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A

Survey Report

On

"A Study On Consumer Buying Behavior for the Cadbury Products"

Project Report

Submitted to RNB Global University for Partial fulfillment for the degree of Bach of B.sc Agriculture (Varun Industry Groundnut Peanut Processing)

By:-

Amisha Sangwa

RNBGU201900041

Under the Guidance of

Mr.Avinash Sharma



RNB Global University, Bikaner

December 2021

Acknowledgment

First of all, I'm grateful to RNB Global University Bikaner for successfully arranging the internship program for us. I also thank to Mr. **Varun Mundhra** MD **Varun Industry Groundnut Peanut Processing Bikaner** for recruiting me as an intern and creating such a wonderful environment for learning

I am really fortunate that, I had the kind association as well as supervision of Mr. **Sushil Mundhra** deputy manager of quality control. His exemplary guidance, constant encouragement, and careful monitoring throughout the internship are so great that, even my most profound gratitude is not enough

In my internship I was mentored by quality control lab staff member Mr.G.anshyam Pareek They have all provided a huge amount of their precious time and effort for me. I feel really lucky to be able to work under there guidance.

I also take this opportunity to express a deep sense of gratitude to all the employees and workers of plant for presenting us such an amazing experience. They are all really wonderful people, and I will never forget these days of mine at **Varun Industry Groundnut Peanut Processing**.

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CERTIFICATE OF ORIGINALITY

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Tele / Fax: +91-151-2251380
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Ref No.:

Date: 31-12-2021

To Whom So Ever It May Concern

This is to certify that **Ms. Amisha Sangwa & Anusuiya Pareek**, Student of **RNB Global University Bikaner**, has successfully completed a internship program of 55 hours with **Varun Industries** From 21st Dec. 2021 to 31st Dec. 2021.

During the period of her internship program with us, she had been exposed to different process and was found diligent, hardworking and inquisitive.

We wish her every success in her life and career.

Thanks & Regards
For Varun Industries

For Varun Industries
Partner/Manager

Sushil Kumar Mundhra (Partner)

CERTIFICATE OF INTERNAL (UNIVERSITY) RESEARCH GUIDE

Enrollment No.: RNBGU201900041

This is to certify that Mr. Amisha Sangwa of B.sc (Varun Industry Groundnut Peanut Processing) has completed this research project under my supervision in Groundnut Peanut Processing for the award of the Bachelor's Degree in Agriculture from RNB GLOBAL UNIVERSITY, BIKANER.

Course Name: Summer Internship and Report

Course Code: 20018500

Signature of internal Research Guide **Signature of Student**

SUMMARY

Varun Industry Groundnut Executive Summary the Projrct Report titled 'Acceptance of Varun Industry of Groundnut at retail level This Project Report drous Significant information about the we would be offer best salted blanced peanuts These peanuts are processed from raw peanuts and are thoroughly tested for tested quality whole process is carried Out in a hygienic environment to retain quality and freshness, moreover offered product is available in various Customized packing Sizes.

Rich in taste

High nutritional value

High nutritional value

Customized packaging

: Size-100gm, 200gm, 500gm,

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Introduction

Groundnut, popularly known as the peanut is a leguminous crop cultivated for edible purposes. It is found exclusively in tropical and subtropical regions of the world. It is sometimes considered as a grain legume because the seed can produce oil and the crop is categorized as an oil crop. The oil content in the seed is estimated to be around 44-50%. The useful part or the part of economical importance within the crop grows under the ground as pods. These crops contain nitrogen fixing bacteria in their roots and that is the reason behind their low nitrogen fertilizer requirement. The cultivation of groundnut began from a hybrid of two different species of groundnuts found in the wild. They are A. duranensis and A. ipaensis**.**

Major uses of groundnuts are found in soap making, cosmetics, lubricant industries, etc. The cake of groundnut is used for manufacturing artificial fiber. The green or dried leaves of the groundnut crops are called haulms and are used as livestock feed. The shell of the ground nut is used for manufacturing coarse boards, corks etc.

This groundnut farming project report highlights the details about the farming techniques and at the end one can find the details about the cost of groundnut farming and the profit associated with 1 hectare of land.

Objective:-1 Groundnut Farming ,Post Harvest Management and Pre-post Harvesting Management of Groundnut Farming**.**

Actullay-

Objective:-2 Peanuts Processing .

(1) Pre-Cleaning Process of Red Peanuts
(2) Rosted White Peanuts Process.

Objective:1

Groundnut

Botanical name:- ***Arachis hypogaea***

Family:- Legumes

Chromosome No:- 2n =20

Origin:- South Amrica

Scope and importance of Groundnut Farming

Among the oilseed crops grown in India, groundnut holds the first place. The annual production of groundnuts is around 7180.5 thousand tonnes approximately and 9 states are considered to contribute more than 100 thousand tonnes each. The major groundnut producing states in India are Gujarat, Rajasthan, Tamil Nadu, Andhra Pradesh, Karnataka, Madhya Pradesh, West Bengal and Telangana. Groundnut farming in India is done in 85 lakh hectares of land approximately and highest productivity is from the state of Tamil Nadu. Oil seeds in India definitely contribute to the agricultural economy, but they are only next to food grains in both value and production. The importance of edible oil in one's daily diet has resulted in increased demand for groundnut production.

It is estimated that there would be further increase in consumption levels owing to enhanced income and population. Currently the production doesn't satisfy the demand and oil is being imported from other countries. Therefore, efforts should be made to increase the area under production for groundnuts so that many by-products manufactured from these could be made available. Groundnut farming in India is also expected to improve income opportunities for the tribal population.

Cultivars/Varieties of Groundnut

All the varieties of groundnut can be divided into three main subcategories namely; the bunch or the Spanish variety, the semi-spreading or Virginia bunch variety and the spreading or Virginia runner variety.

Bunch variety

• Plants are erect

• Light green foliage

• Pods are produced in clusters

• Seeds are round, plump and non-dormant

• Seed colour is light rose

Examples of this variety are Ah.32, Junagadh-II, GAUG-1, Kadiri-71.1, TMV-2, pol.1. pol.2, AK.12-24, Kopergoan-3 etc.

Semi-spreading variety

• Partial trailing branches

• Pod production along the branches

• Dark green colour foliage

Oblong, dormant and brown seeds

Spreading Variety

Completely trail along the surface of soil

• Have dark green foliage • Seeds are oblong and dormant • Some examples of spreading varieties are Punjab-I, Ah.334, GAUG-2, TMV-3, Karad 4-11, M-145, M-13 etc.

Plant and produce properties

Groundnut is considered to be a self pollinated crop, which can grow to a maximum height of 30 to 50 cm. The leaves of the plant are opposite and pinnate. They have four leaflets, each 1-7 cm long and 1-3 cm broad. The colour of groundnut plant flower is yellowish orange with red veins, generally grown in clusters and last for one day. The pods of peanut or groundnut grow underground and this feature is termed as geocarpy. The base of the ovary has a short stalk which elongates upon fertilization and forms a thread like structure called the peg. The peg grows inside the soil and the tip of the ovary develops into a peanut pod. The average length of a pod is 3-7 cm and may contain 1 to 4 seeds. The groundnut has 5 parts; they are shell, cotyledons, seed coat, radical and plumule.

The nutritional compounds found in groundnuts are:

• Mono and polysaturated fat made up of oleic and linoleic acid

• Proteins like arachin and conarachin

• Have low carbs and high fibre content

• Contain vitamins and minerals like biotin, copper, niacin, folate, manganese, vitamin E, thiamin, phosphorous, magnesium.

. Some extra bioactive and antioxidant compounds present in it are p-coumaric acid, resveratrol, isoflavones, phytic acid, phytosterols etc.

Land preparation and planting for Groundnut

All the previous crop residues and weeds should be removed and first ploughing to a depth of 15 20 cm should be done. This should be followed by 2-4 cycles of disk harrowing for getting a fine tilth of the soil. There are three systems developed for sowing groundnuts; the flat surface system, the broad bed-furrow system and the ridge-furrow system. The advantage of the broad bed furrow system is that it helps in proper draining of water, retains soil moisture, provides aeration to the soil and facilitates for intercultural activities.

The seeds are sown at a depth of 5-6 cm in the soil and it is lightly pressed to keep the moisture intact so that there is a uniform and fast germination. The temperature of the soil for sowing should be around 18°C. The most suitable row and plant spacing should be 90 cm and 4-7 cm respectively under rain fed conditions. If it is an irrigation dependent area, then the spacing between rows should be 30 to 35 cm. The minimum no. of seeds required for planting in 1 hectare of land is 100 to 160 kgs.

Propagation of Groundnut

Groundnuts are propagated through seeds. The seeds should be shelled just two weeks before planting. Groundnut seeds are either grown in the nursery, then transplanted to the main area or they have directly sown in the main field. The seeds are sensitive to physical damage so they should be handled carefully. It is important to note that split or damaged kernels will never germinate, so high quality seed should be procured for planting. The seeds for planting should have been naturally dried. If naturally dried seed are not available then, artificially conditioned seeds could be used, but excess heat application to dry the seeds can impair their germination property. Seeds dried under the sun are also considered to have poor germination.

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Your Reliable Partner For Post Harvest Projects.

Manure and fertilizer requirements for Groundnut farming

Residual soil fertility is essential while cultivating groundnuts. This is obtained by growing non leguminous crops prior to groundnuts and fertilizing them properly with potassium and phosphorous content. The soil is tested and then required amount of fertilizers are added, but the general recommendations for groundnut crops are FYM @ 10 to 12 tonnes per hectare should be supplied to the soil 25-30 days before sowing. The plants may need micronutrients like nitrogen @ 8-20 kg, phosphorous @ 16-80 kg and potassium @ 1-75 kg per hectare of land as a basal application. Calcium helps in good seed development in groundnut plants and is supplied during the flowering stage @ 200-400 kg per hac.

Other than these the crops may need micronutrients like boron @ 3-4kh/ha during land preparation, zinc @ 10-20 kg/ha once in three years during soil preparation, sulphur and iron.

Irrigation facilities

The period from flower development to pod formation needs a moist upper soil surface for a better yield. Improper water supply can reduce the growth rate of the crops, reduce the pod development and pod yield. The main idea of irrigation is to keep the soil surface moist without water-logging problems. If the crops are grown in a rain fed region, then there should be proper arrangement for drainage such that excess water doesn't stagnate in the field. If any extra irrigation is required it should be given only at flowering, pegging and seed development stages.

If the crops are grown as Rabi or summer crops, then one should depend on irrigation. The total amount of water required by a groundnut crop is around 600-650 mm. Generally the crop should have 2-3 weeks of moisture stress which should be followed by frequent irrigation; doing so helps

the crops flower profusely and have a uniform pod maturity. At different stages like seed development, pod formation and pegging light irrigation is given. When the crops have grown completely and are nearing maturity, irrigation should be reduced otherwise there is a risk of diseases. Flood irrigation is not suitable for groundnut plants instead sprinkler irrigation should be provided.

Intercultural activities of Groundnut farming

Earthing up of soil should not be practiced for groundnut plants otherwise the pod formation of the lower highly productive nodes is affected. It can also result in deformed plants and non flowering of the crop.

Intercropping is practiced while growing groundnuts during the initial years and the crops that are generally intercropped are pigeon pea, sunflower and some cereal varieties.

Groundnuts are often cultivated in rotation with non-leguminous crops so that the yield increases and there are fewer occurrences of diseases. Crops preferred for crop rotation are maize,pearl millet, sorghum, etc.

Groundnut crops are considered as nitrogen fixers because they have the ability to fix 60 to 70% of its nitrogen requirement from the atmosphere under appropriate conditions. For this to happen, groundnut is inoculated with a suitable strain of Rhizobium bacteria.

After the first 3-6 weeks of sowing, weeds growing around the crop should be removed because groundnut cannot compete with weeds. Any method like mechanical hoeing, manual weed removal or chemical sprays can be used to remove weeds. Using a pre-emergence weedicide followed by manual weeding is considered the best practice. Weeding is done 2 or 3 times during the entire crop cycle; once before flowering season and the other two during pegging. Taller weeds can be manually removed at any stage of the crop cycle.

Pest and disease control in Groundnut farming

The major diseases found in groundnut crops are rust, early and late leaf spots, collar rot, aflatoxins and peanut bud and stem necrosis. These can be controlled by using disease resistant varieties, practicing proper cultural methods, using chemical formulations and biological measures.

The major insect pests that infest the groundnut crops are tobacco caterpillar, gram pod borer, red hairy caterpillar, etc. Some integrated pest management ways to control the pests are growing resistant varieties of crop, growing trap crops like sunflower and castor bean on the borders of the farm, removing the eggs of insect pests manually, allowing birds to feed on the larvae of insects, applying neem seed oil or powder.

Harvesting and yield of Groundnut farming

Groundnut crops are considered to be indeterminate crops and the pod maturity is not uniform. For best harvest the farmer should observe the farm regularly. Every cultivar has a different maturity period and the indications of maturity are defined by pod colour, seed colour, leaves and prevailing weather conditions. Inner walls of the pod appear dark brown and if 75% of the pods show this then it is understood that the crops are ready to harvest. The seed inside the pod is white when young and changes to pink colour upon maturity. The leaves of the crop turn yellow and become dry at the tips indicating maturity of the crops.

Harvesting can be done either mechanically or manually.

Manual harvest should be done carefully, otherwise there is a risk of destroying

Harvesting can be done either mechanically or manually. Manual harvest should be done carefully, otherwise there is a risk of destroying the pods or losing them in the soil. A blade is used to sever the taproots below the soil to a depth of 10 to 15 cm. They are then collected and stacked in bunches. For bunch type groundnuts pulling them from the soil is the best method, whereas for spreading type groundnut plants blade harrow is used. The collected bunches are left for four or five weeks before being picked.

The average yield of spreading type groundnut crops is estimated to be 1500 to 200 kg/ha and that of bunch type groundnut is expected to be 1000 to 1500 kg/ha.

Post harvest management of Groundnut farming

Picking is the process of removing the pods from the plants. Then the pods are cleaned and fed into the Sheller, which removes the shells of the groundnut.

Sorting should be efficiently done to remove unwanted dirt, stones, split seeds, foreign materials, weed seeds etc. from the groundnut. They are graded according to the size of the seed and the color. All the sorted groundnuts are tested for the aflatoxins content and should meet the required standards. Once sorting is done, they are graded in terms of Class A, B, C, D and E. The pods that are stored should contain less moisture around 9% only. Groundnuts are unshelled and then stored. Seeds that are used for cultivation should be stored for seven or eight months.

Packaging the graded groundnuts should be done in clean, dry, odorless and strong containers.

Objective:2

Peanut Processing

The steps of harvesting and processing should avoid the contamination of the product and potential health hazards. Methods and procedures should be hygienic and avoid cracking or tearing of hulls which permit damage the kernels



Figure: 1 Groundnut

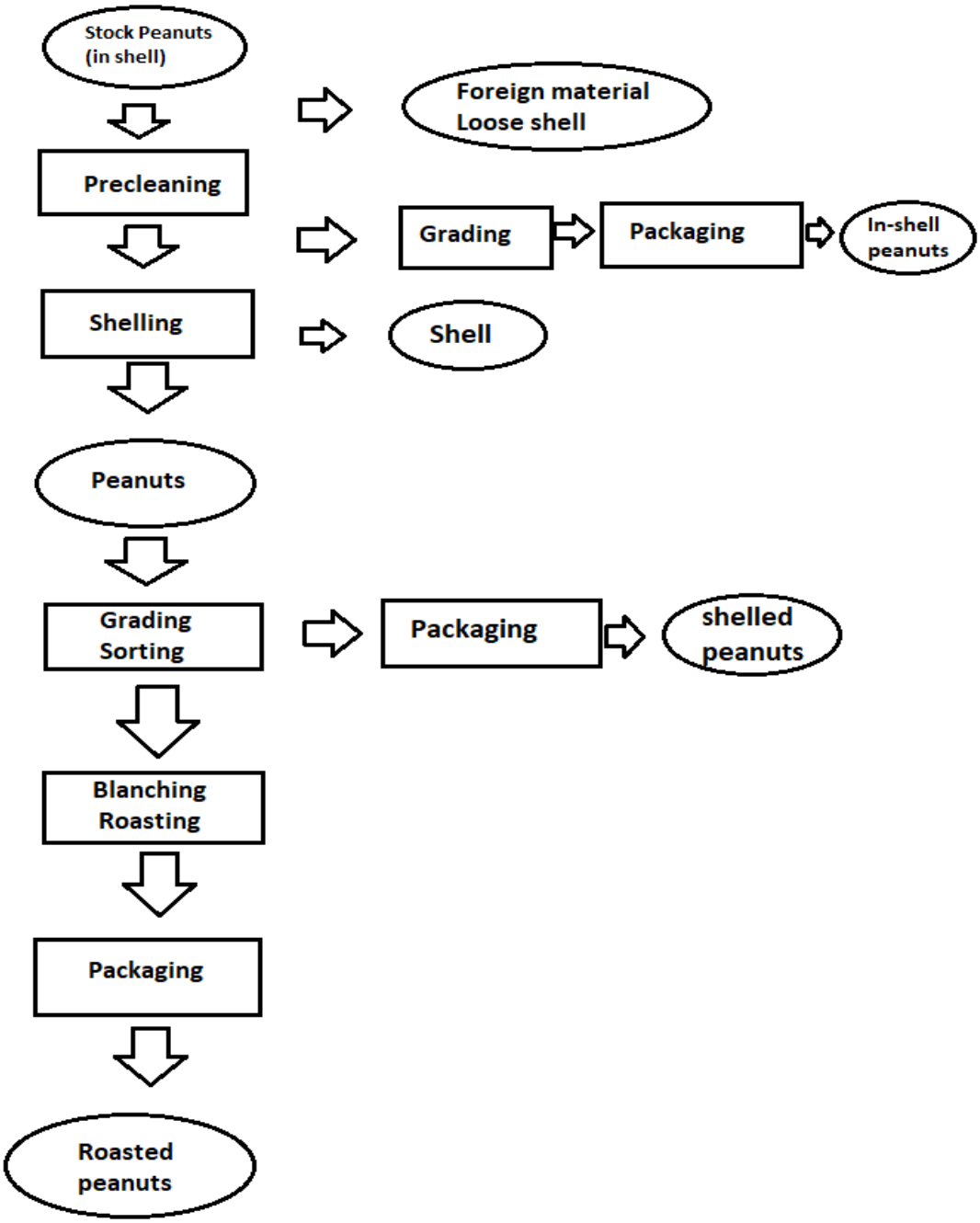


Figure:2 Red Peanut



Figure:3 Rosted White Peanut

Processing of Peanuts



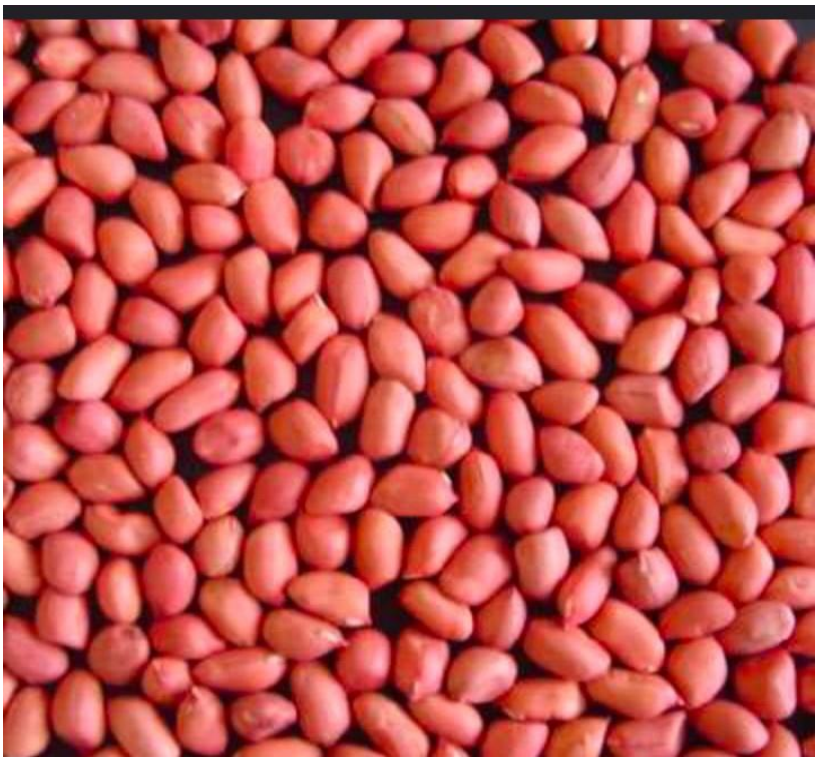


Figure:4 Stock Peanut



Figure:5 Pre-cleaning



Figure:6 Shelling



Figure:7 Foreign Material Loose Shells



Figure:8 Grading



Figure:9 Packaging



Figure:10 Storage

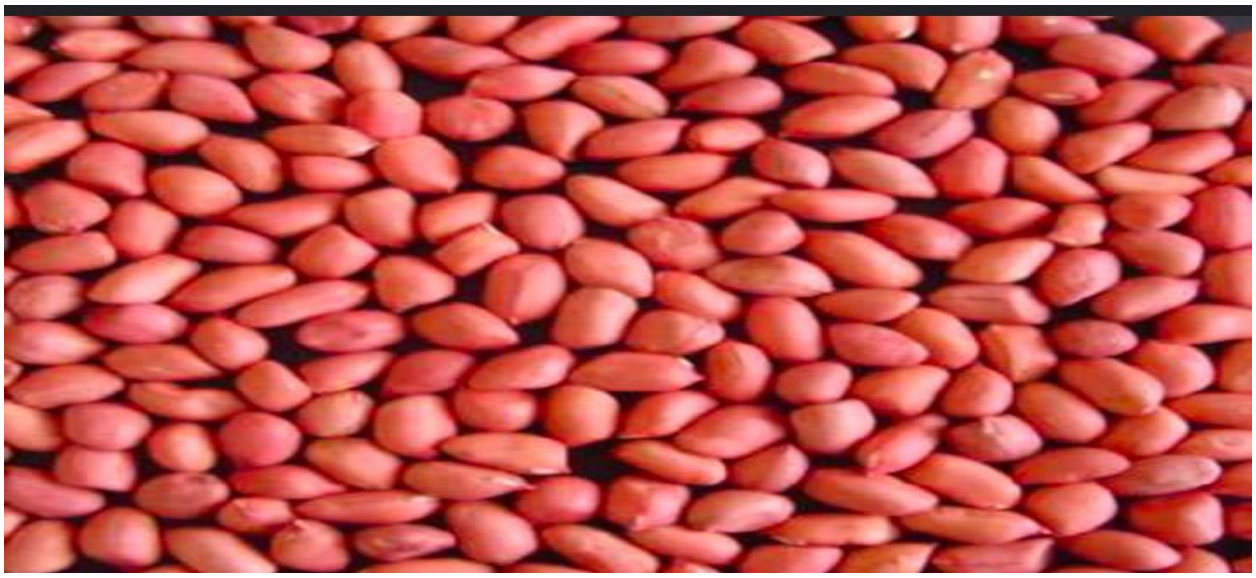


Figure:11 Peanuts red



Figure:12 Grading sorting



Figure:13 Blanching Roasting



Figure:14 Packaging



Figure:15 Storage



Figure:16 Rosted Peanuts

After harvesting, the peanut pods are dried (cured) until they reach a safe moisture level for storage (about 8-9%). Curing should be completed as fast as possible to prevent growth of microorganisms, particularly molds that produce aflatoxins.

The prevention of aflatoxins during storage and transport depends on maintaining low moisture content at room temperature and under hygienic conditions.

RECOMMENDATIONS FOR PROCESSING, PACKAGING, AND STORAGE

PROCESSING

In general, the steps of the processing are the following: precleaning, shelling, grading and sorting.

During the precleaning step, the maximum possible amount of foreign material (dust and dirt), loose shells and loose kernels should be removed. In the case of peanut kernels, the precleaned peanuts are de-shelled and the kernels are separated from the shells. Then the kernels are sorted by size into market grades. Finally, during sorting, defective kernels, as well as any remaining foreign material, are removed. In the case of roasted peanuts, sorting should be performed before and after blanching and roasting.

Internship Value

Internships provide an opportunity to expose yourself to a career that matches your academic and personal interests. Additionally, skills gained from practical experience will make you more valuable as an employee. Completing an internship will allow you to develop strong teamwork skills balanced with the ability to work independently.

Conculusion

"Pea-nut responsibility is to continually improve all aspects of the peanut production in which we operate - environment, social, economic creating a better tomorrow than today." Our vision is put into action through programs and a focus on environmental stewardship. activities to benefit society, and a commitment to build shareholder value by making Pea-hut a truly sustainable company.

A

Survey Report

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"A Study On Consumer Buying Behavior for the Cadbury Products"

Project Report

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By:-

Anusuiya Pareek

RNBGU201900031

Under the Guidance of

Mr.Avinash Sharma



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Land preparation and planting for Groundnut

All the previous crop residues and weeds should be removed and first ploughing to a depth of 15 20 cm should be done. This should be followed by 2-4 cycles of disk harrowing for getting a fine tilth of the soil. There are three systems developed for sowing groundnuts; the flat surface system, the broad bed-furrow system and the ridge-furrow system. The advantage of the broad bed furrow system is that it helps in proper draining of water, retains soil moisture, provides aeration to the soil and facilitates for intercultural activities.

The seeds are sown at a depth of 5-6 cm in the soil and it is lightly pressed to keep the moisture intact so that there is a uniform and fast germination. The temperature of the soil for sowing should be around 18°C. The most suitable row and plant spacing should be 90 cm and 4-7 cm respectively under rain fed conditions. If it is an irrigation dependent area, then the spacing between rows should be 30 to 35 cm. The minimum no. of seeds required for planting in 1 hectare of land is 100 to 160 kgs.

Propagation of Groundnut

Groundnuts are propagated through seeds. The seeds should be shelled just two weeks before planting. Groundnut seeds are either grown in the nursery, then transplanted to the main area or they have directly sown in the main field. The seeds are sensitive to physical damage so they should be handled carefully. It is important to note that split or damaged kernels will never germinate, so high quality seed should be procured for planting. The seeds for planting should have been naturally dried. If naturally dried seed are not available then, artificially conditioned seeds could be used, but excess heat application to dry the seeds can impair their germination property. Seeds dried under the sun are also considered to have poor germination.

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Manure and fertilizer requirements for Groundnut farming

Residual soil fertility is essential while cultivating groundnuts. This is obtained by growing non leguminous crops prior to groundnuts and fertilizing them properly with potassium and phosphorous content. The soil is tested and then required amount of fertilizers are added, but the general recommendations for groundnut crops are FYM @ 10 to 12 tonnes per hectare should be supplied to the soil 25-30 days before sowing. The plants may need micronutrients like nitrogen @ 8-20 kg, phosphorous @ 16-80 kg and potassium @ 1-75 kg per hectare of land as a basal application. Calcium helps in good seed development in groundnut plants and is supplied during the flowering stage @ 200-400 kg per hac.

Other than these the crops may need micronutrients like boron @ 3-4kh/ha during land preparation, zinc @ 10-20 kg/ha once in three years during soil preparation, sulphur and iron.

Irrigation facilities

The period from flower development to pod formation needs a moist upper soil surface for a better yield. Improper water supply can reduce the growth rate of the crops, reduce the pod development and pod yield. The main idea of irrigation is to keep the soil surface moist without water-logging problems. If the crops are grown in a rain fed region, then there should be proper arrangement for drainage such that excess water doesn't stagnate in the field. If any extra irrigation is required it should be given only at flowering, pegging and seed development stages.

If the crops are grown as Rabi or summer crops, then one should depend on irrigation. The total amount of water required by a groundnut crop is around 600-650 mm. Generally the crop should have 2-3 weeks of moisture stress which should be followed by frequent irrigation; doing so helps

the crops flower profusely and have a uniform pod maturity. At different stages like seed development, pod formation and pegging light irrigation is given. When the crops have grown completely and are nearing maturity, irrigation should be reduced otherwise there is a risk of diseases. Flood irrigation is not suitable for groundnut plants instead sprinkler irrigation should be provided.

Intercultural activities of Groundnut farming

Earthing up of soil should not be practiced for groundnut plants otherwise the pod formation of the lower highly productive nodes is affected. It can also result in deformed plants and non flowering of the crop.

Intercropping is practiced while growing groundnuts during the initial years and the crops that are generally intercropped are pigeon pea, sunflower and some cereal varieties.

Groundnuts are often cultivated in rotation with non-leguminous crops so that the yield increases and there are fewer occurrences of diseases. Crops preferred for crop rotation are maize,pearl millet, sorghum, etc.

Groundnut crops are considered as nitrogen fixers because they have the ability to fix 60 to 70% of its nitrogen requirement from the atmosphere under appropriate conditions. For this to happen, groundnut is inoculated with a suitable strain of Rhizobium bacteria.

After the first 3-6 weeks of sowing, weeds growing around the crop should be removed because groundnut cannot compete with weeds. Any method like mechanical hoeing, manual weed removal or chemical sprays can be used to remove weeds. Using a pre-emergence weedicide followed by manual weeding is considered the best practice. Weeding is done 2 or 3 times during the entire crop cycle; once before flowering season and the other two during pegging. Taller weeds can be manually removed at any stage of the crop cycle.

Pest and disease control in Groundnut farming

The major diseases found in groundnut crops are rust, early and late leaf spots, collar rot, aflatoxins and peanut bud and stem necrosis. These can be controlled by using disease resistant varieties, practicing proper cultural methods, using chemical formulations and biological measures.

The major insect pests that infest the groundnut crops are tobacco caterpillar, gram pod borer, red hairy caterpillar, etc. Some integrated pest management ways to control the pests are growing resistant varieties of crop, growing trap crops like sunflower and castor bean on the borders of the farm, removing the eggs of insect pests manually, allowing birds to feed on the larvae of insects, applying neem seed oil or powder.

Harvesting and yield of Groundnut farming

Groundnut crops are considered to be indeterminate crops and the pod maturity is not uniform. For best harvest the farmer should observe the farm regularly. Every cultivar has a different maturity period and the indications of maturity are defined by pod colour, seed colour, leaves and prevailing weather conditions. Inner walls of the pod appear dark brown and if 75% of the pods show this then it is understood that the crops are ready to harvest. The seed inside the pod is white when young and changes to pink colour upon maturity. The leaves of the crop turn yellow and become dry at the tips indicating maturity of the crops.

Harvesting can be done either mechanically or manually.

Manual harvest should be done carefully, otherwise there is a risk of destroying

Harvesting can be done either mechanically or manually. Manual harvest should be done carefully, otherwise there is a risk of destroying the pods or losing them in the soil. A blade is used to sever the taproots below the soil to a depth of 10 to 15 cm. They are then collected and stacked in bunches. For bunch type groundnuts pulling them from the soil is the best method, whereas for spreading type groundnut plants blade harrow is used. The collected bunches are left for four or five weeks before being picked.

The average yield of spreading type groundnut crops is estimated to be 1500 to 200 kg/ha and that of bunch type groundnut is expected to be 1000 to 1500 kg/ha.

Post harvest management of Groundnut farming

Picking is the process of removing the pods from the plants. Then the pods are cleaned and fed into the Sheller, which removes the shells of the groundnut.

Sorting should be efficiently done to remove unwanted dirt, stones, split seeds, foreign materials, weed seeds etc. from the groundnut. They are graded according to the size of the seed and the color. All the sorted groundnuts are tested for the aflatoxins content and should meet the required standards. Once sorting is done, they are graded in terms of Class A, B, C, D and E. The pods that are stored should contain less moisture around 9% only. Groundnuts are unshelled and then stored. Seeds that are used for cultivation should be stored for seven or eight months.

Packaging the graded groundnuts should be done in clean, dry, odorless and strong containers.

Objective:2

Peanut Processing

The steps of harvesting and processing should avoid the contamination of the product and potential health hazards. Methods and procedures should be hygienic and avoid cracking or tearing of hulls which permit damage the kernels



Figure: 1 Groundnut

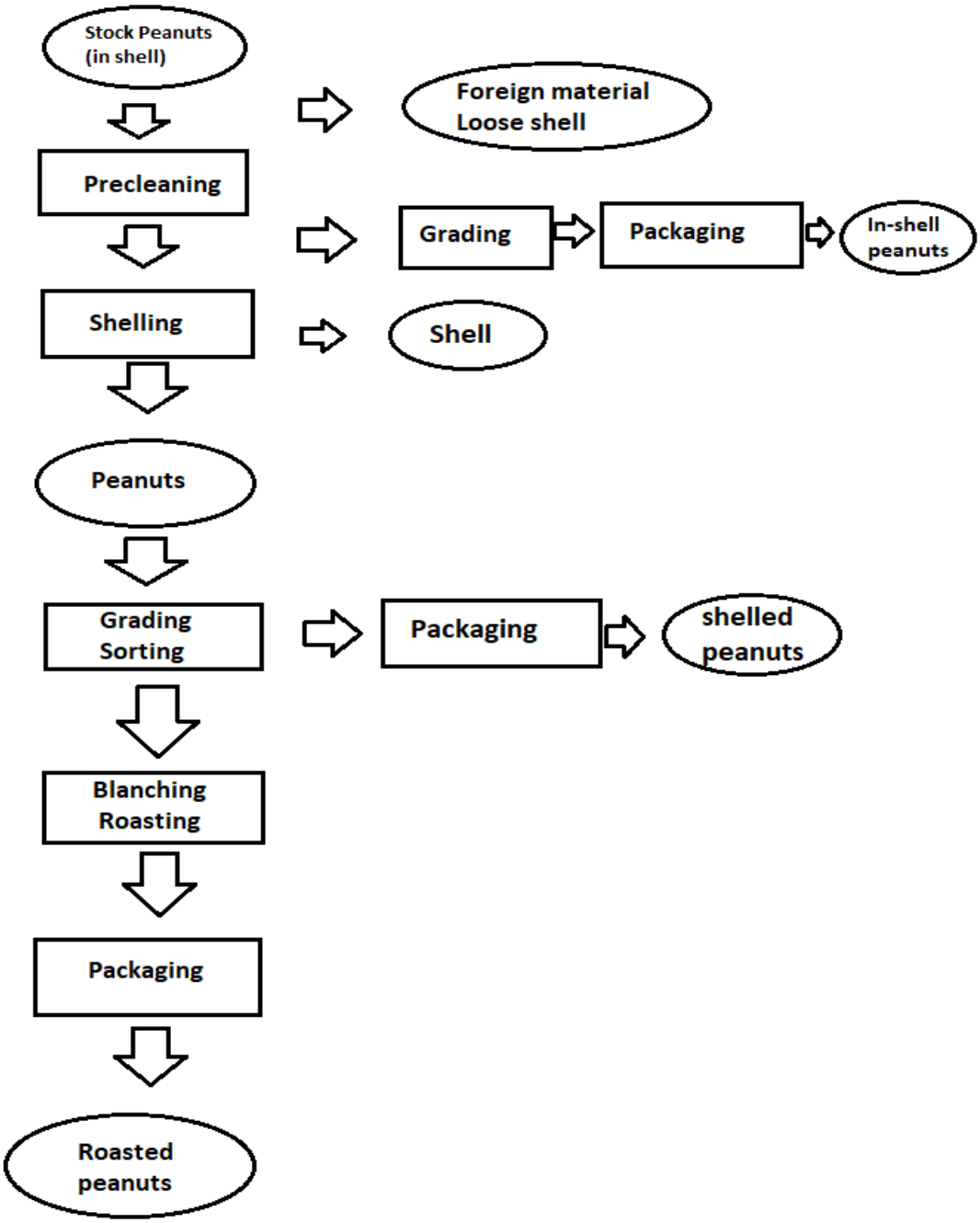


Figure:2 Red Peanut



Figure:3 Rosted White Peanut

Processing of Peanuts



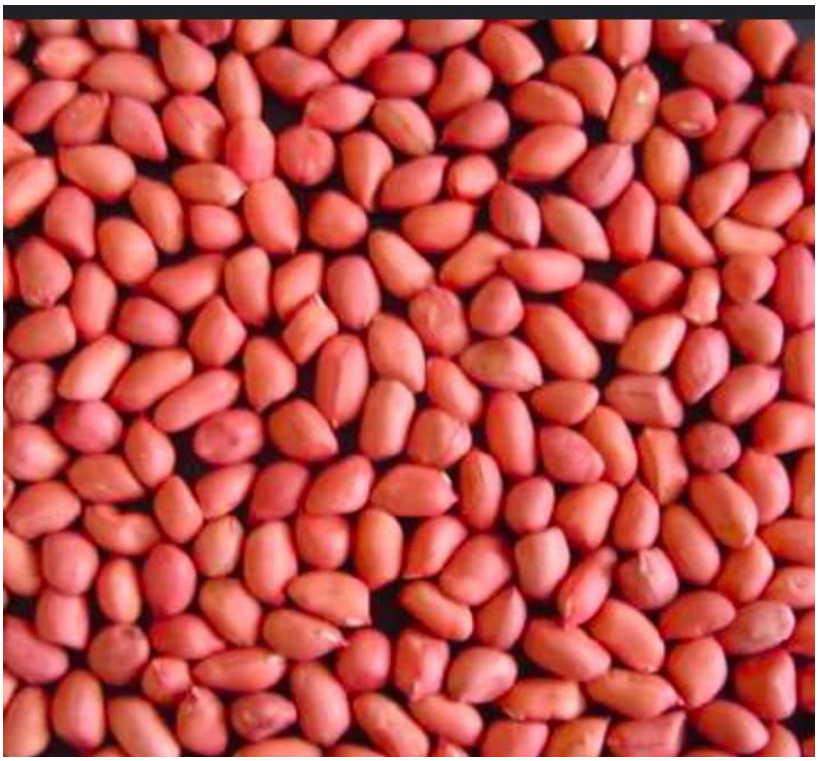


Figure:4 Stock Peanut



Figure:5 Pre-cleaning



Figure:6 Shelling



Figure:7 Foreign Material Loose Shells



Figure:8 Grading



Figure:9 Packaging



Figure:10 Storage

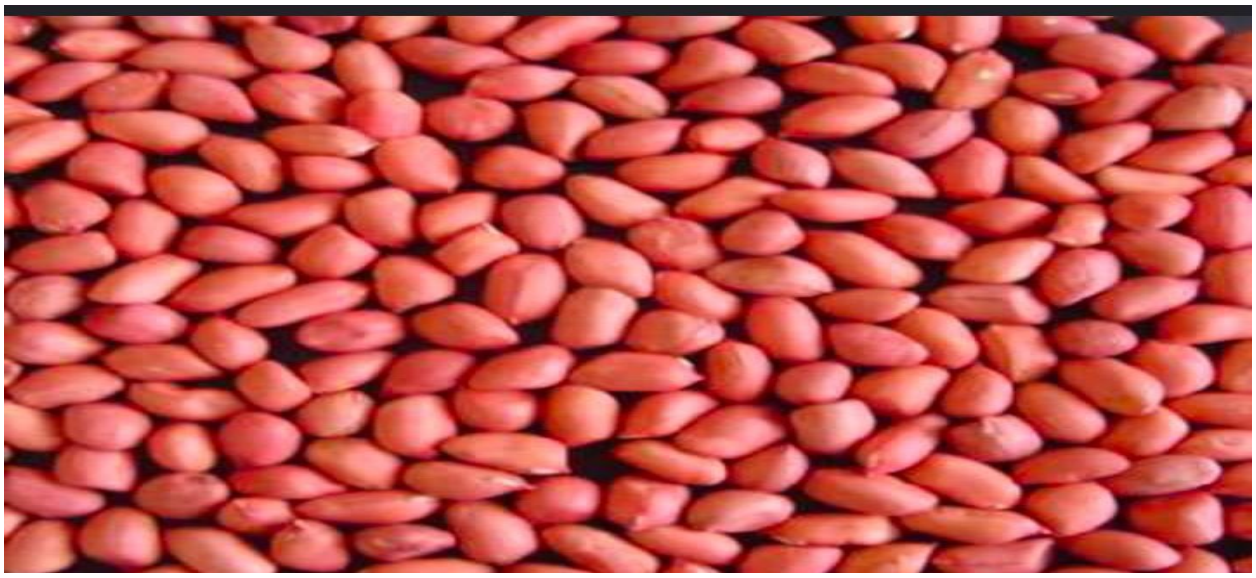


Figure:11 Peanuts red



Figure:12 Grading sorting



Figure:13 Blanching Roasting



Figure:14 Packaging



Figure:15 Storage



Figure:16 Rosted Peanuts

After harvesting, the peanut pods are dried (cured) until they reach a safe moisture level for storage (about 8-9%). Curing should be completed as fast as possible to prevent growth of microorganisms, particularly molds that produce aflatoxins.

The prevention of aflatoxins during storage and transport depends on maintaining low moisture content at room temperature and under hygienic conditions.

RECOMMENDATIONS FOR PROCESSING, PACKAGING, AND STORAGE

PROCESSING

In general, the steps of the processing are the following: precleaning, shelling, grading and sorting.

During the precleaning step, the maximum possible amount of foreign material (dust and dirt), loose shells and loose kernels should be removed. In the case of peanut kernels, the precleaned peanuts are de-shelled and the kernels are separated from the shells. Then the kernels are sorted by size into market grades. Finally, during sorting, defective kernels, as well as any remaining foreign material, are removed. In the case of roasted peanuts, sorting should be performed before and after blanching and roasting.

Internship Value

Internships provide an opportunity to expose yourself to a career that matches your academic and personal interests. Additionally, skills gained from practical experience will make you more valuable as an employee. Completing an internship will allow you to develop strong teamwork skills balanced with the ability to work independently.

Conculusion

"Pea-nut responsibility is to continually improve all aspects of the peanut production in which we operate - environment, social, economic creating a better tomorrow than today." Our vision is put into action through programs and a focus on environmental stewardship. activities to benefit society, and a commitment to build shareholder value by making Pea-hut a truly sustainable company.

SUMMER INTERNSHIP PROJECT REPORT

ON

Haryali Khad Beej Agency New Anaj Mandi Bikaner

Submitted to RNBGU for partial fulfilment for the degree of

B.sc (Hons.) Agriculture

BY

Dheeraj Bishnoi

Enrolment No. -

RNBGU201900039

Under the Guidance of

Mr. Avinash Sharma



RNB GLOBAL UNIVERSITY

DECEMBER 2021

ACKNOWLEDGEMENT

The internship opportunity I had with haryali khad beej ajency was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of it.

Bearing in mind previous, using this opportunity to express my deepest gratitude and special thanks to the Mr. Avinash Sharma who in spite of being extraordinarily busy with her duties, took time out to hear , guide and keep me on the correct path and allowing me to carry out my project at their esteemed organization and extending and extending organization and extending during the training .

I am also very thankful to internship guide Mr. Ashok kameriya who helped me to learn all the experiments and processes performed at agrochemicals

I perceive this opportunity as big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement, to attain desired career objectives. Hope to continue cooperation with all of you in the future.

Dheeraj Bishnoi[B.sc Agriculture 5th sem.]

DECLARATION

I Dheeraj Bishnoi , Hereby declare that the project report entitled “ Licence availability of agriculture input in plant clinic ”submitted by me to RNB Global University in partial fulfilment of the requirement for the award of the degree of B.sc in Agriculture is a record of confide project work carried out by me under the guidance of Mr. Avinash Sharma .

I further declare that this is the record of the authentic work carried out by me during summer internship program for the academic Year 2019 – 23 and has not be submitted to any other University or institute towards the award of any degree .

Signature of the student



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हरियाली खाद–बीज एजेन्सी

नई अनाज मण्डी, मुख्य गेट के पास, बीकानेर (राज.)

Ref. 1165 Date 30-12-21

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Dheeraj Bishnoi** B.Sc. Agriculture (Vth Semester) Student of RNB Global University, Ganganagar Road, Bikaner has successfully completed her one weeks internship at this organization w.e.f. 21th December to 28th December 2021.

He has shown keen interest in learning and knowing the practical aspects of the subject. During the tenure of her training period, her conduct/performance was found satisfactory.

We wish her a bright and excellent future.

हरियाली बीकानेर

(Ashok Kameriya)
Director

CERTIFICATE OF EXTERNAL COMPANY (GUIDE)

CERTIFICATE OF INTERNAL
(UNIVERSITY) FACULTY GUIDE

Enrolment No. – RNBGU201900039

This is to certify that Dheeraj Bishnoi of B.sc (Agriculture) has completed this summer internship / Research project under my supervision in partial fulfilment for the award of the B.sc agriculture from RNB Global University , Bikaner .

Course Name : Summer internship

Course code : 20018500

SIGNATURE OF INTERNAL FACULTY GUIDE

SIGNATURE OF STUDENT

PLACE : RNB GLOBAL UNIVERSITY , BIKANER

DATE :

ABSTRACT

Seed,fertilisers,pesticides and other agrochemical sarecategoriesedasessentialcommoditiesandareexemptedfromanyrestrictions.However,themovementoftrucksandothermodesoftransportstillisn;tnormaldespitethefactthatboth,theCentreandstateshaveallowedtransportationofessentialcommoditiesduringthelockdownperiod.

We are trying our best to reach out to all farmers to supply seeds this kharif season . But we may not be able to reach out to more than 80 percent of our customers.

Here I have studies that all the products are made using selected raw materials procured from best in their category , processed in an isolated and hygienic environment and are untouched by human hand and are packed in a state-of-the-art automated packaging plant

EXECUTIVE SUMMERY

Haryali khad beej agencyhold a key role in society's life. People turn to establishments like Hariyali beej company to get condiments, fruits and vegetables.

The Department of Agriculture and Co-operation is implementing a Central Sector Scheme as ‘Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality Seeds’ since 2005-06 for the whole country. The objective of the ongoing scheme is to ensure production and multiplication of high yielding certified/quality seeds of all crops in sufficient quantities and make the seeds available to farmers, including those in remote areas, not easily accessible by rail/road on time and at affordable price.

Seed, fertilisers, pesticides and other agrochemicals are categoriesed as essential commodities and are exempted from any restrictions. However, the movement of trucks and other modes of transport still isn;t normal despite the fact that both, the Centre and states have allowed transportation of essential commodities during the lockdown period.

We are trying our best to reach out to all farmers to supply seeds this kharif season. But we may not be able to reach out to more than 80 per cent of our customers.

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INTRODUCTION

INTRODUCTION TO THE COMPANY: Hariyali Khad Beej Agency Main Gate,Bikaner is known to satisfactorily cater to the demand so fitscustomer base.It stands locatedat104,Main Gate-334002.The business trives to makefora positive experience throughit so fferings.

Haryali khad beej agency hold akeyroleinsociety'slife.People turn to establishment slike Hariyali beej company to get condiments,fruits and vegetables.

The production takes place on a large scale. To provide its customers with the best quality of masala the agency has a well-established quality

control lab. Every day the first lot is checked and then other lots are made, if the first one is fine.

Packaging :

There is no expiry date of chemical fertilizers. However, in case of imported Fertilizers, the container (bag) has. indication regarding month and year of Manufacture/import.

The procedural requirements are detailed in Clause 8 of FCO. Application has to be made in Form A/ Al to Controller of Fertilizers of the concerned State/UT for obtaining registration/license as Industrial Dealer in fertilizers or dealer in fertilizers for agricultural sales, respectively, along with fee prescribed under Clause 36 and certificate of source in Form O.

Pricing scheme :-

Group Concession Scheme under NPS introduced from 1.402003 Under NPS, all units were classified into six groups based on vintage and the feedstock. For each group, weighted average group price was worked out excluding the outlier (RPS more than +/- 20% of group average). Each unit will get the concession rate based on the group average or the retention price, whichever is lower. Outlier units to get advantage of 50%n of the difference between the RPS and the group average for a period of three years.

1.1 PRODUCTION :

Fertilizer Powders

Fertilizers can be applied to crops as either solids or liquids, with granulated or powdered solids being the most common form. The physical properties of the powder, including its particle size distribution and particle shape are determined by its chemical composition and processing and are important for optimizing spreading properties and minimizing

segregation, especially in bulk blends. Particle size can also affect dilution behaviour and activity rate of the fertilizer.

Colloidal Dispersions

For agrochemicals which are in the form of colloidal suspensions, Zeta potential is a critical metric for optimizing the stability of colloidal dispersions.

Pesticide Sprays

Pesticides are most commonly applied using spray devices and along with soil particle size, the droplet size of a spray determines the run-off speed of the liquid from the soil as well as properties such as spray drift and evaporation.

Polymers in Agrochemicals

The use of polymers in agriculture is becoming more widespread with superabsorbent hydrogels being used to optimize soil properties and functional polymers used to increase the efficiency and stability of pesticides and herbicides. Polymers are also used to control the atomization behavior of agrochemical sprays.

Physical and chemical analysis of agrochemicals

Malvern Panalytical's range of analytical products and expertise can assist the agrochemical sector by helping to:

Optimize spray formulations and spray apparatus to ensure optimum droplet size for a given application or environment

Control particle size and shape of powder formulations to ensure optimum and consistent flow, spreading and packing characteristics

Improve dissolution behaviour and activity rate of fertilizers and pesticides

Classify soil types in terms of their composition and physical characteristics

Characterize and synthesize functional polymers for use in agrochemical formulations

(1). Selection Criterion for Location:-

Since Masala industry are considered to be complementary to each other therefore choice for location of this high tech. Plant in Nagaur is obvious. companies have tried to open this Masala industry in other parts of India but are not successful reason may be due to climatic condition. The factors, which influenced to open it in Nagaur, are: -

Chapter 1

Licensing

The owner of an agriculture shop, with license, is authorized to sell the following products:

Insecticides.

Herbicides or weedicides.

Hybrid seeds.

Farming equipments.

Other farming components.

(1). How to Apply for an Agricultural Shop License?To get license:

1. B. Sc. Agriculture Degree is required. Or,

2. B. Sc., Horticulture Degree is required. Or,

3. B. Sc. from Biology (Science) is required. Or,

4. A diploma programme in particular field is required.

(2). Steps

Collect the necessary records.

Contact an agriculture officer.

Or contact a horticulture officer.

Go to the department of agriculture.

Or go to the department of horticulture.

Get application form.

Fill the application form.

Submit the application form.

(3). Getting License

After verification, if found eligible, you will get a license to open an agricultural shop.

Chapter 2:-

Fertilizer

Checklist: Fertilizer Storage

Store fertilizers separate from other chemicals in dry conditions.

Extra care needs to be given to concentrate stock solutions. Secondary containment should be used.

Provide pallets to keep large drums or bags off the floor. Shelves for smaller containers should have a lip to keep the containers from sliding off easily. Steel shelves are easier to clean than wood if a spill occurs.

If you plan to store large bulk tanks, provide a containment area large enough to confine 125 percent of the contents of the largest bulk container.

Keep the storage area locked and clearly labeled as a fertilizer storage area. Preventing unauthorized use of fertilizers reduces the chance of accidental spills or theft. Labels on the windows and doors of the building give firefighters information about fertilizers and other products present during an emergency response to a fire or a spill.

Provide adequate road access for deliveries and use, and in making the storage area secure, also make it accessible, to allow getting fertilizers and other chemicals out in a hurry.

Never store fertilizers inside a wellhouse or a facility containing an abandoned well.

Fertilizer Storage and Handling

Greenhouse fertilizer storage areas contain concentrated nutrients that must be stored and managed properly. Fertilizers can cause harm if they reach surface or ground water. Excessive nitrate concentrations in drinking water can cause health risks, especially in young children. Phosphorus can be transported to surface waters and cause algae blooms and eutrophication; resulting in poor water quality. Storing fertilizers separate from other chemicals in dry conditions can minimize these risks. Extra care needs to be given to concentrate stock solutions. Secondary containment should always be used.

Untimely application of fertilizer leads to excessive release from the production system to surface and/or ground water. Potential problems can be minimized through adequate environmental awareness, employee training, and emergency preparedness. Below are guidelines for properly storing and handling greenhouse fertilizers.

Storage Location

Greenhouse fertilizer storage areas contain relatively large quantities of concentrated chemicals. Risks in storage areas include release through broken, damaged, or leaking containers; loss of security leading to irresponsible use; accumulation of outdated materials leading to excessive quantity of fertilizer thus unnecessarily raising risk level; and combustion of oxidizing compounds in fertilizer (e.g., nitrates) caused by fire or another disaster event.

The least amount of risk involves having a building or area dedicated to fertilizer storage; separated from offices, surface water, neighboring dwellings and bodies of water; separate from pesticides and protected from extreme heat and flooding. The storage area should have an impermeable floor with secondary containment, away from plant material and high traffic areas. Clean-up equipment should be readily available.

Storage areas should not contain pesticides, or other greenhouse chemicals; storage areas may contain general greenhouse supplies; there should be no food, drink, tobacco products, or livestock feed present.

Provide pallets to keep large drums or bags off the floor. Shelves for smaller containers should have a lip to keep the containers from sliding off easily. Steel shelves are easier to clean than wood if a spill occurs.

If you plan to store large bulk tanks, provide a containment area large enough to confine 125 percent of the contents of the largest bulk container.

Keep the building or storage area locked and clearly labeled as a fertilizer storage area. Preventing unauthorized use of fertilizers reduces the chance of accidental spills or theft. Labels on the windows and doors of the building give firefighters information about

fertilizers and other products present during an emergency response to a fire or a spill. It is a good idea to keep a separate list of the chemicals and amounts stored. If a fire should occur, consider where the water used to fight the fire will go and where it might collect. For example, a curb around the floor can help confine contaminated water.

Provide adequate road access for deliveries and use, and in making the storage area secure, also make it accessible, to allow getting fertilizers and other chemicals out in a hurry.

Never store fertilizers inside a wellhouse or a facility containing an abandoned well.

Sound containers are your first line of defense against a spill or leak. If a container is accidentally ripped open or knocked off a shelf, the spill should be confined to the immediate area and promptly cleaned up. The building should have a solid floor and, for liquid fertilizers, a curb. The containment volume should be large enough to hold the contents of the largest full container.

Containers

Fertilizer should be stored in their original containers unless damaged; labels should be visible and readable; food or beverage containers should never used for storage. Labels should be in plain sight; no containers should come in contact with floor; all containers should be stored up-right; aisles should be wide enough to comfortably accommodate workers; containers should not be crowded on shelves or pallets.

Partially-used Containers

Paper bags and boxes should be opened with a box cutter or scissors; open containers should be resealed and returned to storage; all open paper bags should be sealed inside another, larger container, sealed and labeled.

Damaged Containers

Containers should be checked often for damage; when damaged containers are noticed, contents should be repackaged and labeled or placed in suitable secondary containment which can be sealed and labeled.

Containment

There should be no floor drain; the floor should provide containment in the event of a spill; there should be secondary containment routinely used for most open containers; damaged or leaking containers should be repaired and/or replaced as soon as possible; all spilled material should be cleaned up upon discovery; and cleanup materials should be discarded promptly and properly.

Fire Prevention and Suppression

Fire detection and alarm system should be present; oxidizers and flammable materials should be stored separately; fire extinguisher should be immediately available; the fire department should be notified at least annually of current inventory.

Inventory and Recordkeeping

Inventory should be actively maintained as chemicals are added or removed from storage; containers should be dated when purchased; outdated materials should be removed on a regular basis; inventory should be controlled to prevent the accumulation of excess material that may become difficult to use

Lighting

Electrical lighting should allow view into all areas and cabinets within the storage area.

Monitoring

There should be monthly inspection of storage for 1) signs of container corrosion or other damage - leaking or damaged containers should be repackaged as appropriate, 2) faulty

ventilation, electrical, and fire suppression systems – problems should be reported and corrected.

Security

The storage room should be locked and access restricted to trained personnel.

Signage

There should be signs posted; warning signs should be used as needed; emergency contact information should be posted.

Temperature Control

There should be active mechanical temperature control and no direct sources of heat (sunny windows, steam pipes, furnaces, etc.).

Ventilation

Mechanical ventilation should be working and used.

Containment of Concentrated Stock

Concentrated stock should be stored near the injector in high density polyethylene or polypropylene containers with extra heavy duty walls; secondary containment should be provided.

Disposal

Sufficient planning should be made to eliminate the need for disposal; empty fertilizer containers should be discarded based on latest advice from environmental protection authorities.

Precipitate and Residue Disposal

Fertilizer systems should be cleaned. Solids and rinse solution should be composted.

Spill Prevention and Preparedness

Opening fertilizer product containers, measuring amounts, and transferring fertilizer to the delivery system involves some level of risk from spills. Secondary containment should be used for fertilizer stock tanks routinely; spill clean-up materials should be used for liquids (e.g., absorbent materials) and solids (e.g., shovel, dust pan, broom and empty and/or buckets) should be available within the general area.

Delivery System

The fertigation equipment should be checked monthly for accuracy; containment tanks, back flow preventors and any equipment that holds fertilizer in the dry or liquid form should be inspected; stock tanks should be inspected weekly for deterioration and cracks; the manufacturer recommendations should be followed when calibrating or working on fertilizer injector equipment; stock solution tanks and the areas surrounding fertilizer injectors and concentrated solutions should be kept clean and free of debris.

Chapter :-3

Storage of pesticide :-

The Container Matters

Pesticides should be stored in their original containers. The original container is designed to protect the product and it's made of materials that will withstand the chemicals in the product.

Store containers with their original labeling which includes application and disposal directions, ingredient names and emergency information.

The original container also has the appropriate lid/cap to protect kids and pets.

Temperature Matters

Extremes in temperature can change the chemistry of some pesticides inside the container.

Extremes in temperature can also damage containers.

Always read the label for storage instructions. As a general rule, pesticides are best stored between 40-90 °F.

Location Matters

Designate a place that is only used for pesticide storage.

Pick a well-ventilated location that children and pets cannot access, preferably with a latch or lock.

Keep pesticides away from food, feed and flames.

Choose a location away from ponds, streams and drinking water wells.

Safety Matters

Try to keep your pesticide inventory as low as possible. Buy only what you need this season; mix only what you need today.

Dispose of unwanted pesticides properly rather than storing them.

Never store pesticides in food or drink containers.

Consider storing bottles inside a larger container that could contain liquids in the event of a leak or spill.





Fig :- some available seed in agency



Fig :- some pesticide available in agency

Chapter :-4

Types of fertilizer in available in Agency :-

Plants need nutrients to grow which they absorb from the soil via the plant's root system. Fertilizers provide the major nutrients (nitrogen, phosphorus and potassium and important secondary elements) that plants need. Unless the nutrients are replenished, the soil's productive capacity declines with every harvest.

Fertilizer is any material of natural or synthetic origin added to the soil to supply one or more plant nutrients.

CLASSIFICATION OF FERTILISERS

Fertilisers

1. Straight fertilizers: Straight fertilizers are those which supply only one primary plant nutrient, namely nitrogen or phosphorus or potassium.

eg. Urea, ammonium sulphate, potassium chloride and potassium sulphate.

2. Complex fertilizers: Complex fertilizers contain two or three primary plant nutrients of which two primary nutrients are in chemical combination. These fertilisers are usually produced in granular form.

eg. Diammonium phosphate, nitrophosphates and ammonium phosphate.

3. Mixed fertilizers: are physical mixtures of straight fertilisers. They contain two or three primary plant nutrients. Mixed fertilisers are made by thoroughly mixing the ingredients either mechanically or manually.

Fertilisers can also be classified based on physical form:

Solid

Liquid fertilizers

Fertilizer

Solid fertilizers are in several forms viz.

Powder (single superphosphate),

Crystals (ammonium sulphate),

Prills (urea, diammonium phosphate, superphosphate),

Granules (Holland granules),

Supergranules (urea supergranules) and

Briquettes (urea briquettes).

Urea prills

Granulated urea

Ammonium sulphate

Liquid fertilizers:

Liquid form fertilizers are applied with irrigation water or for direct application.

Ease of handling, less labour requirement and possibility of mixing with herbicides have made the liquid fertilisers more acceptable to farmers.

A. Nitrogenous fertilizers

Nitrogenous fertilizers take the foremost place among fertilizers since the deficiency of nitrogen in the soil is the foremost and crops respond to nitrogen better than to other nutrients.

More than 80 per cent of the fertilizers used in this country are made up of nitrogenous fertilizers, particularly urea.

It is extremely efficient in increasing the production of crops and the possibilities of its economic production are unlimited.

The nitrogenous fertilizers can be further classified as given below:

1. Ammoniacal fertilizers

Ammoniacal fertilizers contain the nutrient nitrogen in the form of ammonium or ammonia.

Ammoniacal fertilizers are readily soluble in water and therefore readily available to crops.

Except rice, all crops absorb nitrogen in nitrate form. These fertilizers are resistant to leaching loss, as the ammonium ions get readily absorbed on the colloidal complex of the soil.

2. Nitrate Fertilizers

Nitrate fertilizers contain the nitrogen in the form of NO_3

These ions are easily lost by leaching because of the greater mobility of nitrate ions in the soil.

Continuous use of these fertilizers may reduce the soil acidity as these nitrogenous fertilizers are basic in their residual effect on soils.

a) Sodium nitrate ($NaNO_3$)

Sodium nitrate is a white salt containing about 15.6 per cent of nitrogen.

It is completely soluble in water and readily available for the use of plants as such, without any chemical change in the soil.

It is easily lost by leaching and denitrification.

When large quantities of sodium nitrate are added year after year, the nitrate ions are absorbed by crops and sodium ions accumulate and affect the structure of the soil. Sodium nitrate is also known as chile salt peter or chilean nitrate.

Sodium nitrate is particularly useful for acidic soils

b) Calcium nitrate [$Ca(NO_3)_2$]

It is a white crystalline hygroscopic solid soluble in water containing 15.5 per cent nitrogen and 19.5 per cent calcium.

The calcium is useful for maintaining a desirable soil pH.



Fig :- nitrate fertilizer

Conclusion

The Department of Agriculture and Co-operation is implementing a Central Sector Scheme as 'Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality Seeds' since 2005-06 for the whole country. The objective of the ongoing scheme is to ensure production and multiplication of high yielding certified/quality seeds of all crops in sufficient quantities and make the seeds available to farmers, including those in remote areas, not easily accessible by rail/road on time and at affordable price.

Seed, fertilisers, pesticides and other agrochemicals are categoriesed as essential commodities and are exempted from any restrictions. However, the movement of trucks and other modes of transport still isn;t normal despite the fact that both, the Centre and states have allowed transportation of essential commodities during the lockdown period.

We are trying our best to reach out to all farmers to supply seeds this kharif season. But we may not be able to reach out to more than 80 per cent of our customers.

Greenhouse fertilizer storage areas contain concentrated nutrients that must be stored and managed properly. Fertilizers can cause harm if they reach surface or ground water. Excessive nitrate concentrations in drinking water can cause health risks, especially in young children. Phosphorus can be transported to surface waters and cause algae blooms and eutrophication; resulting in poor water quality.

Storing fertilizers separate from other chemicals in dry conditions can minimize these risks. Extra care needs to be given to concentrate stock solutions. Secondary containment should always be used.

Name of Student	**Dheeraj Bishnoi**
Enrolment No.	**RNBGU201900039**
Program	**B.sc (Hons.) Agriculture**
Report Date	
Week	**1**
Name of Organisation	**Haryali Khad Beej Agency**
Report	**Processing and Management in Agency**
Tuesday (21/12/21)	**Introduction of Agency**

Wednesday (22/12/21)	**Study on Licensing**
Thursday (23/12/21)	**Registration and Licensing of Seed and Agrochemicals**
Friday (24/12/21)	**About fertilizer**
Saturday (25/12/21)	**Storage of Pesticides**

Sunday (26/12/21)	**Fertilizer Storage**
Monday (27/12/21)	**Pacakging ang Pricing**

“A Project Report on Seed Processing in Shri Char Bhuja Industry”

Submitted to RNB Global University for Partial fulfillment for the degree of B.SC (Hons) Agriculture (Shri Char Bhuja Seeds)

by: -

Dilkhush Kameriya

RNBGU201900048

Under the Guidance of

Mr.Avinash Sharma

RNB Global University, Bikaner

December 2021

ACKNOWLEDGMENTS

The internship opportunity I had with **SHRI CHAR BUJHA AGRO INDUSTRIES** is a great chance for learning. Therefore, I consider myself as a very lucky individual to getting this opportunity to gain lots of knowledge about digital Marketing. Bearing in mind previous I am using this opportunity to express my deepest Gratitudeand special thanks to **Mr. Avinash Sharma**, faculty in charge of RNB Global University who inspite of being extraordinarily busy with his duties, took time out to Hear, Guide and keep me on the correct path.

I perceive as this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement, hope to take it as my career option and will help me in further time.

Sincerely

CERTIFICATE OF ORIGINALITY

Enrollment No.: RNBGU201900033

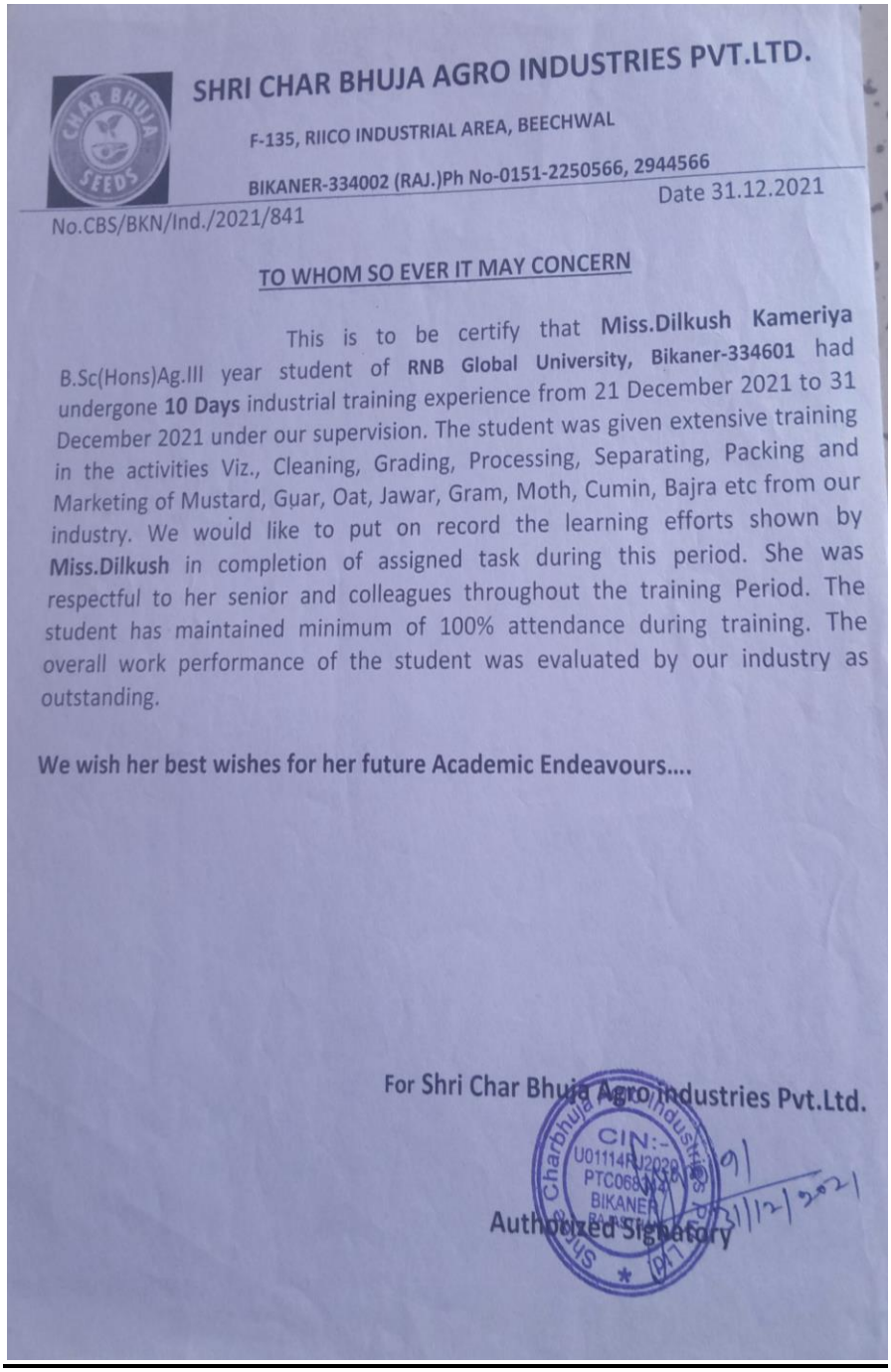
This is to certify that Dilkhush Kameriya of B.sc (SHRI CHAR BUJHA AGRO INDUSTRIES) has completed this research project under my supervision in Seeds Cleaning, Grading, Packing and Marketing, Processing Mustard, Bajra, Chick Pea for the award of the Bachelor's Degree in Agriculture from RNB GLOBAL UNIVERSITY,BIKANER.

Course Name: Summer Internship and Report

Course Code: 20018500

Signature of Faculty Guide **Signature of Student**

CERTIFICATE OF INTERNAL (UNIVERSITY) RE SEARCH GUIDE



SHRI CHAR BHUJA AGRO INDUSTRIES PVT.LTD.

F-135, RIICO INDUSTRIAL AREA, BEECHWAL

BIKANER-334002 (RAJ.)Ph No-0151-2250566, 2944566

No.CBS/BKN/Ind./2021/841 Date 31.12.2021

TO WHOM SO EVER IT MAY CONCERN

This is to be certify that **Miss.Dilkush Kameriya** B.Sc(Hons)Ag.III year student of **RNB Global University, Bikaner-334601** had undergone **10 Days** industrial training experience from 21 December 2021 to 31 December 2021 under our supervision. The student was given extensive training in the activities Viz., Cleaning, Grading, Processing, Separating, Packing and Marketing of Mustard, Guar, Oat, Jawar, Gram, Moth, Cumin, Bajra etc from our industry. We would like to put on record the learning efforts shown by **Miss.Dilkush** in completion of assigned task during this period. She was respectful to her senior and colleagues throughout the training Period. The student has maintained minimum of 100% attendance during training. The overall work performance of the student was evaluated by our industry as outstanding.

We wish her best wishes for her future Academic Endeavours....

For Shri Char Bhuja Agro Industries Pvt.Ltd.

Authorized Signatory

SUMMARY

SHREE CHARBHUJA AGRO INDUSTRIES PRIVATE LIMITED is a private company incorporated on Friday, 21 February 2020. It is classified as Non-government Company and is registered at Registrar of Companies,

JAIPUR. Has authorized share capital of Rs.6,000,000 and has paid up capital of Rs.6,000,000. It is involved in Activities Agriculture, Hunting and related Service activities Directors of SHREE CHARBHUJA AGRO INDUSTRIES PRIVATE LIMITED are SURENDRA KAMEDIYA and KARPA RAM CHOUDHARY. SHREE CHARBHUJA AGRO INDUSTRIES PRIVATE LIMITED's Corporate Identification Number is (CIN) U01114RJ2020PTC068344 and its registration number is 068344. Its registered address is F 135, Bichwal Industrial Area (B I A), BICHWAL, BIKANER RJ 334001 in. Current status of SHREE CHARBHUJA AGRO INDUSTRIES PRIVATE LIMITED is Active. Company is also written / known as M/S SHREE CHARBHUJA AGRO INDUSTRIES PRIVATE LIMITED or M/S SHREE CHARBHUJA AGRO INDUSTRIES PVT. LTD.

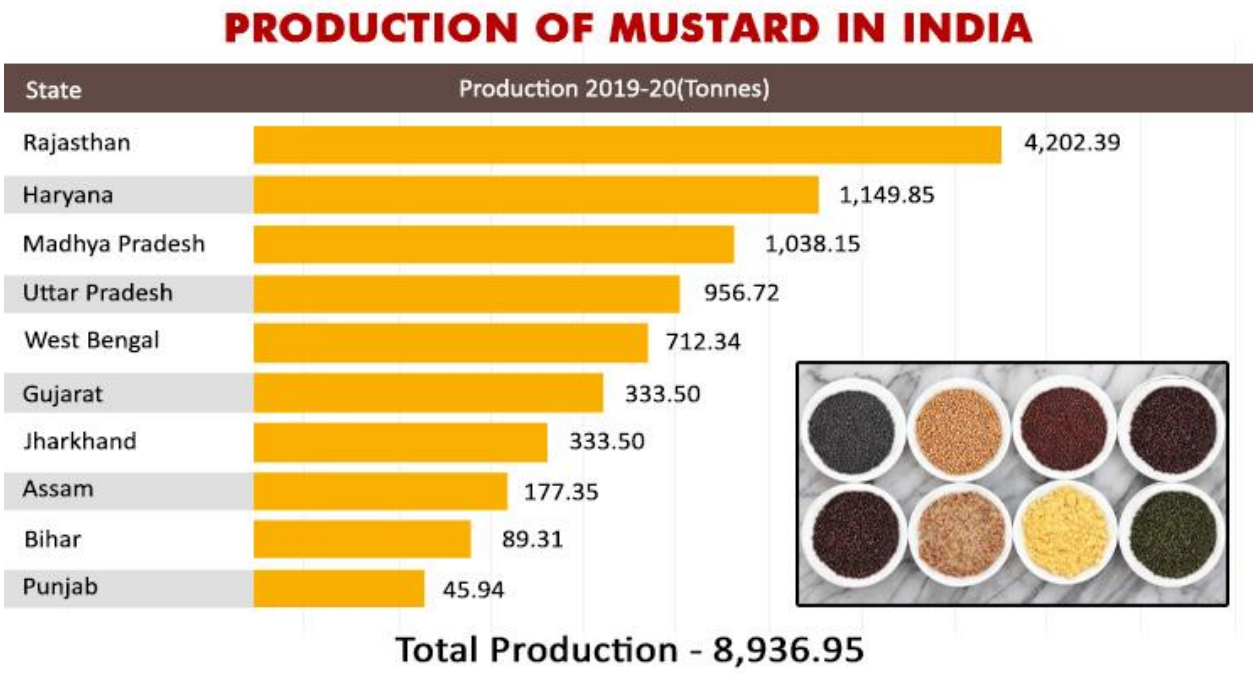
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INTRODUCTION

Oil seed crop

Mustard-condiment made from the pungent seeds of either of two main herbs belonging to the family Brassicaceae.



Production of Mustard in Rajasthan

	2014-15			2015-16 estimated			Variation from Previous Year (%)		
Districts	Area[1]	Production	Yield[2]	Area[1]	Production	Yield[2]	Area	Production	Yield
Alwar	230.66	299.86	1300	207.59	301.01	1450	-10	0.38	11.54
Ganganag	193.62	271.07	1400	199.43	329.06	1650	3	21.39	17.86
Bharatpur	196.52	294.77	1500	190	351.5	1850	-3.32	19.24	23.33
Tonk	299.07	269.16	900	284.11	227.29	800	-5	-15.56	-11.11
Sawai ma	185.01	228.48	1235	181.16	217.39	1200	-2.08	-4.86	-2.83
Baran	73.34	110.01	1500	77	123.21	1600	5	12	6.67
Hanumang	95.64	146.33	1530	100.54	165.9	1650	5.13	13.38	7.84
Other dist	1159.94	1275.93	1100	1143.42	1657.96	1450	-1.42	29.94	31.82
State total	*2433.78*	*2895.6*	*1190*	*2383.26*	*3373.31*	*1415*	*-2.08*	*16.5*	*18.97*
(Area '000 Hectare, Production '000 tonnes and Yield kg/ha)									

Economic Importance

Mustard and white mustard seeds - 25-39% of oil (iodine number 92-122), wherein there is a continuing need in various industries (canning, bakery and confectionery, margarine, pharmaceutical, textile, soap, etc.). is of great economic importance, as mustard seeds contain 34-47% of oil (iodine number 92-119)



Figure:1mustard seed

Cereal Crop

Bajra-The most common millet is **pearl millet** i.e. bajra, which is an important crop in India.

Indian Production of Bajra

Production(000 Tonnes)

Sr No.	State	2019-20 Production	Share(%)
1	Rajasthan	4,685.88	45.22
2	Uttar Pradesh	1,939.45	18.72
3	Haryana	1,019.11	9.83
4	Gujarat	913.15	8.81
5	Madhya Pradesh	656.58	6.34
6	Maharashtra	511.99	4.94
7	Karnataka	367.08	3.54
8	Tamil Nadu	185.13	1.79
9	Andhra Pradesh	58.20	0.56
10	Telangana	10.42	0.10
	Page Total	10,346.99	

Production In Rajasthan

District	Pearl millet 2001 Area sown (000 ha)	Pearl millet 2001 Production (000 tonnes)	Pearl millet 2002 Area sown (000 ha)	Pearl millet 2002 Production (000 tonnes)
Barmer	957.673	249.075	771.540	5.761
Bikaner	274.451	107.237	14.645	2.221
Churu	483.246	351.589	294.215	5.229
Ganganagar	8.566	6.378	1.535	0.344
Hanumangarh	96.464	74.769	59.705	4.516
Jaisalmer	138.691	25.550	11.773	1.489
Jalor	366.428	205.234	353.086	55.873
Jhunjhunun	279.789	290.003	174.736	20.632
Jodhpur	652.067	444.578	45.060	31.626
Nagaur	472.041	391.600	240.899	47.436
Pali	104.918	57.809	63.433	0.000
Sikar	285.738	306.473	214.229	61.305

Source: Govt. of Rajasthan.

Economic Importance

Bajra accounted for about 82 billion Indian rupees in the Indian economy in fiscal year 2019.



Figure : 2 Bajra

Pulse Crop

Chick Pea-An annual Asian plant *(Cicer arietinum)* in the pea family, widely cultivated for the edible seeds in its short-inflated pods.

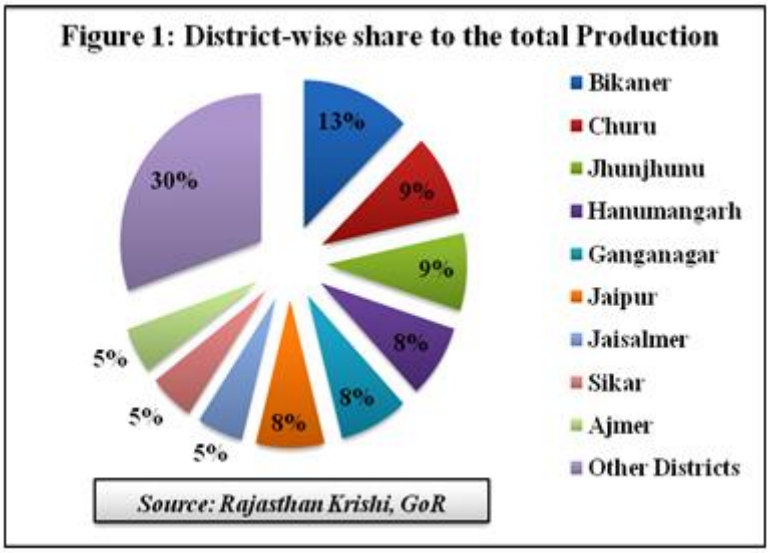
Production In India

(Area-Million ha., Production-Million tones and Yield-Kg./ha.)

State	Area	% to All-India	Prodcution	% to All-India	Yield
Madhya Pradesh	3.11	33.84	2.69	32.73	865
Rajasthan	1.78	19.37	1.60	19.46	899
Maharashtra	1.44	15.67	1.30	15.82	903
Uttar Pradesh	0.57	6.20	0.53	6.45	930
Andhra Pradesh	0.58	6.31	0.72	8.76	1241
Karnataka	0.96	10.45	0.63	7.66	656
Gujarat	0.18	1.96	0.20	2.43	1111
Chattisgarh	0.25	2.72	0.24	2.92	960
Haryana	0.11	1.20	0.11	1.34	1000
Bihar	0.05	0.54	0.06	0.73	1200
Odisha	0.04	0.44	0.03	0.36	750
West Bengal	0.02	0.22	0.02	0.24	1000
Others	0.10	1.09	0.09	1.09	@
All India	**9.19**	**100.00**	**8.22**	**100.00**	**895**

@-Since area/production is low in individual states, yield rates are not worked out (Source: Agricultural Statistics at a glance, GOI, 2012)

Production In Rajasthan


Figure 1: District-wise share to the total Production
13%
9%
9%
8%
8%
8%
5%
5%
5%
30%
Bikaner
Churu
Jhunjhunu
Hanumangarh
Ganganagar
Jaipur
Jaisalmer
Sikar
Ajmer
Other Districts
Source: Rajasthan Krishi, GoR

Economic Importance

Chickpea is a valued crop and provides nutritious food for an expanding world population and will become increasingly important with climate change. Over 2.3 million tons of chickpea enter world markets annually to supplement the needs of countries unable to meet demand through domestic production.



Figure : 3 Chick Pea

Importance of Seed Processing

Seed processing is a vital part of the total technology involved in making available high-quality seed. It **assures the end users, seeds of high quality with minimum adulteration**. In Agriculture, the term seed processing includes cleaning, drying, seed treatment, packaging and storage.

➢ Processing of the seed.

Seed processing is a vital part of the total technology involved in making available high-quality seed. It **assures the end users, seeds of high quality with minimum adulteration**.

➢ Seed testing

Seed testing is **determining the standards of a seed lot viz., physical purity, moisture, germination and ODV and thereby enabling the farming community to get quality seeds**.



Figure : 4 Seed Testing

➢Seed packing

This is the placing of a counted or weighed sample of seeds of an accession into a container which is then hermetically sealed ready for storage.



Figure : 5 Seed Packing

➢Seed Storage

Seed storage is the preservation of seeds under controlled environmental conditions which will prolong the viability of the seeds for long periods.



Figure : 6 Seed Storage

Supply chain management

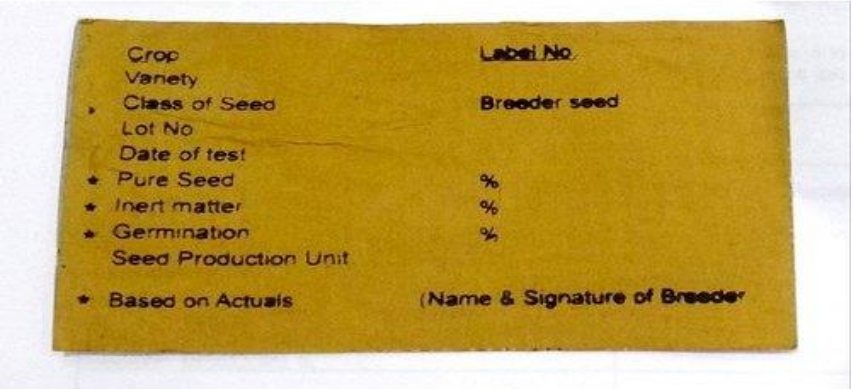
Supply chain management (SCM) implies **managing the relationships between the businesses responsible for the efficient production and supply of products from the farm level to the consumers** to meet consumers' requirements reliably in terms of quantity, quality and price.



Classes of seeds

1.Breeder seed

supply chain management (SCM) implies **managing the relationships between the businesses responsible for the efficient production and supply of products from the farm level to the consumers** to meet consumers' requirements reliably in terms of quantity, quality and price.



Yellow Tag

2. Foundation seed

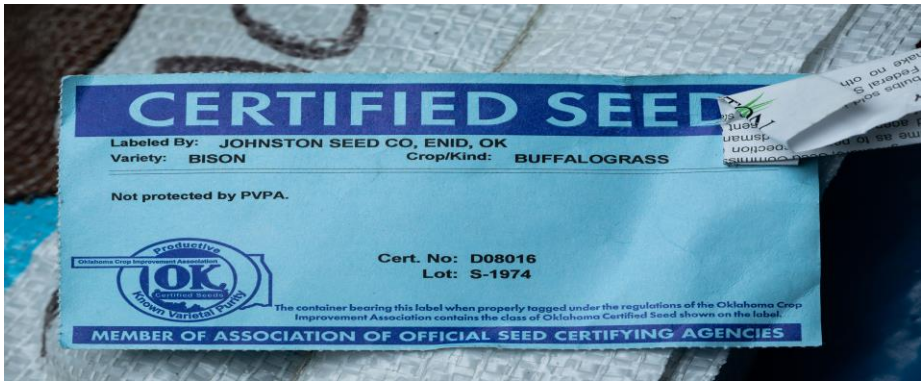
The progeny of breeder seed produced by recognized seed producing agencies in public and private sector, under supervision of seed certification agencies in such a way that its quality is maintained according to prescribed field ad seed standards. A white color certificate is issued for foundation seed by seed certification agencies.



White Tag

3.Certified seed

The progeny of foundation seed produced by registered seed growers under supervision of seed certification agencies to maintain the seed quality as per minimum seed certification standards. A blue color certificate is issued by seed certification agency for this category of seed.


CERTIFIED SEED
Labeled By: JOHNSTON SEED CO, ENID, OK
Variety: BISON
Crop/Kind: BUFFALOGRASS
Not protected by PVPA.
Cert. No: D08016
Lot: S-1974
The container bearing this label when properly tagged under the regulations of the Oklahoma Crop Improvement Association contains the class of Oklahoma Certified Seed shown on the label.
MEMBER OF ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES

Blue Tag

Chapter-I

Oil Seed Crop

Mustard



Figure : 7 Mustard Seed

Processing

Brown and white seeds are ground separately and then sifted through silk to filter out the seed hulls and bran. The two mustards are then blended and poured into tins. ... The seeds are cleaned, **crushed, sieved, and sifted**. A variety of liquids such as wine and vinegar are added to make prepared mustards.



Figure : 8 Processing Seed

Storage –

Mustard stored for a long period should be kept **at less than 18°C**. Drying. Mustard stored for a long period should be kept below nine per cent moisture. When drying mustard seed, do not exceed 65°C (150°F) air temperature and 45°C (113°F) seed temperature.



Figure : 9 Seed Storage

Marketing

Avg Price:	**6937.00 INR/Quintal**
Costliest Market:	Rampurhat
Costliest Market Price:	8300.00 INR/Quintal
Cheapest Market:	Divai
Cheapest Market Price:	4200.00 INR/Quintal

Chapter-II

Cereal Crop

Bajra



Figure : 10 Bajra Seed

Processing

Processing and utilization of Bajra: It is consumed after dehusking and cooked in the same way as rice. More commonly, it is ground into flour and made into chapatis. It is also made into thin porridge. The grain is sometimes eaten after it is parched. The product is similar to popcorn.



Figure : 11 Seed Processing

Storage

The separated grains must be cleaned and dried in sun to bring about 12-14% moisture after which the grains may be bagged and stored in a moisture proof store.



Figure : 12 Seed Storage

Marketing

Product and Quality	Mandi	Price Day Low (Per Quintal)
Bajra	Uttar Pradesh	INR 1690
Bajra Bold	Uttar Pradesh	INR 1920
Bajra	Rajasthan	INR 1800
Jowar White	Gujarat	INR 3150

Chapter – III

Pulse Crop

Chick pea

➢ Processing

In India, the desi type chickpea can be normally processed by shelling, peeling, splitting and cooking in stews, dhal. Another popular chickpea processing is by grinding into chickpea flour, besan. Import: Indian like chickpea so much that its domestic consumption is up to 6 million MT annually.



Figure : 13 Seed Storage

Storage

To store leftover chickpeas, make sure they're completely dry and cool before putting them in an airtight container to store in the fridge. They'll last for up to three days. Alternatively, you can freeze them for up to six months.



Figure : 14 Seed storage

Marketing

Nearly all domestic pulse crop (grain legume) production is marketed through processors, with about 20 percent of production contracted and the majority (80 percent) sold on the cash market.

Internship Value

This chapter deals with comparative study of indigenous farmer's and firm station seeds qualities and effectiveness on Seed Replacement Rate (SRR) of the Study focus about seed quality of farmers seed which is being continuously used for more than 5 years and study the secondary data and record of the farm station's seed which is produce in the farm and recommended to use in the farmers field. The study compared the seed quality according to purity, germination, viability, moisture contain, and 1000 grain weight in lab test of seed and find out the seed replacement rate (SRR). Is it really inputs for drastically change in national production to increase or not?

Agriculture is the mainstream of the country and has significant contribution to the total gross domestic product (GDP). Nepal is very rich in agro-biodiversity due to its diverse farming system, we can produce the different crops in different time and in different place. Agro ecological variations even within a small geographical area of the country make favor for diversifying agricultural opportunities. Rice, wheat and maize are the major important cereals of Lentil, chickpea, Black gram, etc. are the main leguminous crop. Quality seeds of improved and desired varieties are the most important and least expensive agricultural input but is availability and accessibility at right time and location is playing important role to determine the local productivity, production and foods security. Presently, there are four different agencies: public sector led (NARC, DOA, and NSCetc.), commity led (DISSPRO, CBSP, CSB,

Conclusion

The bb testing result of different seed samples concluded that the physiological and physical quality only in terms of germination capacity and purity aspect of rice wheat and kentil. was found reiturkably better in formally eserved seed the certified organization. Besides this, most of the samples of farmer's saved seed also met the minimum seed standard for certified seed. It means farmers are also sensitive towards seed selection, cleaning practices and keeping/storing the seed in the proper way. The seeds saved by the formal sector had lower moisture content percent for all crops which means that those seed have more longevity than the seeds saved by the farmers themselves. More use of seed through the informal sector may be the cause of bw production of crops in Nepal burt kow seed quality is not the cause. There may be other factor like low yiekl potentiality of those seeds.

After viewing the results, farm station seeds are superior than farmer saved seeds. Although, farmer's seed also maintained minimum seed qualities standards. conclude that low seed replacement rate is not so danger in context of Nepal. this way, we

Three Days Report .1

1.Jawar

Botanical name:- *Sorghum bicolour*

Family :- Poaceae

Origine :- Africa

Jawar (Sorghum vulgare; Sanskrit: Yavanaal, Yavakar or Joorna) is a major crop. Jowar is sown in low rainfall areas for both grain and fodder. Jowar is an important and nutritious fodder for animals. In India, this crop is sown in about 4.5 crore acres of land. It is one of the main Kharif crops. It is a type of grass whose hairy grains are counted in coarse grains.

2. Mustard

Botanical name - *Brassica spp. (L*)

Family - Brassicaceae

Origin - Southern Europe,

Chromosome - 2n= 18

The mustard plant is any one of several plant species in the genera Brassica and Sinapis in the family Brassicaceae (the mustard family). Mustard seed is used as a spice. Grinding and mixing the seeds with water, vinegar, or other liquids creates the yellow condiment known as prepared mustard. The seeds can also be pressed to make mustard oil, and the edible leaves can be eaten as mustard greens. Many vegetables are cultivated varieties of mustard plants; domestication may have begun 6,000 years ago.

Three Days Reports .2

1.Cumin

Botanical name - *Cuminum cyminum*

Family -Apiaceae

Chromosome - 2n= 18

Origin -Western Asia

(Cuminum cyminum) is a flowering plant in the family Apiaceae, native to the Irano-Turanian Region.[7] Its seeds – each one contained within a fruit, which is dried – are used in the cuisines of many cultures in both whole and ground form. Although cumin is thought to have uses in traditional medicine, there is no high-quality evidence that it is safe or effective as a therapeutic agent.

2 Bajra

Scientific name: Pennisetum glaucum

Family: Poaceae

Pearl millet (Cenchrus americanus, commonly known as the synonym Pennisetum glaucum; also known as 'Bajra' in Hindi, 'Sajje' in Kannada, 'Kambu' in Tamil, 'Bajeer' in Kumaoni and 'Gero' in Hausa) is the most widely grown type of millet. It has been grown in Africa and the Indian subcontinent since prehistoric times. The center of diversity, and suggested area of domestication, for the crop is in the Sahel zone of West Africa. Recent archaeobotanical research has confirmed the presence of domesticated pearl millet on the Sahel zone of northern Mali between 2500 and 2000 BC

Three Days Report .3

1.Gram

Botanical name:- ***Cicer Arietinum***
Origin:- French
Family:- Fabaceae
Chromosome Number:- 2n= 16

Chana, one of the major pulses (commonly called daals) cultivated and consumed in India, is also known as Bengal gram or gram or chickpea. Chana is a major and cheap source of protein compared to animal protein. Chana is scientifically known as Cicer aritinum and is reportedly originated from western Asia (Turkey).

In India, main types of chickpea are cultivated viz., Desi and Kabuli in the ratio of 3:1 and chana accounts for about 45% of total pulses produced in the country. Similar to the case of other pulses, India is the major producing country for chana, contributing for over 75% of total production in the world.

2 . Guar

Scientific name: *Cyamopsis tetragonoloba*
Family: Fabaceae
Chromosome Number:- 2n= 58
Origin:- African species

India is native of guar or cluster bean where it is used as a vegetable. Guargum is an extract of the guar bean, where it acts as a food and water store. Guar gum comes from the endosperm of the seed of the legume plant Cyamopsis tetragonoloba; an annual plant, grown in dry regions of India as a food crop for animals. The guar bean is principally grown in India and Pakistan, with smaller crops grown in the U.S., Australia, China, and Africa. The drought-resistant guar bean can be eaten as a green bean, fed to cattle, or used in green manure. For hundreds of years Guar has been used as vegetable in India. Guar is a rain-fed crop, sown in July-August and harvested in October-November. Being a leguminous crop, guar fixes nitrogen, making the soil fertile.

Two Days Report.4

1.Oat

Scientific name: *Avena sativa*

Family: Poaceae

Oats is an important Cereal crop as well as fodder crop. Cultivation of Oat is similar as wheat crop. It is mainly grown in Temperate and Subtropical climates. It can also thrive well in high-altitude tropics. They are very popular due to their health benefits. Oat meal is very famous food. Oats is rich in proteins and fiber. They also help in weight loss, controlling blood pressure and for building strong immune system.

2. Moth

Botanical name:- *Vigna aconitifolia*

Family :- Fabaceae

Origin :- india

Vigna aconitifolia is a drought-resistant legume, commonly grown in arid and semi-arid regions of India. It is commonly called mat bean, moth bean, matki or dew bean. The pods, sprouts and protein-rich seeds of this crop are commonly consumed in India. Moth bean can be grown on many soil types, and can also act as a pasture legume.

A

Survey Report

On

"A Study on Consumer Buying Behavior for the Cadbury Products"

Project Report

Submitted to RNB Global University for Partial fulfillment for the degree of B.sc. Agriculture (Urmul Dairy Plant)

By:-

DROPADI

RNBGU201900044

Under the Guidance of

Mr. Avinash Sharma

RNB Global University, Bikaner

December 2021

Acknowledgment

First of all, I'm grateful to RNB Global University Bikaner for successfully arranging the internship program for us. I also thank to Mr. S.N Purohit MD URMUL DAIRY BIKANER for recruiting me as an intern and creating such a wonderful environment for learning

I am really fortunate that, I had the kind association as well as supervision of Mr. R. S. Sengar deputy manager of quality control. His exemplary guidance, constant encouragement, and careful monitoring throughout the internship are so great that, even my most profound gratitude is not enough

In my internship I was mentored by quality control lab staff member Mrs. Manila, Mrs. Jyotsna and Miss Sonali Ma'am. They have all provided a huge amount of their precious time and effort for me. I feel really lucky to be able to work under there guidance.

I also take this opportunity to express a deep sense of gratitude to all the employees and workers of plant for presenting us such an amazing experience. They are all really wonderful people, and I will never forget these days of mine at URMUL.

At last, I would also like to thank my parents who supported me and help me in finalizing my internship and my friend who helped me a lot during my internship.

CERTIFICATE OF INTERNAL (UNIVERSITY) RESEARCH GUIDE

Tin : 08381301453

सुधा उत्तरी राजस्थान सहकारी दुग्ध उत्पादक संघ लिमिटेड

UTTARI RAJASTHAN SAHAKARI DUGDH UTPADAK SANGH LIMITED

(An ISO 9001 & IS : 15000 (HACCP) Certified Organisation)

Ref No. Urmul/Estt./2022/ 11857 Date : 5/01/2022

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Rahul, B.Sc. (Agriculture) student of RNB Global City, Bikaner has successfully completed his 2 weeks internship at this organization w.e.f. 21st December, 2021 to 3rd January, 2022.

He has shown keen interest in learning and knowing the practical aspects of the subject. During the tenure of his training period, his conduct/performance was found satisfactory.

We wish him a bright and excellent future.

S.N. Purohit 5.1.22.

(S.N. Purohit)
Managing Director

Urmul Dairy Plant, P.B. No. 55, N.H. 15, BIKANER - 334002 (Raj.)
Ph. MD.: 0151-2225500, 502, PBX:0151-2225502, Fax:0151-2225556, 0151-2225501 (Telefax)
Pur.: 2225504, Plant : 2225501, 503, Mkt.: 2225507 E-mail : rcdfbik1.jp1@gmail.com

SUMMARY

URMUL DAIRY PLANT EXECUTIVE SUMMARY The project report titled "Acceptance of Urmul Dairy products at retail level". This project report draws significant information about the Urmul Retal Sores. The customer's perception for the Urmul Dairy products & the peoblem faced by the Reailen. It gives the information that where the Urmul Dairy need improve the level of customer satisfaction and the role of Retailers for the Urmul Dairy product's distribution. I have done my project under the guidance and supervision of Mr. S.H. Choudhary The analysis and conclusion was carried out from the data collected through various primary and secondary resources (Market survey. Company Website namely Books, company's executives, e-Newspapers, e-Magelaes , jounals, interviews and many other.)

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Declaration

I, Rahul hereby declare that the presented report of Internship entitled on Milk Processing and packaging, milk supply is uniquely prepared by me after the completion of one months of work experience in **URMUL DAIRY BIKANER**.I also confirm that the report is only prepared for my academic requirement, not for any other purpose. It might not be used with the interest of the opposite party of the cooperation.

Place: Bikaner

DROPADI
Date:

Introduction

A dairy is a business enterprise established for the harvesting or processing (or both) of animal milk – mostly from cows or buffaloes, but also from goats, sheep, horses, or camels –for human consumption. A dairy is typically located on a dedicated dairy farm or in a section of a multi-purpose farm (mixed farm) that is concerned with the harvesting of milk.

URMUL Dairy (Uttar Rajasthan Milk Union Limited) was set up in the arid region of Bikaner district on August 29, 1972 as part of the Operation Flood II a cooperative body registered under cooperative act 1956.

With the objective to ameliorate the socioeconomic status of the rural population by providing them market of their milk at their door step, irrespective of their geographical conditions.

Urmul started its business from 9th July 1973 with the initial membership of 64 societies and initially collected 1500 litres of milk per day. Presently there are 851 registered and 333 Proposed societies covered by 52 milk routes and collecting about 80 thousand litres of milk per day against the installed capacity of 150 thousand litres of milk. No one had ever thought that there could exist a tremendous amount of milk in the hot thar desert of Bikaner District. Villages are flushed with milk in this District. During August 1983 Urmul collected 269 thousand litres of milk in a day which was a record collection.

The products manufactured at the plant are Butter, Ghee, and Skim milk powder, Cheddar Cheese, and Paneer besides milk being packed in sachets. Urmul started manufacturing of Chach, Lassi, Dahi and Shrikhand which has gained a very much positive response from the local market.

The product manufactured are marketed with the help of RCDF, Jaipur under a common brand name “SARAS”.

Objectives:-[1] Processing and packaging in milk.

[2] Record and relationship management in milk supply.

OBJECTIVES :1

RMRD (Raw Milk Reception Dock)

Introduction:

Raw milk reception dock is the collection center for milk in the dairy, it is the very first section in the dairy plant, it collects good quality of milk from the village in the cans and tankers.

Process following RMRD:

1. Unloading: the motor truck carrying the filled milk cans is backed up to the unloading platform. The milk cans are unloaded manually. Then the milk cansare assembled for grading.

2. Grading: this refers to the classification of milk on the basis of its quality, it is well known that the quality of the finished product depends on that of the raw material used.

The principle of grading is based on organoleptic (sensory) tests, such as those for odor, taste, appearance, touch, acidity, sediments etc. These are included under platform tests.

- These are as follow

  [1]• **Smell (odor)**: the lid of the can is removed and shaking the can vigorously with the help of plunger and sample is taken and raised to the nose, if any off- flavors appears rejection of the can take place.

  [2]• **Appearance**: by regularly observing the milk in each can after the odor test has been made, any floating extraneous matter, off-color or partially be noted in any of the can that can is rejected. The milk should

be normal in color, free from churned fat globules and reasonably free from floating extraneous material.

[3]•**Temperature**: The temperature at which milk is delivered is often an indicator of its quality. A temperature of 5°C or below is satisfactory

[4]•**Acidity test**: It has already been pointed out that natural or apparent acidity of milk does not make the milk taste sour, nor does it affect the normal properties of milk its quality or its behavior towards processing heat. Nevertheless, the acidity test does have its proper place on the milk it is always well to have a certain acidity above which milk should not be accepted.

[5]•**Lactometer** reading: The addition of water to milk results in the lowering of its lactometer reading. Hence this test is applied for detection of adulteration of milk with water.

3. Weighing: This is essential step making payments for milk. The milk in cans is dump into the weigh tank manually. The milk in tanker is measured on a weigh bridge.

4. Filtration and Chilling and Storage: from the weighing balance the milk is transferred to the dump tank and from there it is passes through filter for the removal of foreign matter like dust, dirt etc. After that it passes to chilling plate capacity of 20 KLPH to chill the milk at 7°C for deactivation of bacteria and to increase the shelf life of the milk than milk goes to RMT (raw milk storage tank).

5. Cane washing: after reception of milk, cans and lids go to can washer which is straight through type cane washer, capacity to wash 400 cans in 1hr.

Raw milk Processing

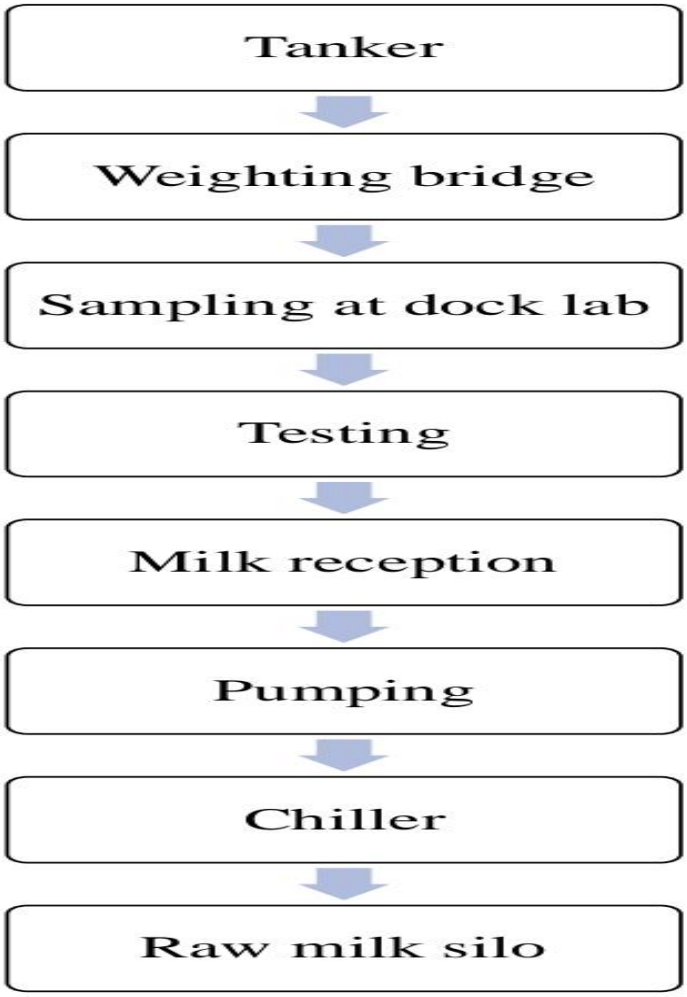


Figure [1]: Raw Milk Receiving



Figure [2]: Raw Milk Receiving

Flow chart of Milk Receptio



Milk processing

Processing section is the heart of any dairy. Hence to preserve the milk and improve its nutritional quality by subjecting it to different process depending upon

the final process. Processing section perform various operations such as clarification, pasteurization, standardization, homogenization, chilling**.**

1. Pasteurization:

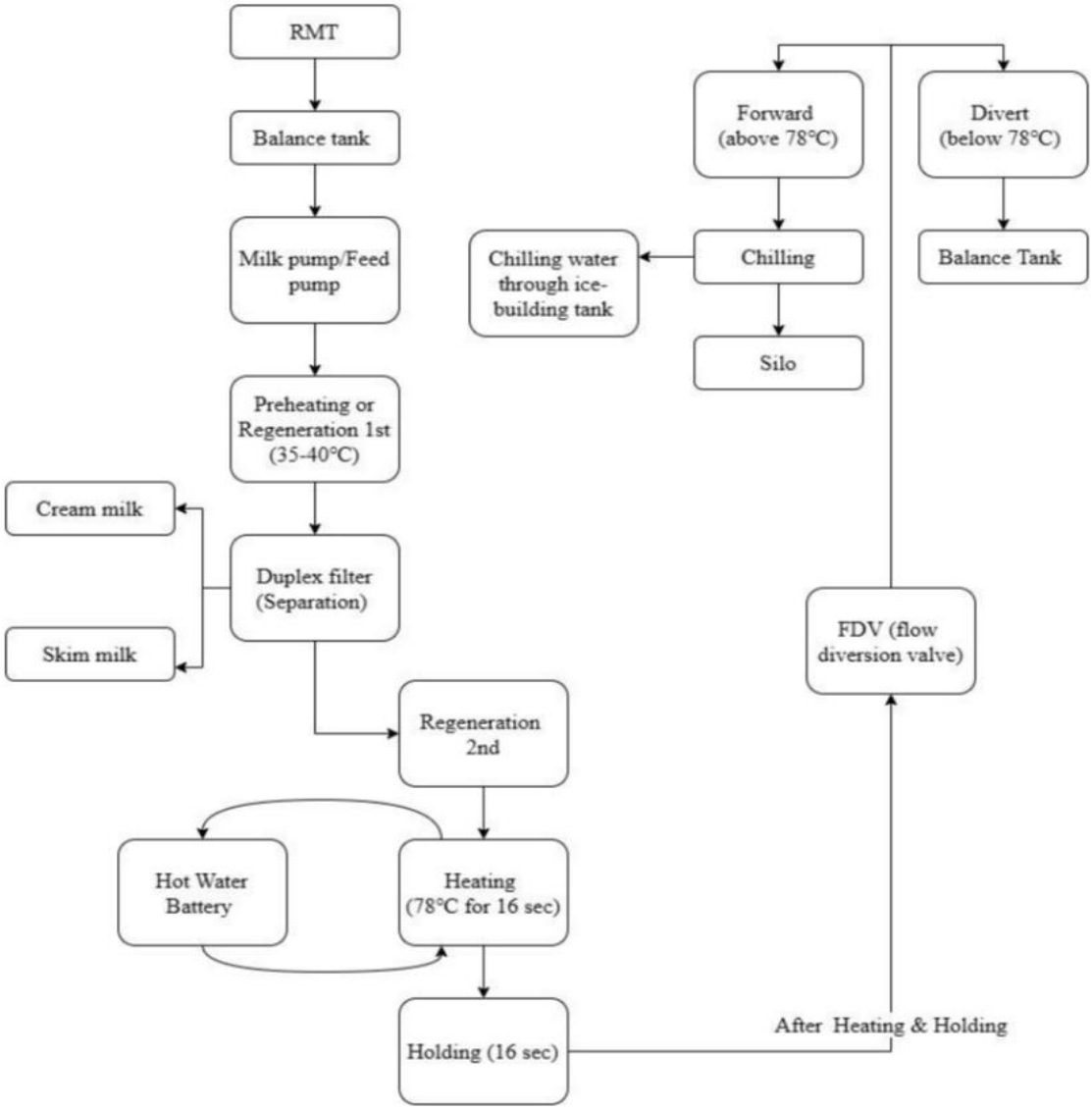
The term pasteurization refers to the process of heating every particle of milk to at least 63℃C for 30 min, or 72℃C for 15 seconds, in approved and properly operated equipment. After pasteurization, the milk is immediately cooled to 5℃Cor below.

Objective:
To render milk safe for human consumption by destruction of pathogenic microorganism (target organism).To improve the keeping quality of milk by destruction of almost all spoilage organism (85- 99%). But it does not kill all vegetative cells or spores (Bacillus and Clostridium spp.)

2. Cream separator:
Cream separation based on average density difference of fat and skim milk. When centrifugal force is subjected to apply due to variation in density separate from one another. Separation of skim milk (about 0.05% fat) and cream (35-40% fat) Separation of milk at 45℃.

3. Standardization:
Standardization of milk refers to the adjustment, i.e., raising or lowering, of the fat and/ or solid not fat % of milk to desired value, so as to conform to the legal or other requirement prescribed.For standardize, to reduce the fat percentage of milk with SMP or skimmed milk is added and to increase the fat percentage cream is added. After standardization milk is stored in silos, sample is taken for analysis of fat, SNF etc. when result is ok milk is used for further process

Flow chart of milk processing:



Milk pouch packaging

Introduction:

Most food consumed is far removed in time and space from the point of its production. Packaging is a necessary aid for the storage and distribution of food. Food is packaged for four primary reasons**:**

- To protect the product from contamination. by micro-

  Organisms ,macro- organisms and filth
- To retard or to prevent either losses or gain of moisture
- To shield the product from oxygen and light
- To facilitate handling

Pouch material specification:

Adjust the pouch length

500ml	140-150mm
1000ml	15-225mm

Pouch Name	**FAT**	**SNF**
Saras Standard	4.5%	8.5%
Saras toned	3%	8.5%
Saras double Toned	1.5%	9.8%

Milk packaging machine:



Figure: 3 Milk Packaging Machine

Packing Milk

Dubble Toned Milk



Toned Milk



Figure: 4 Milk Packing Pouch

Butter Milk and Curd

Buttermilk is a popular refreshing drink prepared from the by-product produced during the preparation of butter/ makkhan from curd. Butter milk is also known as Mattha, or Chhach in northern part of India.

Curd is well fermented milk product consumed by, large section of the population throughoutthe country, as a part of the daily diet or as are fresh beverage.

Composition	**Standard**
Fat	Less than 1%
S.N.F	5.0-5.5%
Acidity	0.4-1.0%

Butter machine



Figure: 5 Butter machine

Curd packing Machine

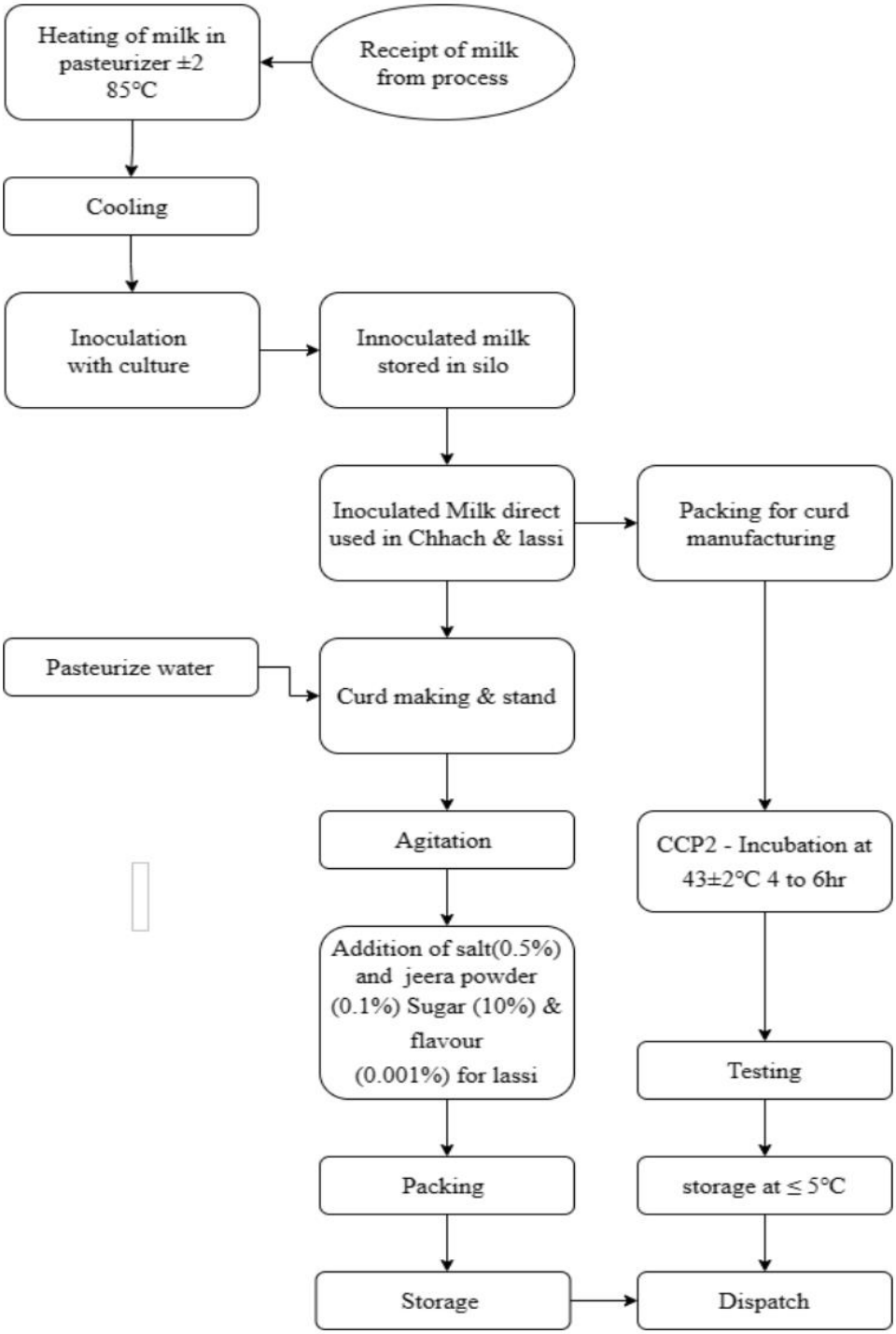






Figure:6 Packaged curd

Flow chart of Buttermilk and Curd manufacturing:



Ghee

Ghee production is the largest segment of milk utilization in India. Most of the dairy plants have ghee production facility to meet the demand of the market as well as to utilize the excess fat in profitable manner. Since simple technology involved in ghee production and relatively less investment for gheeproduction unit as already plant have steam boiler with them.

Following are the various processes available in the industry to make ghee including Desi method which is following largely at rural household level.

Ghee pouch packing material:

Composition: LLDPE +LLDP

Shelf life:
Best before3month/6month /1year from the date of packaging.

Yield:
The yield of ghee from cream or butter is influenced by fat content of raw material.

Ghee Packagi Machine



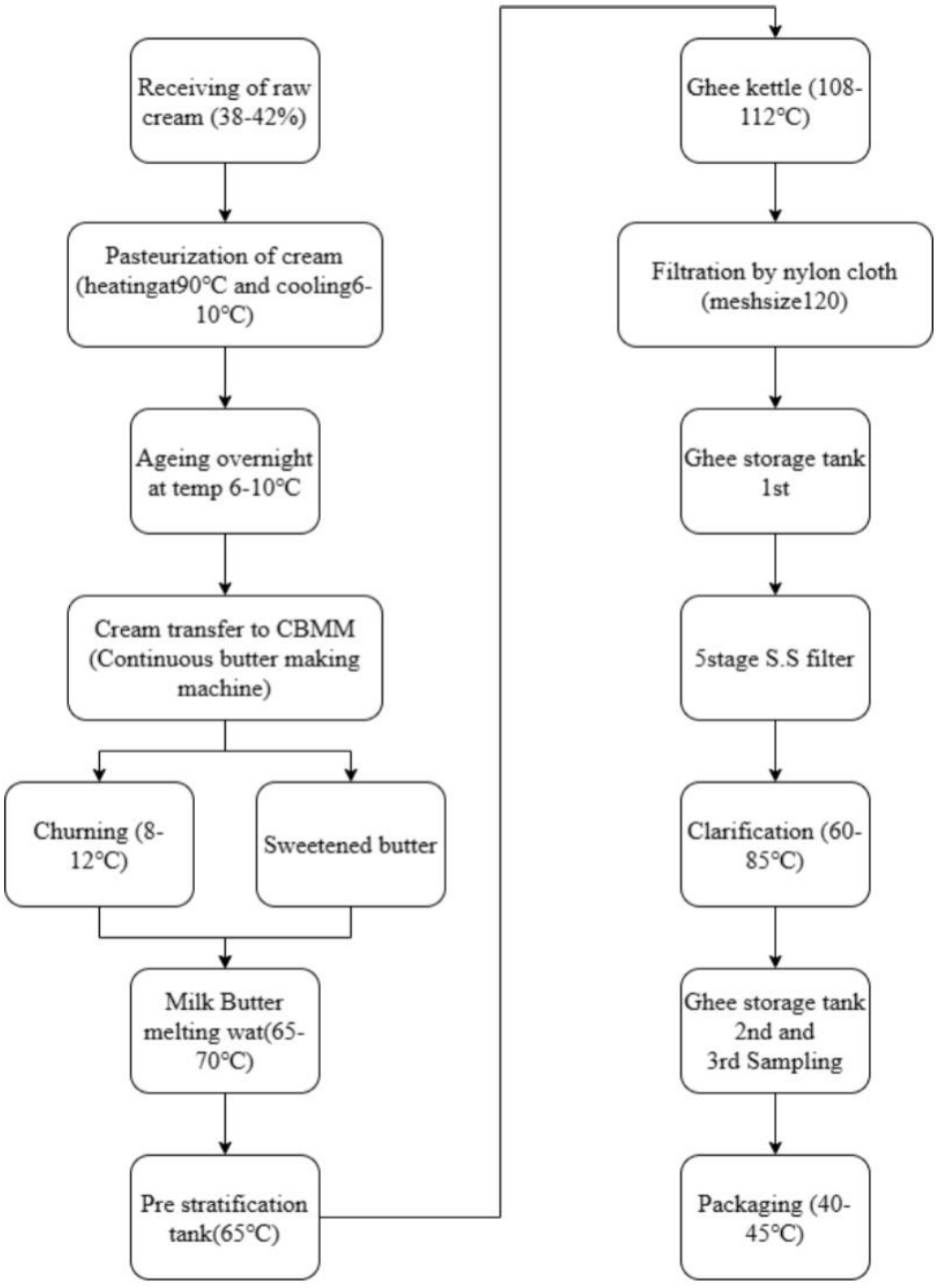




Figure: 7 Ghee Packaging

Flow Chart

Flow chart:



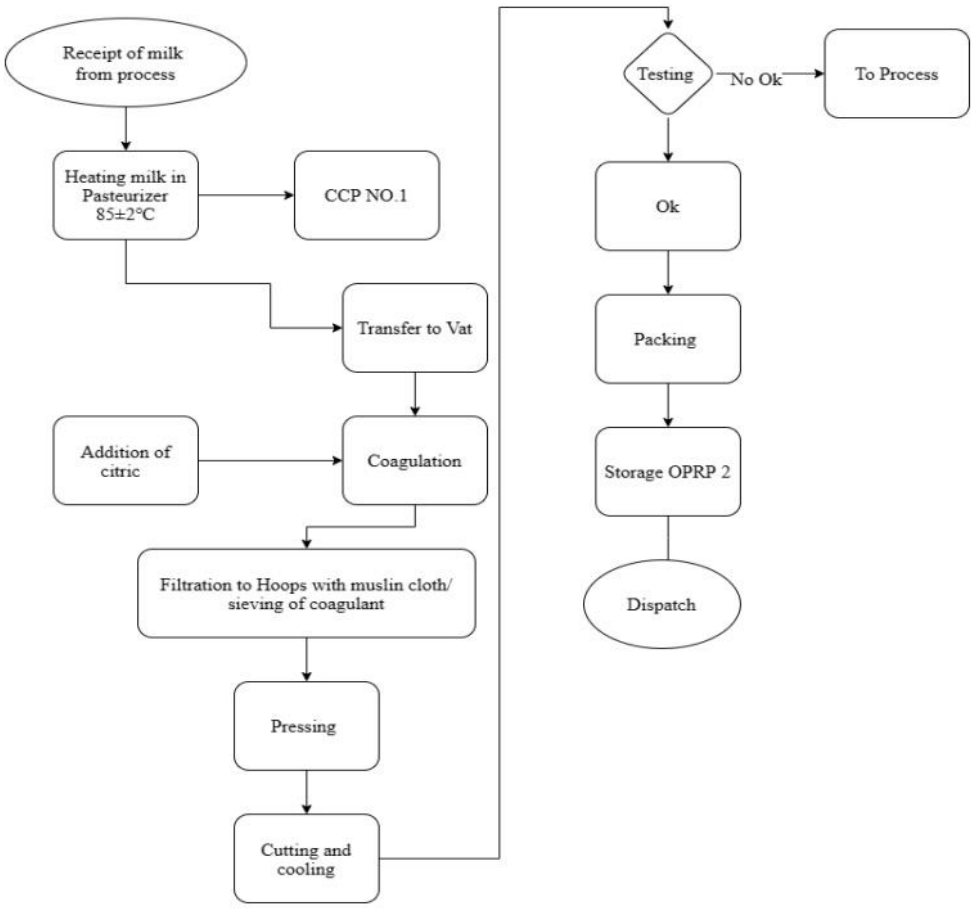
Paneer

Introduction: Is obtained by the acid and heat coagulation of milk at high temperature. The phenomenon of coagulation involves the formation of large structure aggregates of protein in which milk fat and other colloidal and soluble milk solids are entrained with whey. Good quality paneer is characterized by white colour, sweetish, mildly acidic, nutty flavours pongy body and closely-knit texture.

Composition:

Fat 13-14% Moisture 70% Shelf life 15 days from date of packaging

Paneer flow chart:



Paneer Packaging





Figure:8 Paneer Packaging

Experiment no.1

Fat test by Gerber method

Introduction:
The traditional standard reference method for fat analysis is base d on either weight or volumetric determination of the fat content of milk, the Gerber test is widely used all over the world

Principle:
The test is a volumetric method in which fat is separated from milk by centrifugal force. Sulphuric acid is used to dissolve the protein that form membrane around the fat and amyl alcohol is added to improve the separation of fat from other solids.

Equipment and materials:
Sulphuric acid, amyl alcohol, butyrometer, stoppers and shaker stand for butyrometer made from a suitable grade of rubber or plastics, pipette, water bath, centrifuge.

Procedure:
• Add10ml Sulphuric acid into the butyrometer.
• Fill10.75ml pipette with milk and deliver the sample into butyrometer
• Add 1ml of amyl alcohol using1ml pipette and close
• Shake the butyrometer in the shake stand until no white particles are seen and invert it a few times.

• Put the butyrometer in the water bath for 5min.
• Take it out and dry with a cloth, put it in the centrifuge, placing two butyrometer diametrically opposite, centrifuge at maximum speed of 4min.

• Transfer the butyrometer, stoppers downward into water bath for 3-10 min.
• Bring lower end of fat column on to a main graduation mark by slightly withdrawing stopper.

Setup for fat test:



Result appeared as:



Internship Values:-

❖ The values I understood included:

- Practical knowledge of field.
- How to do quality test.
- Importance of time punctuality.
- Importance of Dress Code.
- Good communication skills.
- How to build team work skills.
- How to build confidence.

Conclusion

During Two weeks of Internship, I have accumulated various experience and wide new knowledge through the work had been assigned to me. From my internship at Urmul, I was able to get a better understanding of practical knowledge of field while performing testing and other plant experiment. I enjoyed working with the plant incharge and other associates to devise and implement different strategies. I had also got the opportunity to see the working of large machinery, how a plant work, packaging and manufacturing. Overall, I found the internship experience to be positive, and I'm sure I will be able to use the skills I learned in my career later.

A Project Report on Wheat Flour Shree Govindam Primefood Pvt. Ltd.

Submitted to RNB Global University for Partial fulfillment for the degree of B.SC (Hons) Agriculture

By:

Govind singh

Enrolment no.

RNBGU201900015

Under the Guidance of

Mr . Avinash Sharma



RNB GLOBAL University

29 December 2021

Declaration

Govind Singh Student of RNB Global University submitting

Project report entitled " Post Harvest of Wheat flour " to the School of Agriculture,

Is an original piece of work done by meduring the period from 21 Dec. 2021

To 29th Dec. 2021. This Project work has not been submitted or presented

Anywhere or in any other University for the award of any degree/ diploma etc.

Govind Singh

B.Sc (hons.) Agriculture 6thSemester

School of Agriculture

R.N.B. Global University

Certificate

This is to certify that Mr. Govind singh of R. N. B Global University, School Of Agriculture has successfully completed the project work titled ***Post Harvest of wheat flour*** in partial fulfilment of requirement for the completion of Working Model/Project as prescribed by the RNB Global University, School Of Basic & Applied Sciences. This project report is the record of authentic work carried out by him during the period from 22 ***Dec. 2021 to 29th Dec. 2021***. He/She has worked under my guidance.

Internal Examiner External Examiner Dean

Acknowledgment

I would like to take the opportunity to thank and express my deep sense of gratitude to my mentor and guide MR. Avinash Sharma, Associate Professor, School of Agriculture, RNB Global University, Bikaner. I am greatly indebted to Dr. Surendra Singh Shekhawat, Dean, School of Agriculture for providing valuable guidance at all stages of the study, their advice, constructive suggestions, positive and supportive attitude and continuous encouragement, without which it would have not been possible to complete the project.

Name of the Student Signature

CERTIFICATE OF ORIGINALITY

Enrollment No.: RNBGU201900015

This is to certify that Mr. Govind singh of B.sc(Hons.) Agriculture (SHREE GOVINDAM PRIMEFOOD PVT.LTD.) has completed this research project under my supervision in Wheat flour Cleaning, Packing and Marketing, Processing for the award of the Bachelor's Degree in Agriculture from RNB GLOBAL UNIVERSITY, BIKANER.

Course Name: Summer Internship and Report

Course Code: 20018500

Signature of internal Research Guide

Signature of Student

SHREE GOVINDAM PRIMEFOOD PVT. LTD.

Factory : B-180 - I.G.C. Khara, Bikaner (Raj.)

Regd. Off : 230 New Dhan Mandi, Sri Ganganagar (Raj)

CIN : U17117RJ2005PTC020417

E-mail : grovergovind@yahoo.com

Telephone : 0154-2474255, 01522-260155

GOLD SAPPHIRE

This is to certify that Mr. GOVIND SINGH, S/O Mr. CHEL SINGH a student of B.sc Agriculture RNB GLOBAL UNIVERSITY, BIKANER has successfully completed 07 days (22ND Dec. 2021 to 29th Dec. 2021) internship program at this Industries. During the period of this internship programs with us he was found punctual, hardworking and inquisitive.

We wish him every success in life

For,

Shree Govindam Primefood Pvt. Ltd.

SHREE GOVINDAM PRIME FOODS PVT. LTD.

Post Harvest of wheat

How do the work?

(**Index)**

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Chapter 1

Introduction

It is the most important human food grain and ranks second in total production as a cereal crop behind maize and the third being rice. Wheat is the staple food for over ten billion people in as many as 43 countries of the word. Wheat provides nourishment to 35% of world population. Wheat cultivation has traditionally been dominated by the northern region of india. The northern states of Punjab and Haryana plains in india have been prolific wheat production. Today,india is exporting sufficient quantities of all types of wheat and extensive research efforts are underway for improving its cereals and grain output in the years to come.



page 2

Production of wheat in india

Year	Area (000ha)	Productivity (000tonns)	Yield (quintals/ha)
2000-01	25731	69681	27.1
2001-02	26350	72766	27.6
2002-03	24860	65096	26.2
2003-04	26600	72160	27.1
2004-05	26380	68640	26.0
2005-06	26480	69350	26.0
2006-07	27990	75810	27.1
2007-08	28040	78570	28.0
2008-09	27750	80680	29.1
2009-10	28460	80800	28.4
2010-11	29070	86870	29.9
2011-12	29860	94880	31.8
2012-13	29650	92460	31.1

Economic Importance

Wheat is the staple food for most of the temperate and sub tropical regions of the world.

The chief use of wheat is the flour for making bread biscuits, cookies, chapatti, etc.

Industrially, it is used in preparation of starch, gluten, malt, and distilled spirit.

Wheat bran is rich in protein and used as valuable livestock feed.

From straw corrugated



chapter 2

Importance of Seed Processing

Seed processing is a vital part of the total technology involved in making available high-quality seed. It assures the end users, seeds of high quality with minimum adulteration. In Agriculture, the term seed processing includes cleaning, drying, seed treatment, packaging and storage.

Processing of the seed.

Seed processing is a vital part of the total technology involved in making available high-quality seed. It assures the end users, seeds of high quality with minimum adulteration.

Seed testing

Seed testing is determining the standards of a seed lot viz., physical purity, moisture, germination and ODV and thereby enabling the farming community to get quality seeds.



Seed Storage

Seed storage is the preservation of seeds under controlled environmental conditions which will prolong the viability of the seeds for long periods.



Supply chain management

Supply chain management (SCM) implies **managing the relationships between the businesses responsible for the efficient production and supply of products from the farm level to the consumers** to meet consumers' requirements reliably in terms of quantity, quality and price.



chapter. 3
Processing of wheat flour

The wheat grain consists for 85% of endosperm (flour body), 13% bran (various layers) and 2% germ.

The chemical composition of the wheat grain is:

59% carbohydrates (starches and sugars)
14% moisture
13% protein
10% of dietary fiber
2% fat
2% minerals
Different types of meal and flour can be produced from wheat grains. The criteria for flour is that it can only contain the endosperm; meal also consist of bran parts. Whole meal has a very coarse structure, because it contains the entire husk of the grain, namely the bran. In contrast, Super Patent flour is of a very fine structure, containing only the endosperm. The similarities between the different types of flour is the fact that the germ is always removed. This is due to the fact that the high fat content of the germ speeds up the oxidative spoiling, resulting in a rancid smell and flavor.

The flour quality, and especially the protein content, is determining for its applications. For instance, flour with a low protein content (below 10%) is suitable for use in confectionery products, such as biscuit, and cake. Flour with a protein content of between 10 and 15% is suitable for use in bread. An even higher protein content (higher than 15%) is used in the production of rusk.
The protein content of the flour is determined by the degree of grinding. The core of the grain contains the most proteins; towards the outside of the grain, the protein contents becomes gradually lower. The husk layers virtually do not contain any protein. The higher the degree of milling, the higher the protein content of the meal. The skin layers contain virtually no more protein. So the higher the degree of milling, the higher the protein content of the flour.

Meal and flour production process

Harvesting and threshing

The harvesting of wheat preferably takes place when the grain is sufficiently dry and the grass is properly matured. The harvest takes place during autumn. Threshing can damage the grains, especially when the moisture levels in the grains are low. The combine harvester has to be adjusted properly, ensuring as little grain damage as possible, but with sufficient threshing. Also impurities (like stem and leaf residues) should be avoided. The stems of the wheat plants can be processed into straw.

Storage

First, the grains are stored. This is done in large silos, where dry air is blown through. This dry air is necessary because moisture content of the grain is usually on the high side. By lowering the moisture

content below 14%, overheating and deterioration are prevented. Moreover, the brittleness and toughness of the grain can be adjusted, giving it the ideal characteristics for grinding.

Cleaning

There are six purification steps to rid the grains of any impurities.

Sieving

The grains are sieved, removing any coarse contaminants such as paper, sand, straw, husks and twigs.

Magnet

A magnet is used to retrieve any iron particles from the grain. These iron particles are removed in order to guarantee the safety of the final product and to prevent damage to the machines, such as damage to the rollers in the milling process.

Separator (Aspirator)

During the third cleaning step in the separator, also called aspirator, both coarse materials (husks and strands) and fine particles (sand and dust) are removed. The grain is guided over two sieve screens. On top a sieve for coarse materials, and below a small sieve. The grain can fall through the course sieve; the small particles such as sand and dust will fall through the small sieve. What is left over passes through an upward stream of air, any remaining dust particles are sucked away with the air flow, while the grains are collected below.

Destoner

During the fourth cleaning step, stones are removed using a destoner. A vibrating screen (sieve) carries the grains and any stones upwards. A powerful air stream lifts the grains up while the impurities remain on the vibrating screen and are disposed above.

Trieur (Triage)

The fifth cleaning step separates the different types of grains. In a trieur, a rotating drum with indentations in its sides, the cereals are rotated. The indentations are made to exactly catch the grains that have to be collected. Grains that do not fit exactly (being either too big or too small) drop from the slot. The desired grain kernels remain in place longer, and then fall into a collecting tray, which is a stationary part in the middle of the drum. The remaining grains are used for different products, for example, for another meal or flour type, or in the animal feed industry. The trieur is not used if a mix of different types of cereals is purposely made, because then this step would separate the grains again.

Scouring

The final purification step takes place in the scouring machine. Here, the grains are beaten against the coarse side in a drum. Any impurities that were attached to the grain are removed in this way.

Temporary storage

After cleaning, the grains are temporarily stored according to class and protein content.

Conditioning

In order to effectively remove the bran during grinding, the grains are conditioned. The desired moisture content is 16-17%. The cereal grains have a moisture content of 13-16%. In most cases, the cereal grains are thus moistened with 1 to 4% of water. This moistening can be carried out using steam and pressure, and takes up to 8 to 20 hours to complete.

Blending

To obtain the desired grain composition of the meal or flour, some grains are mixed. This mixing process is referred to as blending.

Grinding

After the conditioning step, the grinding process can be started. The grinding process is divided into two phases: the scrap phase and grinding phase.

Scrap phase

During the scrap phase, the conditioned grains are divided into three segments, namely, the germ and bran, large parts of endosperm (middlings/ grouts), and a small amount of fine flour. The distance between the rollers, that are rotating in opposite directions, at different speeds, is reduced after each rolling step. Furthermore, the grooves in the rollers are becoming finer and after every step the whole is sieved.

Brushing

The germs are separated during the scrap phase and the brans are further processed in a bran brushing machine, where any flour particles sticking to these parts are removed. These particles can be ground further down to flour using grinding rollers. The endosperm advances to the final phase: the milling/grinding phase.

Milling/ grinding phase

In this phase the endosperm is first divided into two groups: coarse and fine grinding. The coarse grind (middlings, groat) is finely rolled using up to 12 consecutive smooth rolls. After every rolling step, the whole is sieved, creating different fractions.

The fine grinding, which consists of lumps of endosperm and flour, is cleaned in the middlings purifier. After brushing, the semolina (finest parts) are also milled. The middlings go with the bran to a dissolution roll. Here, the bran is separated from the endosperm.

Chapter 4

Packaging of wheat flour

The entire packaging process is fully automated to make sure that there are no microbes or external factors that come into play. The flour that is ready to be packaged is put into the packets. These packets are FDA approved and are made of food grade plastic. This makes sure that the flour does not react with the packet.

The packaging is done in a way to make sure that no air or moisture can go through the bag. However, if some moisture does pass through, the packaging should be such that it does not react with it. For example, there are some packaging colors that would dissolve in water. This could be dangerous for the flour. Our food grade packaging makes sure that the packaging does not react with any environmental factor, and keeps the contents safe.

Flour packaging is done in many ways. There are small as well as large packets. The packaging of flour also depends on its quantity. With smaller quantity, there is no special need regarding the robustness of the packet. However, with larger quantity, the packet should be strong enough to be carried to different places. Plus, it should have features to allow it to be used multiple times. Zippers would do the trick here, as they can be opened and closed multiple times.

For even larger quantities that are used in professional bakeries, there are simple flour bags with hang holes. This way they can be hung on hooks to save space.

The material used to package flour in standup pouches is made by laminating several plastic layers together. This makes a barrier against external factors like sunlight, air, moisture, and germs. Because of these qualities, it is also known as barrier packaging. This barrier packaging is highly preferred for easily perishable food products. Since flour can easily go rancid with the slightest of moisture, it is important to use barrier packaging to keep it safe.



figure. wheat flour packing machine

page 10

chapter 5

labelling of wheat flour

Regarding Use of Term Wheat Flour on Labels of Food Products

The FSSAI had recently issued directions through its order dated 30 April 2019 the FSSAI regarding the extension of the time period for the usage of the term Wheat Flour (Atta) and Refined Wheat Flour (Maida) on the labels of the packaged food products. The FSSAI had also decided to replace the nomenclature Whole Wheat Flour (Atta) with Wheat Flour (Atta) Food Products

The FSSAI has since received reports that several Food Business Operators have already got packaging material that has been printed with the nomenclature Whole Wheat Flour (Atta). The FBOs had got these printed on the basis of the 1 February 2019 order which had asked FBOs to use the English nomenclature for Atta and Maida as

Atta should be labelled as Whole Wheat Flour (Atta) wherever the same is used singly or as an ingredient in food items

Maida Should be labelled as ‘Refined Wheat Flour’ whenever the same is used singly or as an ingredient in food items.

FSSAI has since received representations from the FBOs in this regard. Since FBOs have so much printed material with them FSSAI has decided that such FBOs shall be permitted to use the nomenclature Whole Wheat Flour (Atta) on their packaging material up to 31 December 2019. Any further extensions in this regard will be considered by the FSSAI on a case by case basis.

“A Project Report on Seed Processing in Shri Char Bhuja Industry”

Submitted to RNB Global University for Partial fulfillment for the degree of B.SC (Hons) Agriculture (Shri Char Bhuja Seeds)

by: -

Hukam Singh

RNBGU201900033

Under the Guidance of

Mr.Avinash Sharma

RNB Global University, Bikaner

December 2021

ACKNOWLEDGMENTS

The internship opportunity I had with **SHRI CHAR BUJHA AGRO INDUSTRIES** is a great chance for learning. Therefore, I consider myself as a very lucky individual to getting this opportunity to gain lots of knowledge about digital Marketing. Bearing in mind previous I am using this opportunity to express my deepest Gratitudeand special thanks to **Mr. Avinash Sharma**, faculty in charge of RNB Global University who inspite of being extraordinarily busy with his duties, took time out to Hear, Guide and keep me on the correct path.

I perceive as this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement, hope to take it as my career option and will help me in further time.

Sincerely

CERTIFICATE OF ORIGINALITY

Enrollment No.: RNBGU201900033

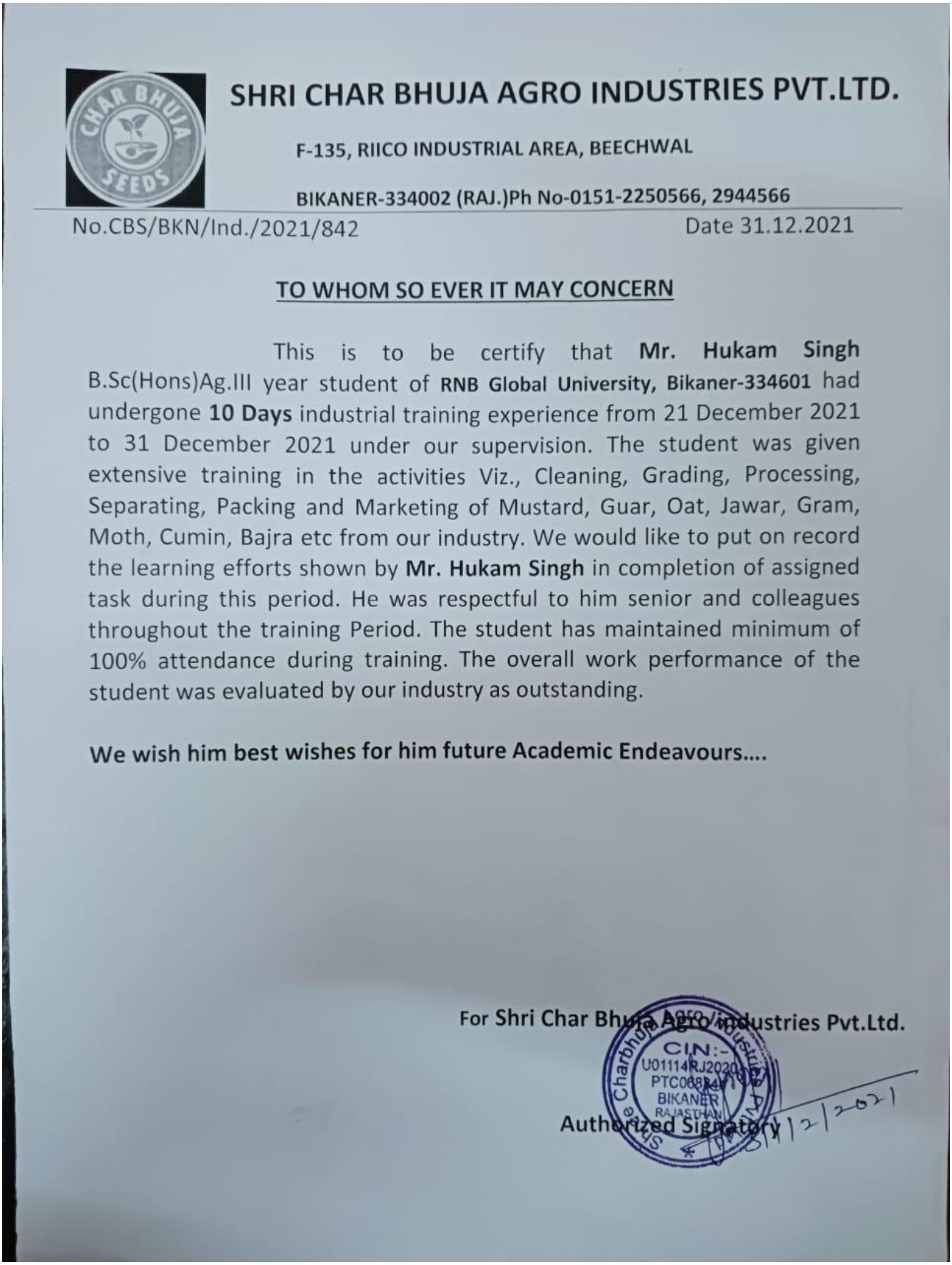
This is to certify that Mr. Hukam Singh of B.sc (SHRI CHAR BUJHA AGRO INDUSTRIES) has completed this research project under my supervision in Seeds Cleaning, Grading, Packing and Marketing, Processing Mustard, Bajra, Chick Pea for the award of the Bachelor's Degree in Agriculture from RNB GLOBAL UNIVERSITY,BIKANER.

Course Name: Summer Internship and Report

Course Code: 20018500

Signature of Faculty Guide **Signature of Student**

CERTIFICATE OF INTERNAL (UNIVERSITY) RE SEARCH GUIDE



SHRI CHAR BHUJA AGRO INDUSTRIES PVT.LTD.

F-135, RIICO INDUSTRIAL AREA, BEECHWAL

BIKANER-334002 (RAJ.)Ph No-0151-2250566, 2944566

No.CBS/BKN/Ind./2021/842 Date 31.12.2021

TO WHOM SO EVER IT MAY CONCERN

This is to be certify that **Mr. Hukam Singh** B.Sc(Hons)Ag.III year student of **RNB Global University, Bikaner-334601** had undergone **10 Days** industrial training experience from 21 December 2021 to 31 December 2021 under our supervision. The student was given extensive training in the activities Viz., Cleaning, Grading, Processing, Separating, Packing and Marketing of Mustard, Guar, Oat, Jawar, Gram, Moth, Cumin, Bajra etc from our industry. We would like to put on record the learning efforts shown by **Mr. Hukam Singh** in completion of assigned task during this period. He was respectful to him senior and colleagues throughout the training Period. The student has maintained minimum of 100% attendance during training. The overall work performance of the student was evaluated by our industry as outstanding.

We wish him best wishes for him future Academic Endeavours....

For Shri Char Bhuja Agro Industries Pvt.Ltd.

CIN:- U01114RJ2020PTC068141 BIKANER RAJASTHAN

31/12/2021

Authorized Signatory

SUMMARY

SHREE CHARBHUJA AGRO INDUSTRIES PRIVATE LIMITED is a private company incorporated on Friday, 21 February 2020. It is classified as Non-government Company and is registered at Registrar of Companies, JAIPUR. Has authorized share capital of Rs.6,000,000 and has paid up capital of Rs.6,000,000. It is involved in Activities Agriculture, Hunting and related Service activities Directors of SHREE CHARBHUJA AGRO INDUSTRIES PRIVATE LIMITED are SURENDRA KAMEDIYA and KARPA RAM CHOUDHARY. SHREE CHARBHUJA AGRO INDUSTRIES PRIVATE LIMITED's Corporate Identification Number is (CIN) U01114RJ2020PTC068344 and its registration number is 068344. Its registered address is F 135, Bichwal Industrial Area (B I A), BICHWAL, BIKANER RJ 334001 in. Current status of SHREE CHARBHUJA AGRO INDUSTRIES PRIVATE LIMITED is Active. Company is also written / known as M/S SHREE CHARBHUJA AGRO INDUSTRIES PRIVATE LIMITED or M/S SHREE CHARBHUJA AGRO INDUSTRIES PVT. LTD.

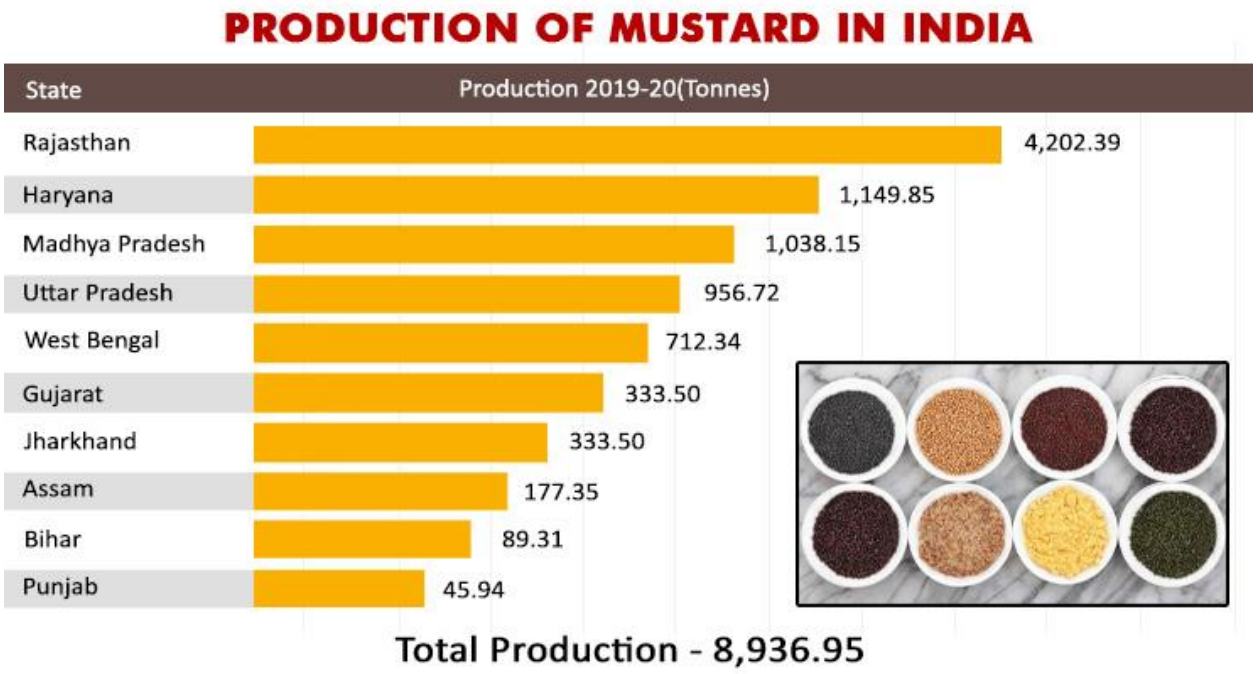
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INTRODUCTION

Oil seed crop

Mustard-condiment made from the pungent seeds of either of two main herbs belonging to the family Brassicaceae.



Production of Mustard in Rajasthan

	2014-15			2015-16 estimated			Variation from Previous Year (%)		
Districts	Area[1]	Production	Yield[2]	Area[1]	Production	Yield[2]	Area	Production	Yield
Alwar	230.66	299.86	1300	207.59	301.01	1450	-10	0.38	11.54
Ganganag	193.62	271.07	1400	199.43	329.06	1650	3	21.39	17.86
Bharatpur	196.52	294.77	1500	190	351.5	1850	-3.32	19.24	23.33
Tonk	299.07	269.16	900	284.11	227.29	800	-5	-15.56	-11.11
Sawai ma	185.01	228.48	1235	181.16	217.39	1200	-2.08	-4.86	-2.83
Baran	73.34	110.01	1500	77	123.21	1600	5	12	6.67
Hanumang	95.64	146.33	1530	100.54	165.9	1650	5.13	13.38	7.84
Other dist	1159.94	1275.93	1100	1143.42	1657.96	1450	-1.42	29.94	31.82
State total	*2433.78*	*2895.6*	*1190*	*2383.26*	*3373.31*	*1415*	*-2.08*	*16.5*	*18.97*
(Area '000 Hectare, Production '000 tonnes and Yield kg/ha)									

Economic Importance

Mustard and white mustard seeds - 25-39% of oil (iodine number 92-122), wherein there is a continuing need in various industries (canning, bakery and confectionery, margarine, pharmaceutical, textile, soap, etc.). is of great economic importance, as mustard seeds contain 34-47% of oil (iodine number 92-119)



Figure:1mustard seed

Cereal Crop

Bajra-The most common millet is **pearl millet** i.e. bajra, which is an important crop in India.

Indian Production of Bajra

Production(000 Tonnes)

Sr No.	State	2019-20 Production	Share(%)
1	Rajasthan	4,685.88	45.22
2	Uttar Pradesh	1,939.45	18.72
3	Haryana	1,019.11	9.83
4	Gujarat	913.15	8.81
5	Madhya Pradesh	656.58	6.34
6	Maharashtra	511.99	4.94
7	Karnataka	367.08	3.54
8	Tamil Nadu	185.13	1.79
9	Andhra Pradesh	58.20	0.56
10	Telangana	10.42	0.10
	Page Total	10,346.99	

Production In Rajasthan

District	Pearl millet 2001 Area sown (000 ha)	Pearl millet 2001 Production (000 tonnes)	Pearl millet 2002 Area sown (000 ha)	Pearl millet 2002 Production (000 tonnes)
Barmer	957.673	249.075	771.540	5.761
Bikaner	274.451	107.237	14.645	2.221
Churu	483.246	351.589	294.215	5.229
Ganganagar	8.566	6.378	1.535	0.344
Hanumangarh	96.464	74.769	59.705	4.516
Jaisalmer	138.691	25.550	11.773	1.489
Jalor	366.428	205.234	353.086	55.873
Jhunjhunun	279.789	290.003	174.736	20.632
Jodhpur	652.067	444.578	45.060	31.626
Nagaur	472.041	391.600	240.899	47.436
Pali	104.918	57.809	63.433	0.000
Sikar	285.738	306.473	214.229	61.305

Source: Govt. of Rajasthan.

Economic Importance

Bajra accounted for about 82 billion Indian rupees in the Indian economy in fiscal year 2019.



Figure : 2 Bajra

Pulse Crop

Chick Pea-An annual Asian plant *(Cicer arietinum)* in the pea family, widely cultivated for the edible seeds in its short-inflated pods.

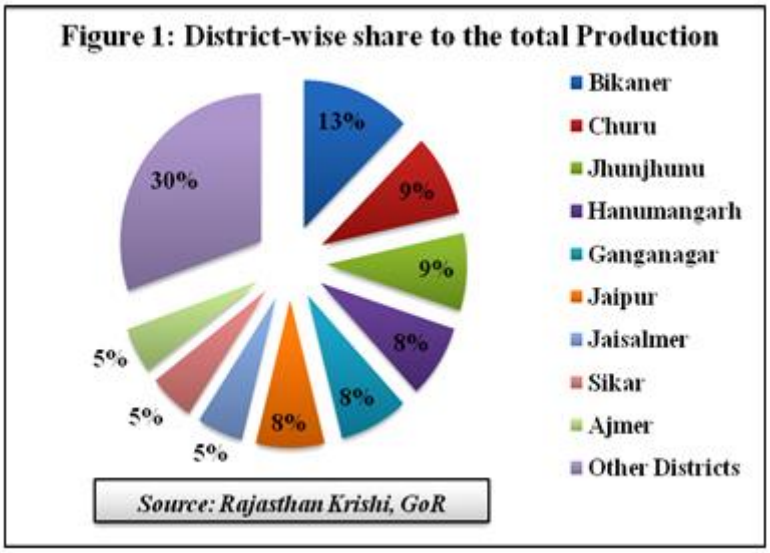
Production In India

(Area-Million ha., Production-Million tones and Yield-Kg./ha.)

State	Area	% to All-India	Prodcution	% to All-India	Yield
Madhya Pradesh	3.11	33.84	2.69	32.73	865
Rajasthan	1.78	19.37	1.60	19.46	899
Maharashtra	1.44	15.67	1.30	15.82	903
Uttar Pradesh	0.57	6.20	0.53	6.45	930
Andhra Pradesh	0.58	6.31	0.72	8.76	1241
Karnataka	0.96	10.45	0.63	7.66	656
Gujarat	0.18	1.96	0.20	2.43	1111
Chattisgarh	0.25	2.72	0.24	2.92	960
Haryana	0.11	1.20	0.11	1.34	1000
Bihar	0.05	0.54	0.06	0.73	1200
Odisha	0.04	0.44	0.03	0.36	750
West Bengal	0.02	0.22	0.02	0.24	1000
Others	0.10	1.09	0.09	1.09	@
All India	**9.19**	**100.00**	**8.22**	**100.00**	**895**

@-Since area/production is low in individual states, yield rates are not worked out (Source: Agricultural Statistics at a glance, GOI, 2012)

Production In Rajasthan


Figure 1: District-wise share to the total Production
13%
9%
9%
8%
8%
8%
5%
5%
5%
30%
Bikaner
Churu
Jhunjhunu
Hanumangarh
Ganganagar
Jaipur
Jaisalmer
Sikar
Ajmer
Other Districts
Source: Rajasthan Krishi, GoR

Economic Importance

Chickpea is a valued crop and provides nutritious food for an expanding world population and will become increasingly important with climate change. Over 2.3 million tons of chickpea enter world markets annually to supplement the needs of countries unable to meet demand through domestic production.



Figure : 3 Chick Pea

Importance of Seed Processing

Seed processing is a vital part of the total technology involved in making available high-quality seed. It **assures the end users, seeds of high quality with minimum adulteration**. In Agriculture, the term seed processing includes cleaning, drying, seed treatment, packaging and storage.

➢ Processing of the seed.

Seed processing is a vital part of the total technology involved in making available high-quality seed. It **assures the end users, seeds of high quality with minimum adulteration**.

➢ Seed testing

Seed testing is **determining the standards of a seed lot viz., physical purity, moisture, germination and ODV and thereby enabling the farming community to get quality seeds**.



Figure : 4 Seed Testing

➢Seed packing

This is the placing of a counted or weighed sample of seeds of an accession into a container which is then hermetically sealed ready for storage.



Figure : 5 Seed Packing

➢Seed Storage

Seed storage is the preservation of seeds under controlled environmental conditions which will prolong the viability of the seeds for long periods.



Figure : 6 Seed Storage

Supply chain management

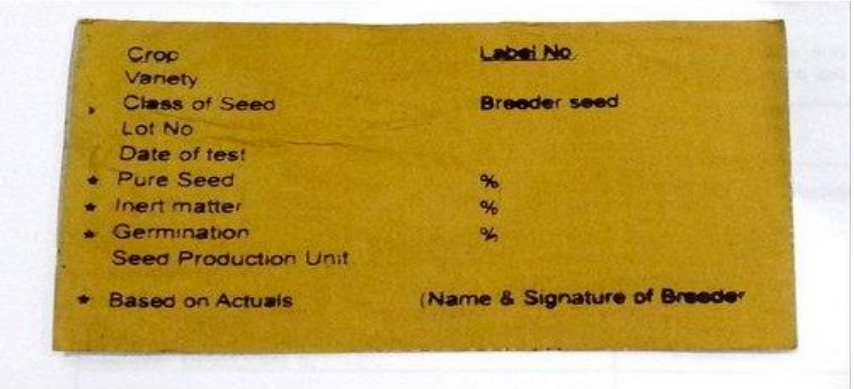
Supply chain management (SCM) implies **managing the relationships between the businesses responsible for the efficient production and supply of products from the farm level to the consumers** to meet consumers' requirements reliably in terms of quantity, quality and price.



Classes of seeds

1.Breeder seed

supply chain management (SCM) implies **managing the relationships between the businesses responsible for the efficient production and supply of products from the farm level to the consumers** to meet consumers' requirements reliably in terms of quantity, quality and price.



Yellow Tag

2. Foundation seed

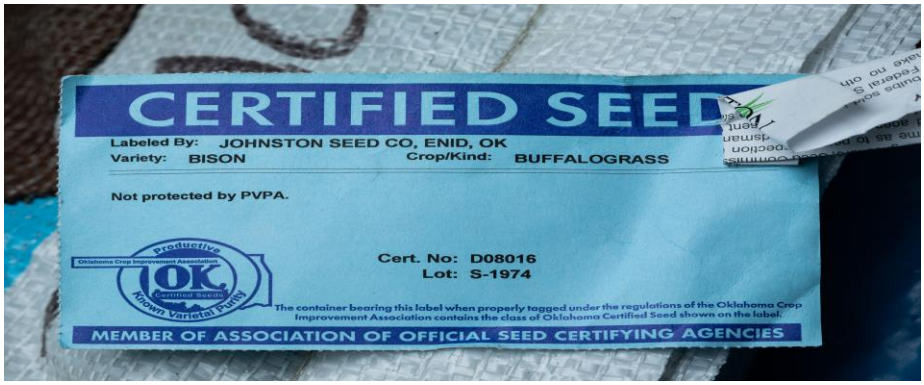
The progeny of breeder seed produced by recognized seed producing agencies in public and private sector, under supervision of seed certification agencies in such a way that its quality is maintained according to prescribed field ad seed standards. A white color certificate is issued for foundation seed by seed certification agencies.



White Tag

3.Certified seed

The progeny of foundation seed produced by registered seed growers under supervision of seed certification agencies to maintain the seed quality as per minimum seed certification standards. A blue color certificate is issued by seed certification agency for this category of seed.


CERTIFIED SEED
Labeled By: JOHNSTON SEED CO, ENID, OK
Variety: BISON
Crop/Kind: BUFFALOGRASS
Not protected by PVPA.
Cert. No: D08016
Lot: S-1974
The container bearing this label when properly tagged under the regulations of the Oklahoma Crop Improvement Association contains the class of Oklahoma Certified Seed shown on the label.
MEMBER OF ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES

Blue Tag

Chapter-I

Oil Seed Crop

Mustard



Figure : 7 Mustard Seed

Processing

Brown and white seeds are ground separately and then sifted through silk to filter out the seed hulls and bran. The two mustards are then blended and poured into tins. ... The seeds are cleaned, **crushed, sieved, and sifted**. A variety of liquids such as wine and vinegar are added to make prepared mustards.



Figure : 8 Processing Seed

Storage –

Mustard stored for a long period should be kept **at less than 18°C**. Drying. Mustard stored for a long period should be kept below nine per cent moisture. When drying mustard seed, do not exceed 65°C (150°F) air temperature and 45°C (113°F) seed temperature.



Figure : 9 Seed Storage

Marketing

Avg Price:	**6937.00 INR/Quintal**
Costliest Market:	Rampurhat
Costliest Market Price:	8300.00 INR/Quintal
Cheapest Market:	Divai
Cheapest Market Price:	4200.00 INR/Quintal

Chapter-II

Cereal Crop

Bajra



Figure : 10 Bajra Seed

Processing

Processing and utilization of Bajra: It is consumed after dehusking and cooked in the same way as rice. More commonly, it is ground into flour and made into chapatis. It is also made into thin porridge. The grain is sometimes eaten after it is parched. The product is similar to popcorn.



Figure : 11 Seed Processing

Storage

The separated grains must be cleaned and dried in sun to bring about 12-14% moisture after which the grains may be bagged and stored in a moisture proof store.



Figure : 12 Seed Storage

Marketing

Product and Quality	Mandi	Price Day Low (Per Quintal)
Bajra	Uttar Pradesh	INR 1690
Bajra Bold	Uttar Pradesh	INR 1920
Bajra	Rajasthan	INR 1800
Jowar White	Gujarat	INR 3150

Chapter – III

Pulse Crop

Chick pea

➢ Processing

In India, the desi type chickpea can be normally processed by shelling, peeling, splitting and cooking in stews, dhal. Another popular chickpea processing is by grinding into chickpea flour, besan. Import: Indian like chickpea so much that its domestic consumption is up to 6 million MT annually.



Figure : 13 Seed Storage

Storage

To store leftover chickpeas, make sure they're completely dry and cool before putting them in an airtight container to store in the fridge. They'll last for up to three days. Alternatively, you can freeze them for up to six months.



Figure : 14 Seed storage

Marketing

Nearly all domestic pulse crop (grain legume) production is marketed through processors, with about 20 percent of production contracted and the majority (80 percent) sold on the cash market.

Internship Value

This chapter deals with comparative study of indigenous farmer's and firm station seeds qualities and effectiveness on Seed Replacement Rate (SRR) of the Study focus about seed quality of farmers seed which is being continuously used for more than 5 years and study the secondary data and record of the farm station's seed which is produce in the farm and recommended to use in the farmers field. The study compared the seed quality according to purity, germination, viability, moisture contain, and 1000 grain weight in lab test of seed and find out the seed replacement rate (SRR). Is it really inputs for drastically change in national production to increase or not?

Agriculture is the mainstream of the country and has significant contribution to the total gross domestic product (GDP). Nepal is very rich in agro-biodiversity due to its diverse farming system, we can produce the different crops in different time and in different place. Agro ecological variations even within a small geographical area of the country make favor for diversifying agricultural opportunities. Rice, wheat and maize are the major important cereals of Lentil, chickpea, Black gram, etc. are the main leguminous crop. Quality seeds of improved and desired varieties are the most important and least expensive agricultural input but is availability and accessibility at right time and location is playing important role to determine the local productivity, production and foods security. Presently, there are four different agencies: public sector led (NARC, DOA, and NSCetc.), commity led (DISSPRO, CBSP, CSB,

Conclusion

The bb testing result of different seed samples concluded that the physiological and physical quality only in terms of germination capacity and purity aspect of rice wheat and kentil. was found reiturkably better in formally eserved seed the certified organization. Besides this, most of the samples of farmer's saved seed also met the minimum seed standard for certified seed. It means farmers are also sensitive towards seed selection, cleaning practices and keeping/storing the seed in the proper way. The seeds saved by the formal sector had lower moisture content percent for all crops which means that those seed have more longevity than the seeds saved by the farmers themselves. More use of seed through the informal sector may be the cause of bw production of crops in Nepal burt kow seed quality is not the cause. There may be other factor like low yiekl potentiality of those seeds.

After viewing the results, farm station seeds are superior than farmer saved seeds. Although, farmer's seed also maintained minimum seed qualities standards. conclude that low seed replacement rate is not so danger in context of Nepal. this way, we

Three Days Report .1

1.Jawar

Botanical name:- *Sorghum bicolour*

Family :- Poaceae

Origine :- Africa

Jawar (Sorghum vulgare; Sanskrit: Yavanaal, Yavakar or Joorna) is a major crop. Jowar is sown in low rainfall areas for both grain and fodder. Jowar is an important and nutritious fodder for animals. In India, this crop is sown in about 4.5 crore acres of land. It is one of the main Kharif crops. It is a type of grass whose hairy grains are counted in coarse grains.

2. Mustard

Botanical name - *Brassica spp. (L*)

Family - Brassicaceae

Origin - Southern Europe,

Chromosome - 2n= 18

The mustard plant is any one of several plant species in the genera Brassica and Sinapis in the family Brassicaceae (the mustard family). Mustard seed is used as a spice. Grinding and mixing the seeds with water, vinegar, or other liquids creates the yellow condiment known as prepared mustard. The seeds can also be pressed to make mustard oil, and the edible leaves can be eaten as mustard greens. Many vegetables are cultivated varieties of mustard plants; domestication may have begun 6,000 years ago.

Three Days Reports .2

1.Cumin

Botanical name - *Cuminum cyminum*

Family -Apiaceae

Chromosome - 2n= 18

Origin -Western Asia

(Cuminum cyminum) is a flowering plant in the family Apiaceae, native to the Irano-Turanian Region.[7] Its seeds – each one contained within a fruit, which is dried – are used in the cuisines of many cultures in both whole and ground form. Although cumin is thought to have uses in traditional medicine, there is no high-quality evidence that it is safe or effective as a therapeutic agent.

2 Bajra

Scientific name: Pennisetum glaucum

Family: Poaceae

Pearl millet (Cenchrus americanus, commonly known as the synonym Pennisetum glaucum; also known as 'Bajra' in Hindi, 'Sajje' in Kannada, 'Kambu' in Tamil, 'Bajeer' in Kumaoni and 'Gero' in Hausa) is the most widely grown type of millet. It has been grown in Africa and the Indian subcontinent since prehistoric times. The center of diversity, and suggested area of domestication, for the crop is in the Sahel zone of West Africa. Recent archaeobotanical research has confirmed the presence of domesticated pearl millet on the Sahel zone of northern Mali between 2500 and 2000 BC

Three Days Report .3

1.Gram

Botanical name:- ***Cicer Arietinum***
Origin:- French
Family:- Fabaceae
Chromosome Number:- 2n= 16

Chana, one of the major pulses (commonly called daals) cultivated and consumed in India, is also known as Bengal gram or gram or chickpea. Chana is a major and cheap source of protein compared to animal protein. Chana is scientifically known as Cicer aritinum and is reportedly originated from western Asia (Turkey).

In India, main types of chickpea are cultivated viz., Desi and Kabuli in the ratio of 3:1 and chana accounts for about 45% of total pulses produced in the country. Similar to the case of other pulses, India is the major producing country for chana, contributing for over 75% of total production in the world.

2 . Guar

Scientific name: *Cyamopsis tetragonoloba*
Family: Fabaceae
Chromosome Number:- 2n= 58
Origin:- African species

India is native of guar or cluster bean where it is used as a vegetable. Guargum is an extract of the guar bean, where it acts as a food and water store. Guar gum comes from the endosperm of the seed of the legume plant Cyamopsis tetragonoloba; an annual plant, grown in dry regions of India as a food crop for animals. The guar bean is principally grown in India and Pakistan, with smaller crops grown in the U.S., Australia, China, and Africa. The drought-resistant guar bean can be eaten as a green bean, fed to cattle, or used in green manure. For hundreds of years Guar has been used as vegetable in India. Guar is a rain-fed crop, sown in July-August and harvested in October-November. Being a leguminous crop, guar fixes nitrogen, making the soil fertile.

Two Days Report.4

1.Oat

Scientific name: *Avena sativa*

Family: Poaceae

Oats is an important Cereal crop as well as fodder crop. Cultivation of Oat is similar as wheat crop. It is mainly grown in Temperate and Subtropical climates. It can also thrive well in high-altitude tropics. They are very popular due to their health benefits. Oat meal is very famous food. Oats is rich in proteins and fiber. They also help in weight loss, controlling blood pressure and for building strong immune system.

2. Moth

Botanical name:- *Vigna aconitifolia*

Family :- Fabaceae

Origin :- india

Vigna aconitifolia is a drought-resistant legume, commonly grown in arid and semi-arid regions of India. It is commonly called mat bean, moth bean, matki or dew bean. The pods, sprouts and protein-rich seeds of this crop are commonly consumed in India. Moth bean can be grown on many soil types, and can also act as a pasture legume.

SUMMER INTERNSHIP PROJECT REPORT

ON

PARAKH WOOLLEN MILS MANUFACTURING OF CARPET & YARN , BIKANER 334001 (Rajasthan)

Submitted to RNBGU for partial fulfillment for the digree of

B.sc (hons.) Agriculture

by

Kaustubh Gaur

Enrollment No.

RNBGU201900047

Under the guidance of

Mr. Avinash Sharma

RNB GLOBAL UNIVERSITY

Educating stars for tomorrow

RNB GLOBAL UNIVERSITY

ACKNOWLEDGEMENT

The internship opportunity I had with PARAKH WOOLLEN MILS MANUFA CTURE OF CARPET WOOLLEN YARN was a great chance for learning and professional development. Therefore,I consider my self as a very lucky individual as I was provided with an opportunity to be part of it .

Bearing in mind previous , using this opportunity to express my deepest gratitude and special thanks to the Mr. Avinash Sharma who in spite of being extraordinarily busy with his duties , took time out to hear , guide and keep me on the correct path and allowing me to carry out my project at their esteemed organization and extending during the training

I am also thankful to internship guide Mr. Vikas Parakh who helped me to learn all the process and experiment performed at Parakh Woollen Mils

I perceive this opportunity as big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way , and I will continue to work on their improvement , to attain desired career objectives . hope to continue cooperation with all of you in future.

Kaustubh Gaur [B.sc Agriculture 5th sem]

DECLARATION

I Kaustubh Gaur , hereby declare that the project report entitled ‘ processing and spinning of wool’ submitted by me to RNB global university in partial fulfillment of the requirement for the aword of the digree of B.sc in agriculture is a record of confide project work carried out by me under the guidance of Mr. Avinash Sharma .

I further declare that this is the record of the authentic work carried out by me during summer internship programe of the acadmic year 2019-23 and has not be submitted to any other university or institute toward the award of ant digree.

Signature of the student

GSTIN : 08AABFP3778K1ZS

PARAKH WOOLLEN MILLS

Mfg. Of Carpet Woollen Yarn

Date.....

Training Certificate

- This is certified that Mr. Kaustubh Gaur S/o Mr. Hemant Gaur completed his training in Woollen *Indursrties* (Carpet Woollen Yarn and all *process*) *in our organization.*
- *Period Training* : 16th Dec. to 31st Dec.2021
- *Place of Training* : Parakh Woollen Mills

वास्ते पारख वूलन मिल्स

मैनेजर/पार्टनर

Bikaner 334001 (Raj.)

81-A, Industrial Area, BIKANER-334001, email-parakh.vikash@gmail.com, Mobile - 09414137173, 9413013097 ☎ 0151- 22211

CERTIFICATE OF INTERNAL

(UNIVERTSITY) FACULTY GUIDE

Enrollment No . - RNBGU201900047

This is to certify that Mr. Kaustubh Gaur of B.sc (Agriculture) has completed this summer internship / research project under my supervision in partial fulfillment for the award of the B.sc agriculture from RNB Global University , Bikaner.

Cource name : summer internship

Cource code : 20018500

SIGNATURE OF INTERNAL FACULTY GUIDE

SIGNATURE OF STUDENT

PLACE : RNB Global Univetsity , Bikaner

DATE :

ABSTRACT

The company started its journey in the woolen product like carpet and yarn in 1989 and in 2 years they took there company to the next level

The company grew up because of there products have good quality yarn which is usefull to made carpets and any othaer things . there are 15 plus woolen mills in Bikaner and that woolen mil keep place in top 3 best woolwn mils in Bikaner because of selling material

The company import of wooll and they made yarn or carpets from that yarn

wooll industry was at times the citys most important industries ool processing includes removing the fleece by shearing, classing the wool by quality, untangling, carding and spinning it into yarn, which may be knitted or woven into cloth, then finishing the cloth by fulling, napping and pressing. Spinning and weaving of sheep's wool dates to prehistoric times in Wales,

EXECUTIVE SUMMERY

How to make fiber from wooll

1. Shearing the Sheep. ...
2. Cleaning the Wool. ...
3. Carding the Wool. ...
4. Spinning the Wool into Yarn. ...
5. Weaving and Knitting. ...
6. Dyeing

Shearing the sheep ⟶

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* introduction wooll (types of wooll)

***** raw material

2. WHOLE PROCESS

***** how a tangled wool becomes s well shaped carpet and yarn

* types of wooll

* excixion the wool

* washinh wool properly

* dry them

* threshing

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INTRODUCTION

Wool is **the hair that covers the skin of the sheep**, isolates . it from the cold and heat, maintaining constant its body temperature. There are many varieties of ovine breeds which product wool with fibres different for their fineness, length, shininess and resistance.

- Fleece obtained from sheep = raw / grease wool .
- It is the animal fiber which grows from follicles in the scheme
- Indian needs good wool and increased supply of mutton
- Population of sheeps – 71.6 million (4^{th} rank)
- The yield of wool or 350gm to 1800gm/ sheep/year
- Mohair - straight, uneven , translucent fiber obtained from goat.

Type of wool

wool is the tetile

There are mostly 3 types of wool

(a) Black wool
(b) Gray wool
(c) Yellow wool

- **Black wool –** the black wool is very low at coast because its colour is black and we cant do diy on it because the colour will stay black the wools fibers are anti – wrinkle

- **Gray wool -** The gray wool is mid range wool this wool mostly used for making yarn becauser we can do diy gray colour easily

- **Yellow wool –**the yellow wool high in proce instead of yellow wool or black wool because yellow wool is used for carpet or making yarn and they can easily coloured

Yellow wool :



Gray wool



Black wool



The wool import in big bags and tere were many trash and dust which Is collected in the wool

,



Step 2 .

Using treasure to open the wool

When wool comes they were cling to each other

The wool were be inside each other

Therefore we use treasure to open the wool and there are many sharp hook who help to open the clined wo



step 3 :

now we put all wool which we bring out from treasure and out them in to this machine

this machine will help to made a thin layer of the wool and after doing thin layer the layer enter in same machiine but different chamber

that chamber helps wool to become more durable





Tjhis machine made a layer or wool

STEP 4

In this chamber there are 2 roller wich made a thin and durable layer of cotton by which the yarn will be durable and will not break early



It has a lattice –like structure which maks a thin layer of wool



This the the thin layer of wool which is going to be making yarn

In this machine there have some lattice – like structure

Step 6

These chains will help to stay settled to make a single layer yarn





After that all process itnis the single layer yarn

It is notas stronger as it should be now it will be made 2 layers





Here a thread is being made bt mixing 3 threads



And now it is ready but this too fat we cant made a carpet from there

Now it will be going for thinning and washing



This is for the washing of the yarn so thet the sample become clean

After that leave them to dry

- There is a chemical which was missed in the washing tank of yarn
- The wools fiber are naturally acidic by adding vinegar to the rinse cycle
- 

Ready for packaging



And the yarn is ready to sell In the market

- **OBJECTIVE**
- PROCESSING AND SPINNING OF WOOL

Woollen Spinning

In terms of yarn count (Nm), coarser counts are generally produced on the woollen system in comparison to worsted spinning.

In woollen spinning there are two types of spinning methods used; these include ring spinning which is similar to what's used to produce worsted yarns, and mule spinning which is unique to the woollen spinning industry.

Generally, blends of coarse micron wool, such as 29 micron Shetland, are ring spun, whilst finer blends (21 micron and finer Lambswool blends) tend to be spun on a mule.

During ring spinning the woollen roving continuously enters the drafting zone on the spinning machine. It is slightly drafted in the region of 20% to 30%, before entering the twisting zone where a predetermined amount of twist is inserted to produce a singles (1xply) yarn.

Mule spinning is somewhat different whereby the yarn is formed by a number of intermittent actions, rather than been formed continually.

Firstly, the rovings are drawn out about 1.5 meters by means of a moveable carriage, and then twisted slightly to increase their strength. Tension is then applied and the rovings are further drawn or drafted by some 20% to 30%. The desired amount of twist is then inserted, before the carriage moves back to its original position whilst winding the singles yarns onto bobbins. The sequence is then repeated until the bobbins of yarn reach their maximum or optimum size.

The yarn is then wound on a winding machine which is fitted with a clearing device, detecting and removing any faults such as thick and thin places, neps and slubs.

Today most winding machines are fitted with a pneumatic splicing device in order to join or splice the ends of broken yarns, rather than tie and produce knots.

Although some yarns are sold and used in singles form, such as 1xply, the majority undergoes a twisting process where two singles yarns are twisted together to produce a two-fold, or 2xply, yarn.

After twisting, the yarn is then re-wound onto suitable packages either for knitting or for weaving. Because woollen yarns contain a lot of oil in contrast to worsted-spun yarns, due to the relatively high amounts of processing lubricants applied to the wool prior to carding, it's not normally necessary to apply wax.

When producing wool yarns either for machine knitting or weaving of acceptable quality, there are many important parameters to take into consideration. These include:

- yarn count (Nm) and yarn count variation
- twist levels (turns per metre) and variation; in the case of a two-fold yarn the ratio in percentage terms between the twist levels in the single yarn and the folding twist is very important. This factor is known as the twist balance.
- yarn frictional properties
- yarn strength and elongation
- irregularity (U %)

- # PROCESSING AND SPINNING WOOL (MAIN PRODIDURE)

Industrial revolution supplied developments to production units making their process easy in controlling the process by spinning machinery. In this machine process various levels are added to convert fiber (cotton/wool) into yarn to process it further for textile products. This transformation goes through various levels such as:

- Step 1: Blowroom process
- Step 2: Carding
- Step 3: Combining
- Step 4: Drawing
- Step 5: Roving
- Step 6: Cone winding

BLOWROOM IN SPINNING:

Blowroom indicates place processing “Air Flow”. Blow room consists of various machineries to conduct the objectives of blowroom. Here the cluster of cotton brought is changed into miniature material. Simply, in blow room section, the compressed bales are opened, cleaned and blended/mixed according to particular length to form a specific size of lap.

CARDING*:*

Carding is known as heart of spinning process as it defines the concluded features of yarn. The lap produced in blowroom is now shifted to carding machine for production of carded silver. Here the bales processed will open up in single fiber. Apparently, it will make ease to remove the left impurities on the surface of fiber making it straight and separating the short fiber.

COMBINING:

As yarn is arranged in parallel manner, it is straightened again in stage of combining. On the other hand, the left short fiber will be subtracted completely from longer staple fiber. This will result in stronger and smoother staple fabric having higher demand in market.

DRAWFRAME*:*

This is a device in which drafting and drawing are carried out. Doubling is the application of feeding several intermediate strands into a single strand. Drafting is carried out to lessen fiber laps to slivers. The carded silver is drafted between roller to produce drawn silver

ROVING/RING FRAME:

The yarn produced is processed into a speed frame to attain roving yarn. This is the initial step where twist is inserted for giving hold to the fibers in a spinning mill. The roving yarn is of little larger diameter as compared to the final yarn. Similarly ring frames are used to produce finished yarns from obtained roving yarns. yarn is resulted having good amount of strength through these ring frames.

CONE WINDING:

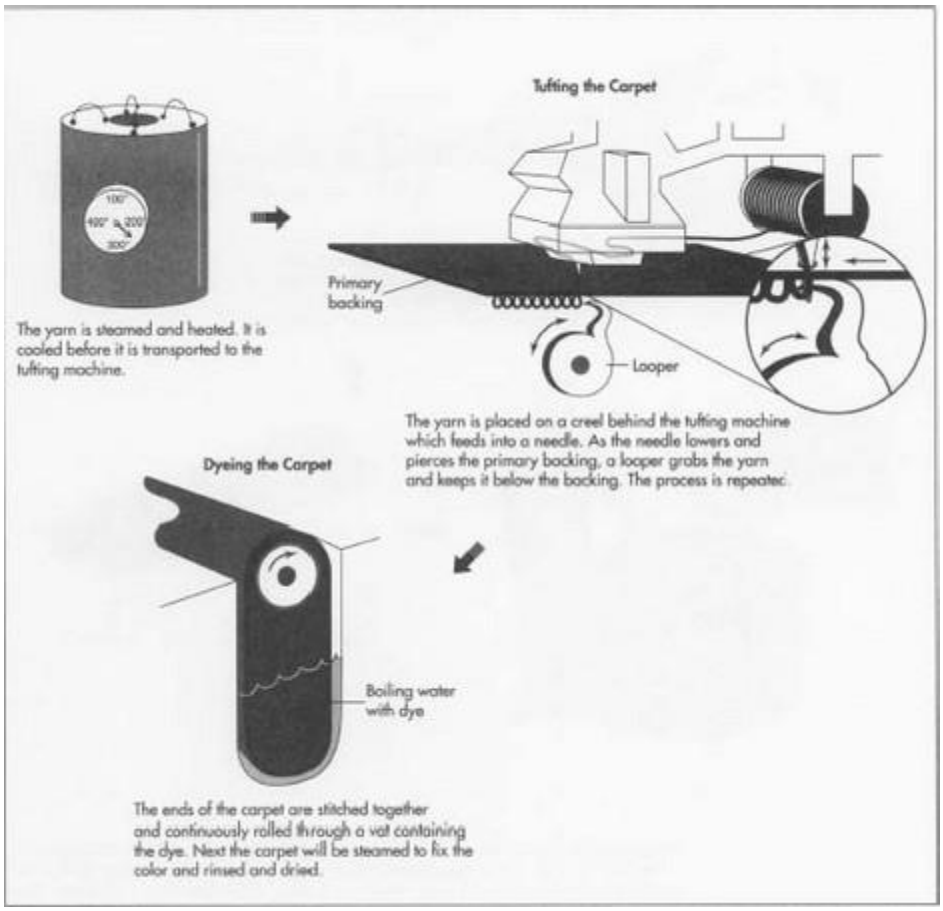
Cone winding is just a simple packaging process functioning as a link between last stages of yarn manufacturing and initial stages of fabric manufacturing process. It is important to utilize the winding devices properly to avoid the loss of spinning mills as well as consumers.

- **PROCESS OF MAKING CARPET FROM YARN**

THE MANUFACTURING PROCESS :

Preparing the yarn

-
- 1 Synthetic yarns arrive at the carpet manufacturer either in staple fiber form or bulk



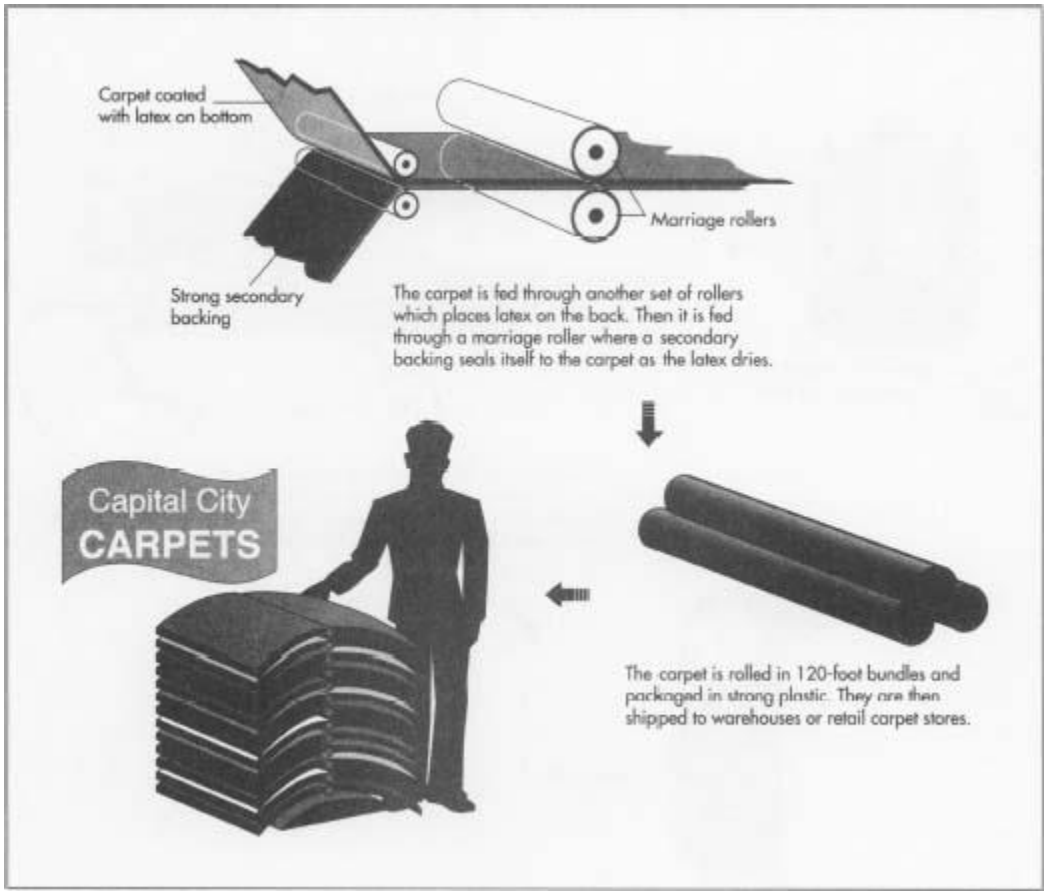
continuous filament form. The staple fibers, which average 7 inches (18 cm) long, are loose, individual strands that arrive in bales. Several bales are blended together into one batch in a hopper. Then, after lubrication, they are spun into long, loose ropes called slivers by a carding machine. The slivers are then pulled, straightened, and spun into single yarn that is wound onto spools. Both the single-ply staple fibers

(now spun into filament) and the bulk continuous filament must now be twisted together to form thicker twoply yarn suitable for tufting. The yarns are then

steamed to bulk them, and then heated to 270-280°F (132-138°C). This heat setting causes the yarn to maintain its shape by fixing its twist. After cooling, these yarns are wound onto tubes and transported to the tufting machines.

Dyeing the yarn

- 2 Most carpets are dyed after tufting, yet sometimes the yarns are dyed first. The methods include putting 500-1,000 pounds (227-455 kg) of fiber into pressurized vats



through which treated dyes are circulated, or passing the fiber continuously through the bath, or passing skeins of yarn through the vat of dye. The yarn can also be put on forms, and the heated dyes can then be forced under pressure from inside the forms to color the yarn. Another method passes the yarn through printing rollers,

while yet another involves knitting the yarn onto a form that is then printed with dyes before the yarn is unraveled. All yarn that has been dyed is then steamed, washed, and dried.

Tufting the carpet

- 3 The yarn is put on a creel (a bar with skewers) behind the tufting machine, then fed into a nylon tube that leads to the tufting needle. The needle pierces the primary backing and pushes the yarn down into a loop. Photoelectric sensors control how deeply the needles plunge into the backing, so the height of the loops can be controlled. A looper, or flat hook, seizes and releases the loop of yarn while the needle pulls back up; the backing is shifted forward and the needle once more pierces the backing further on. To make cut pile, a looper facing the opposite direction is fitted with a knife that acts like a pair of scissors, snipping the loop. This process is carried out by several hundred needles (up to 1,200 across the 12 foot [3.7 ml width), and several hundred rows of stitches are carried out per minute. One tufting machine can thus produce several hundred square yards of carpet a day.

Dyeing the tufted carpet

- 4 For solid color carpeting, carpet of several standard roll lengths is sewn together to make a continuous roll, which is then fed into a vat. The vat is filled with water, which is first heated before dyes and chemicals are mixed in. The mixture is then slowly brought to a boil and cooked for four hours. Another method of making solid color carpet is to sew several rows together to make one continuous roll, which is then fed under rods that bleed the color into the pile. After dyeing, the carpet is then steamed to fix the color, excess color is washed off, and the carpet is dried and put on a roll.
- 5 To make printed carpet of various designs, white carpet passes under screens in which holes in the desired pattern have been cut. The desired color is squeegeed through the holes in the screen, and the carpet is advanced 36 inches (91 cm) to a different screen that applies a new color in a different design through the screen. Up to eight colors can be applied with this method.
- 6 Another method of dyeing printed carpet is to pass it under embossed cylinders that have raised portions in a design, which press color into the carpet. Each cylinder provides a different design for a different color. After dyeing, the printed carpet is steamed, excess dyes are washed off, and the carpet is then dried and put onto rolls to go to the finishing department.

Finishing the carpet

- 7 The ends of the dyed carpet are first sewn together to form a continuous belt. This belt is then rolled under a dispenser that spreads a coating of latex onto the bottom of the carpet.

At the same time, a strong secondary backing is also coated with latex. Both of these are then rolled onto a marriage roller, which forms them into a sandwich and seals them together.

The carpet is then placed in an oven to cure the latex.

- 8 The completed carpet is then steamed, brushed, vacuumed, and run through a machine that clips off any tufts that rise above its uniform surface. The carpet is then rolled into 120 foot (37 m) lengths that are then packaged in strong plastic and shipped to either the carpet manufacturer's inventory warehouse or to a retail carpet store.
-
-
- Quality Control

Every piece of carpet that is tufted is inspected to see if any tufts are missing. One person with a single needle tufting gun shoots pile yarn wherever holes are found. Each piece of carpet is then inspected. The manufacturer checks that the piece is of the proper dimensions and that the tuft height is of the desired length. The static shock potential is also tested.

Most states require a flammability test. A prepared 9 × 9 inch (23 × 23 cm) specimen is placed on a steel plate that has a hole 8 inches (20 cm) in diameter in its middle. A methenamine tablet is ignited in the center. If the charred portion in seven out of eight trials does not reach to the circumference of the hole, the carpet passes. Another important test determines the carpet's resistance to wear. A specimen of carpet is placed in a drum and beaten with a steel ball that has rubber studs on it for 20,000 to 50,000 revolutions. The carpet should look fairly new after this test. To test how the carpet's color stands up to sunlight, a standard light source that simulates sunlight is directed at a specimen, which is then rated according to the number of units of exposure required to produce visible loss of color.

The mass per unit area of pile yarn is a significant test because pile density determines the feel of the carpet. First, the synthetic yarn is removed from the carpet, either by physical means (it is ripped off the primary backing) or chemical means (it is dissolved off). The yarn is then dissolved in a solvent, then dried in an oven to remove the solvent. The dry residue is then weighed and checked to see if the mass is as specified for that type of carpet. Each type of synthetic fiber has its own recipe. Nylon, the most commonly used synthetic yarn, is dissolved in hydrochloric acid and dried 15 minutes at 77°F (25°C).

Backing fabrics and carpet padding are tested for strength by being pulled in a vise until they break. The primary backing's strength is checked both before and after tufting. The

delamination strength of the secondary backing is also tested by determining at what force the secondary backing can be pulled away from the primary backing.

Part of the quality control process is up to the customer, who must select carpet of the proper strength and durability for the amount of traffic expected in the room, vacuum regularly, and have the carpet professionally deep cleaned at least once a year.

Weekly report

Name of student	**Kaustubh Gaur**
Enrollment No.	**RNBGU201900047**
Program	**B.sc (Hons.) agriculture**
Report date	
Week	**2**
Name of the organization	**Parakh Woollen mills, Bikaner**
Report	**Processing and management of woollen mills**

Thrusday (16.12.21)	**Intoduction of the working of the mill**
Friday(17.12.21)	**Introduction with other employess in mil unit & understanding the work**
Monday(20.12.21)	**Introduction the basics of mil work**
Tuesday(21.12.21)	**The main work of the firm how they make and proceesing other material**
Wednesday(22.12.21)	**Introduction with vendors with whom the firm purchases raw material**
Thursday(23.12.21)	**Understanding the process of making complete wool process and meeting with other process**
Friday(24.12.21)	**Detailed information about product handling**
Monday(27.12.21)	**Detailed information about grievance handling which includes types of grievances**
Tuesday(28.12.21)	**Introduction about recording every aspect of**

	completion of wool processing in books
Wednesday(29.12.21)	**Started working on the final project topic for summer internship programme, studied about the manufacture and its process**
Thuesday(30.12.21)	**Learnt about various kind of process**
Friday(31.12.21)	**Understanding all about parakh woolen mils**

INTRODUCTION

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- Mohair - straight, uneven , translucent fiber obtained from goat.

Project Report

On

Drip Irrigation System

Submitted to RNB Global University for practical fulfilment for the degree of Bachelors of Agriculture

BY: Laxmendra Singh Meena

Enrolment No.

RNBGU201900038

Under the Guidance of

Dr.Avinash Sharma

RNB Global University, Bikaner

28th December 2021

Declaration

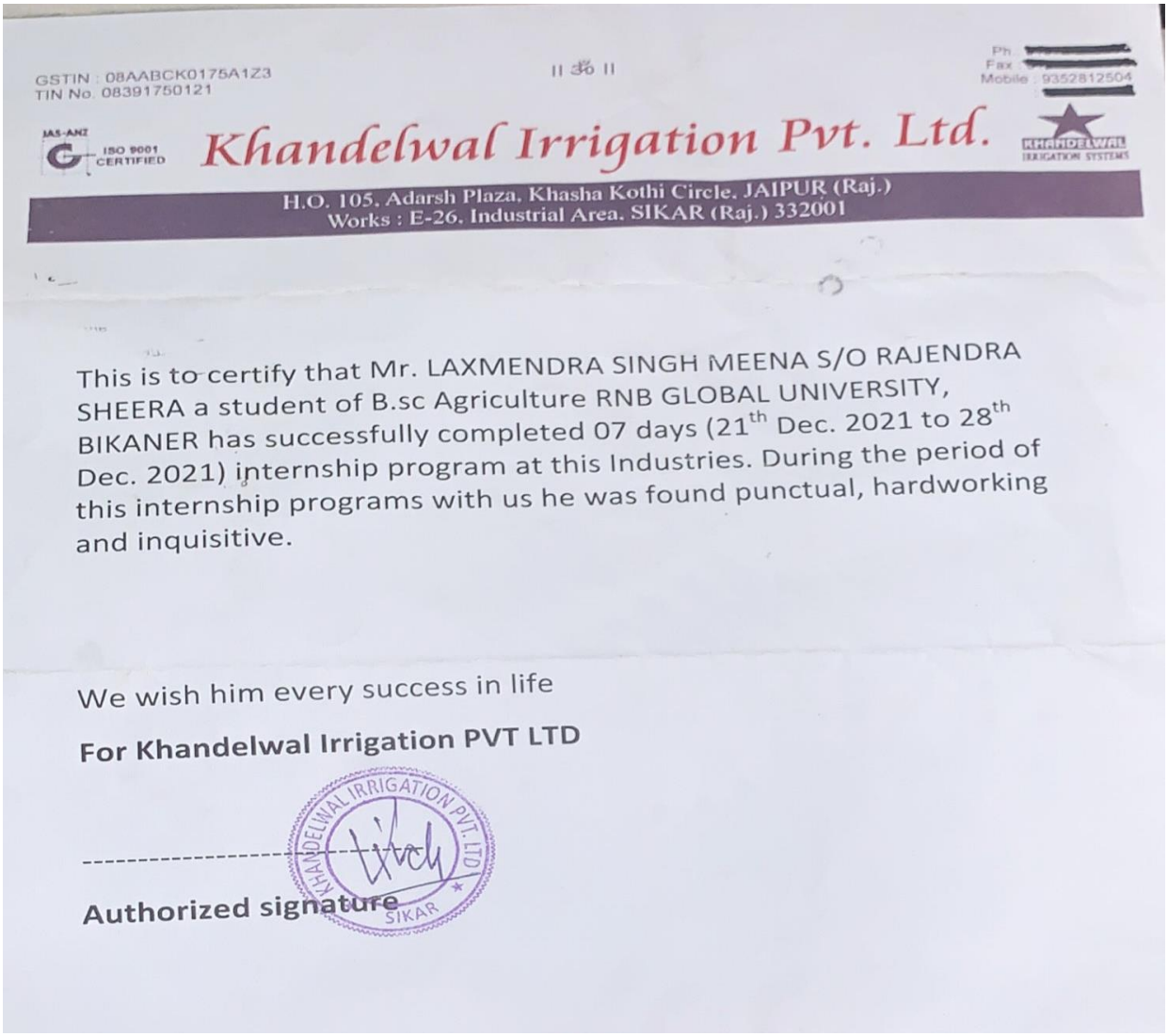
I, ***Laxmendra Singh Meena*** student of ***R.N.B. Global University*** submitting project report entitled **"Drip Irrigation System**" to the ***School of Agriculture*****,** is an original piece of work done by meduring the period from ***21th Dec. 2021 to 28th dec. 2021***. This project work has not been submitted or presented anywhere or in any other University for the award of any degree/ diplomaetc.

Laxmendra Singh Meena

(B.SC) School of Agriculture

RNB GLOBAL UNIVERSITY

Certificate



GSTIN : 08AABCK0175A1Z3
TIN No. 08391750121

॥ ॐ ॥

Ph. [redacted]
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Mobile : 9352812504

JAS-ANZ ISO 9001 CERTIFIED

Khandelwal Irrigation Pvt. Ltd.

KHANDELWAL IRRIGATION SYSTEMS

H.O. 105, Adarsh Plaza, Khasha Kothi Circle, JAIPUR (Raj.)
Works : E-26, Industrial Area, SIKAR (Raj.) 332001

This is to certify that Mr. LAXMENDRA SINGH MEENA S/O RAJENDRA SHEERA a student of B.sc Agriculture RNB GLOBAL UNIVERSITY, BIKANER has successfully completed 07 days (21th Dec. 2021 to 28th Dec. 2021) internship program at this Industries. During the period of this internship programs with us he was found punctual, hardworking and inquisitive.

We wish him every success in life

For Khandelwal Irrigation PVT LTD

KHANDELWAL IRRIGATION PVT. LTD. SIKAR

Authorized signature

InternalExaminer ExternalExaminer Dean

Acknowledgment

I would like to take the opportunity to thank and express my deep sense of gratitude to my mentor and guide Dr. Avinash Sharma, Associate Professor, School of Agriculture, RNB Global University, Bikaner. I am greatly indebted to Dr. Surendra Singh Shekhawat, Dean, School of Agriculture for providing valuable guidance at all stages of the study, their advice, constructive suggestions, positive and supportive attitude and continuous encouragement, without which it would have not been possible to complete the project.

Name oftheStudent Signature

DRIP IRRIGATION SYSTEM

How do the work ?

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4.	Components and operation	
5.	Advantages and disadvantages	
6.	CONCLUSION	

1. INTRODUCTION:-

Drip irrigation is a form of irrigation that saves water and fertilizer by allowing water to drip slowly to the roots of many different plants, either onto the soil surface or directly onto the root zone, through a network of valves, pipes, tubing, and emitters. Simcha Blass ; November 27, 1897 to July 18, 1982; Hebrew: was an Israeli engineer and inventor. He was a main figure of water development in Israel, initiator, introducer and developer of new drip irrigation systems, inventor of new dripper Micro–irrigation or drip systems are generally more efficient than conventional sprinklers, because they deliver low volumes of water directly to plants' roots, minimizing losses to wind, runoff, evaporation, or

overspray Drip irrigations systems use 20 to 50 percent less water than conventional pop-up sprinkler ... Drip irrigation is a form of irrigation that saves water and fertilizer by allowing water to drip slowly to the roots of many different plants, either onto the soil surface or directly onto the root zone, through a network of valves, pipes, tubing, and emitters. It is done through narrow tubes that deliver water directly to the base of the plant. It is chosen instead of surface irrigation for various reasons, often including concern about minimizing evaporation.

Why is the need of it

- To use water efficiently
- No water to runoff or evaporation.
- It reduces water contact with crop leaves, stems, and fruits. Agricultural chemicals can be applied more efficiently

History:-

Primitive drip irrigation has been used since ancient times. Fan Sheng-Chih Shu, written in China during the first century BCE, describes the use of buried, unglazed clay pots filled with water as a means of irrigation.

[1] Modern drip irrigation began its development in Germanyin 1860 when researchers began experimenting with subsurface irrigation using clay pipe to create combination irrigation and drainage systems.

[2] Research was later expanded in the 1920s to include the application of perforated pipe systems.

[3] The usage of plastic to hold and distribute water in drip irrigation was

later developed in Australia by Hannis Thill.

[4] Usage of a plastic emitter in drip irrigation was developed in Israel by Simcha Blass and his son Yeshayahu.

[5] Instead of releasing water through tiny holes easily blocked by tiny particles, water was released through larger and longer passageways by using velocity to slow water inside a plastic emitter. The first experimental system of this type was established in 1959 by Blass who partnered later (1964) withKibbutzHatzerim to create an irrigation company called Netafim. Together they developed and patented the first practical surface drip irrigation emitter.

[6] In the United States, the first drip tape, called Dew Hose, was developed by Richard Chapin of Chapin Watermatics in the early 1960s. Modern drip irrigation has arguably become the world's most valued innovation in agriculture since the invention of the impact sprinkler in the 1930s, which offered the first practical alternative to surface irrigation. Drip irrigation may also use devices called micro- spray heads, which spray water in a small area, instead of dripping emitters. These are generally used on tree and vine crops with wider root zones. Subsurface drip irrigation (SDI) uses permanently or temporarily buried dripperline or drip tape located at or below the plant roots. It is becoming popular for row crop irrigation, especially in areas where water

supplies are limited or recycled water is used for irrigation. Careful study of all the relevant factors like land topography, soil, water, crop and agro-climatic conditions are needed to determine the most suitable drip irrigation system and components to be used in a specific installation.

Components and operation:-

1. Water Source
2. Pumping system
3. Distribution system
4. Drip tape (drip tube)
5. Injectors

components used in drip irrigation (listed in order from water source) include:

- Pump or pressurized water source
- Water filter(s) or filtration systems: sand separator, Fertigation systems (Venturi injector) and chemigation equipment (optional)
- Backwash controller (Backflow prevention device)
- Pressure Control Valve (pressure regulator)
- Main line (larger diameter pipe and pipe fittings)
- Hand-operated, electronic, or hydraulic control valves and safety valves
- Smaller diameter polytube (often referred to as "laterals")
- Poly fittings and accessories (to make connections)

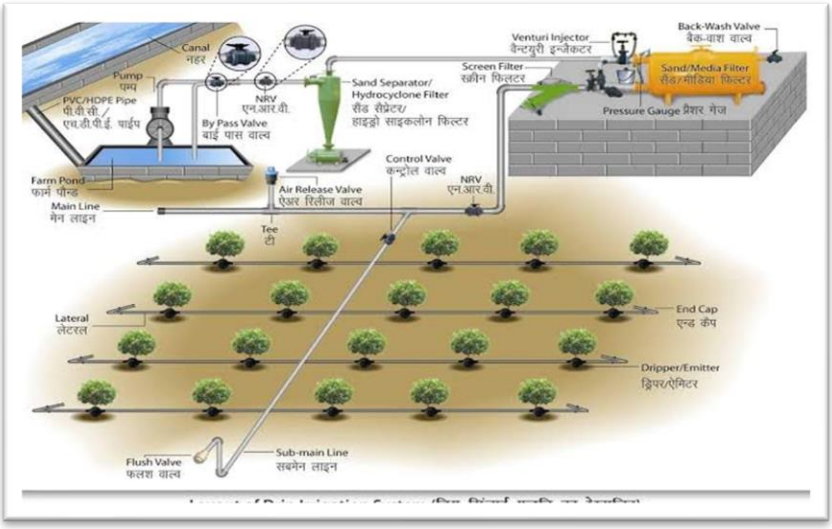
• Emitting devices at plants (emitter or dripper, micro spray head, inline dripper or inline driptube) In drip irrigation systems, pump and valves may be manually or automatically operated by a controller. Most large drip irrigation systems employ some type of filter to prevent clogging of the small emitter flow path by small waterborne particles. New technologies are now being offered that minimize clogging. Some residential systems are installed without additional filters since potable water is already filtered at the water treatment plant. Virtually all drip irrigation equipment manufacturers recommend that filters be employed and generally will not honor warranties unless this is done. Last line filters just before the final delivery pipe are strongly recommended in addition to

any other filtration system due to fine particle settlement and accidental insertion of particles in the intermediate lines. Drip and subsurface drip irrigation is used almost exclusively when using recycled municipal waste water. Regulations typically do not permit spraying water through the air that has not been fully treated to potable water standards. Because of the way the water is applied in a drip system, traditional surface applications of timed-release fertilizer are sometimes ineffective, so drip systems often mix liquid fertilizer with the irrigation water. This is called fertigation; fertigation and chemigation use chemical injectors such as diaphragm pumps, piston pumps, or aspirators. The chemicals may be added constantly whenever the system

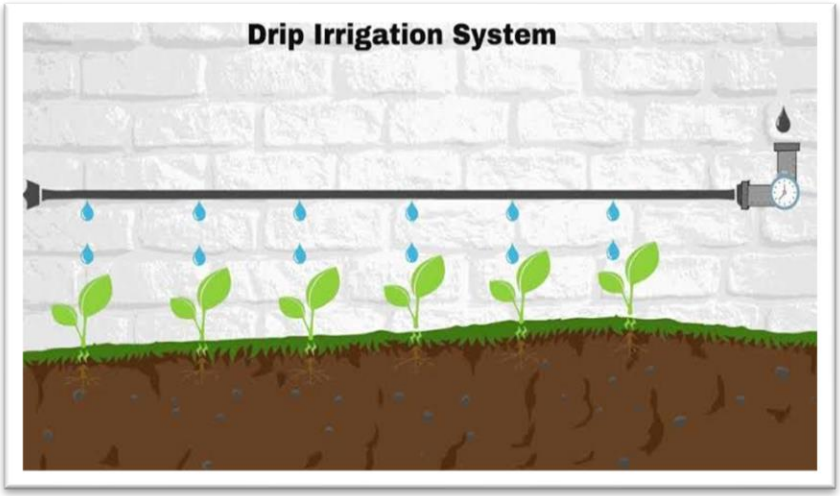
is irrigating or at intervals. Fertilizer savings of up to 95% are being reported from recent university field tests using drip fertigation and slow water delivery as compared to timed-release and irrigation by micro spray heads. Properly designed, installed, and managed, drip irrigation may help achieve water conservation by reducing evaporation and deep drainage when compared to other types of irrigation such as flood or overhead sprinklers since water can be more precisely applied to the plant roots. In addition, drip can eliminate many diseases that are spread through water contact with the foliage. Finally, in regions where water supplies are severely limited, there may be no actual water savings, but rather simply an increase in production

while using the same amount of water as before. In very arid regions or on sandy soils, the preferred method is to apply the irrigation water as slowly as possible. Pulsed irrigation is sometimes used to decrease the amount of water delivered to the plant at any one time, thus reducing runoff or deep percolation. Pulsed systems are typically expensive and require extensive maintenance. Therefore, the latest efforts by emitter manufacturers are focused toward developing new technologies that deliver irrigation water at ultra-low flow rates, i.e. less than 1.0 liter per hour. Slow and even delivery further improves water use efficiency without incurring the expense and complexity of pulsed delivery equipment. An emitting pipe is a type of drip

irrigation tubing with emitters pre-installed at the factory with specific distance and flow per hour as per crop distance. An emitter restricts water flow passage through it, thus creating head loss required in order to emit water in the form of droplets. This head loss is achieved by friction / turbulence within the emitter.


Canal
नहर
Pump
पम्प
PVC/HDPE Pipe
पी.वी.सी. /
एच.डी.पी.ई. पाईप
By Pass Valve
बाई पास वाल्व
NRV
एन.आर.वी.
Sand Separator/
Hydrocyclone Filter
सैंड सेपरेटर/
हाइड्रो साइकलोन फिल्टर
Venturi Injector
वेन्टयुरी इन्जैकटर
Screen Filter
स्क्रीन फिल्टर
Back-Wash Valve
बैक-वाश वाल्व
Sand/Media Filter
सैंड/मीडिया फिल्टर
Pressure Gauge प्रेशर गेज
Farm Pond
फार्म पौन्ड
Main Line
मेन लाइन
Air Release Valve
एअर रिलीज वाल्व
Control Valve
कन्ट्रोल वाल्व
NRV
एन.आर.वी.
Tee
टी
Lateral
लेटरल
End Cap
एन्ड कैप
Dripper/Emitter
ड्रिपर/ऐमिटर
Flush Valve
फलश वाल्व
Sub-main Line
सबमेन लाइन


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Drip Irrigation System


EVERGREEN
Garden
Drip Irrigation Kit

Advantages and disadvantages:-

ADVANTAGES:

- Fertilizer and nutrient loss is minimized due to localized application and reduced leaching.
- Water application efficiency is high if managed correctly
- Field levelling is not necessary.
- Fields with irregular shapes are easily accommodated.
- Recycled non-potable water can be safely used.
- Moisture within the root zone can be maintained at field capacity.
- Soil type plays less important role in frequency of irrigation.
- Soil erosion and Soil salinity is lessened.
- Weed growth is lessened.

- Water distribution is highly uniform, controlled by output of each nozzle.
- Labour cost is less than other irrigation methods.
- Variation in supply can be regulated by regulating the valves and drippers.
- Fertigation can easily be included with minimal waste of fertilizers.
- Foliage remains dry, reducing the risk of disease.

DISADVANTAGES:

- Initial cost can be more than overhead systems.
- The sun can affect the tubes used for drip irrigation, shortening their usable life. (This article does not include a discussion of the effects of degrading plastic on the soil content and subsequent effect on food crops. With many types of plastic, when the sun degrades the plastic, causing it to become brittle, the estrogenic chemicals (that is, chemicals replicating female hormones) which would cause the plastic to retain flexibility have been released into the surrounding environment.)
- If the water is not properly filtered and the equipment not properly maintained, it can result in clogging

- For subsurface drip the irrigator cannot see the water that is applied. This may lead to the farmer either applying too much water (low efficiency) or an insufficient amount of water, this is particularly common for those with less experience with drip irrigation.
- Drip irrigation might be unsatisfactory if herbicides or top dressed fertilizers need sprinkler irrigation for activation.
- Drip tape causes extra cleanup costs after harvest. Users need to plan for drip tape winding, disposal, recycling or reuse.
- Waste of water, time and harvest, if not installed properly. These systems require careful study of all the relevant factors like land topography, soil, water, crop and agro-climatic conditions, and

suitability of drip irrigation system and its components.

- In lighter soils subsurface drip may be unable to wet the soil surface for germination. Requires careful consideration of the installation depth.
- most drip systems are designed for high efficiency, meaning little or no leaching fraction. Without sufficient leaching, salts applied with the irrigation water may build up in the root zone, usually at the edge of the wetting pattern. On the other hand, drip irrigation avoids the high capillary potential of traditional surface-applied irrigation, which can draw salt deposits up from deposits below.
- the PVC pipes often suffer from rodent damage, requiring replacement of the entire tube and increasing expenses.

- Drip irrigation systems cannot be used for damage control by night frosts
- Usually operated at lower pressure than other types of pressurised irrigation, reducing energy costs.

CONCLUSION:-

Drip irrigation is used in farms, commercial greenhouses, and residential gardeners. Drip irrigation is adopted extensively in areas of acute water scarcity and especially for crops and trees such as coconuts, containerized landscape trees, grapes, bananas, pandey, eggplant,citrus, strawberries, sugarcane, cotton, maize, and potatoes. Drip irrigation for garden available in drip kits are increasingly popular for the homeowner and consist of a timer, hose and emitter. Hoses that are 4 mm in diameter are used to irrigate flower pots.

Project Report

On

Drip Irrigation System

Submitted to RNB Global University for practical fulfilment for the degree of Bachelors of Agriculture

BY:

Lokesh Kumar

Enrolment No.
RNBGU201900017
Under the Guidance of
Dr. Avinash Sharma

RNB GLOBAL UNIVERSITY
Educating stars for tomorrow

RNB Global University, Bikaner

28th December 2021

Declaration

I, ***Lokesh kumar*** student of ***R.N.B. Global University*** submitting project report entitled **"Drip Irrigation System**" to the ***School of Agriculture,*** is an original piece of work done by me during the period from ***21st Dec. 2021 to 28th dec. 2021***. This project work has not been submitted or presented anywhere or in any other University for the award of any degree/ diploma etc.

Lokesh Kumar
B.Sc.
Semester: 6th
School of Agriculture
RNB Global University

Certificate

This is to certify that Mr. Lokesh Kumar of RNB Global University, School Of Agriculture has successfully completed the project work titled ***Drip Irrigation System*** in partial fulfilment of requirement for the completion of Working Model/Project as prescribed by the RNB Global University, School Of Basic & Applied Sciences. This project report is the record of authentic work carried out by him during the period from ***21***st ***Dec. 2021 to 28th Dec. 2021***. He/She has worked under my guidance.

Internal Examiner External Examiner Dean

9352811504

GSTIN 08AABCK0175A1Z3
PAN 08AABCK0175A1Z3

Khandelwal Irrigation Pvt. Ltd.

H.O. 105, Adarsh Plaza, Khasher Kothi Circle, JAIPUR (Raj.)
Works : E-26, Industrial Area, SRI KARANPUR (Raj.)

This is to certify that Mr. LOKESH KUMAR, S/O Mr. MEGHARAM GURANIYA a student of B.sc Agriculture RNB GLOBAL UNIVERSITY, BIKANER has successfully completed 07 days (21th Dec. 2021 to 28th Dec. 2021) internship program at this Industries. During the period of his internship programs with us he was found punctual, hardworking and inquisitive.

We wish him every success in life

For Khandelwal Irrigation PVT LTD

9352812504.

Authorized signature

RNB Global University Registrar Bikaner

Acknowledgment

I would like to take the opportunity to thank and express my deep sense of gratitude to my mentor and guide Dr. Avinash Sharma, Associate Professor, School of Agriculture, RNB Global University, Bikaner. I am greatly indebted to Dr. Surendra Singh Shekhawat, Dean, School of Agriculture for providing valuable guidance at all stages of the study, their advice, constructive suggestions, positive and supportive attitude and continuous encouragement, without which it would have not been possible to complete the project.

Name of the Student Signature

DRIP IRRIGATION SYSTEM

How do the work ?

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4.	Components and operation	
5.	Advantages and disadvantages	
6.	CONCLUSION	

Chapter – 1

INTRODUCTION

Drip irrigation is a form of irrigation that saves water and fertilizer by allowing water to drip slowly to the roots of many different plants, either onto the soil surface or directly onto the root zone, through a network of valves, pipes, tubing, and emitters. Simcha Blass; November 27, 1897 to July 18, 1982; Hebrew: was an Israeli engineer and inventor. He was a main figure of water development in Israel, initiator, introducer and developer of new drip irrigation systems, inventor of new dripper Micro–irrigation or drip systems are generally more efficient than conventional sprinklers, because they deliver low volumes of water directly to plants' roots, minimizing losses to wind, runoff, evaporation, or overspray Drip irrigations systems use 20 to 50 percent less water than conventional pop-up sprinkler Drip irrigation is a form of irrigation that saves water and fertilizer by allowing water to drip slowly to the roots of many different plants, either onto the soil surface or directly onto the root zone, through a network of valves, pipes, tubing, and emitters. It is done through narrow tubes that deliver water directly to the base of the plant. It is chosen instead of surface irrigation for various reasons, often including concern about minimizing evaporation.

Why is the need of it

- To use water efficiently
- No water to runoff or evaporation.
- It reduces water contact with crop leaves, stems, and fruits. Agricultural chemicals can be applied more efficiently

Chapter – 2

History:-

Primitive drip irrigation has been used since ancient times. Fan Sheng-Chih Shu, written in China during the first century BCE, describes the use of buried, unglazed clay pots filled with water as a means of irrigation.

[1] Modern drip irrigation began its development in Germanyin 1860 when researchers began experimenting with subsurface irrigation using clay pipe to create combination irrigation and drainage systems.

[2] Research was later expanded in the 1920s to include the application of perforated pipe systems.

[3] The usage of plastic to hold and distribute water in drip irrigation was later developed in Australia by Hannis Thill.

[4] Usage of a plastic emitter in drip irrigation was developed in Israel by Simcha Blass and his son Yeshayahu.

[5] Instead of releasing water through tiny holes easily blocked by tiny particles, water was released through larger and longer passageways by using velocity to slow water inside a plastic emitter. The first experimental system of this type was established in 1959 by Blass who partnered later (1964) withKibbutz Hatzerim to create an irrigation company called Netafim. Together they developed and patented the first practical surface drip irrigation emitter.

[6] In the United States, the first drip tape, called Dew Hose, was developed by Richard Chapin of Chapin Watermatics in the early 1960s. Modern drip irrigation has arguably become the world's most valued innovation in agriculture since the invention of the impact sprinkler in the 1930s, which offered the first practical alternative to surface irrigation. Drip irrigation may also use devices called micro- spray heads, which spray water in a small area, instead of dripping emitters. These are generally used on tree and vine crops with wider root zones. Subsurface drip irrigation (SDI) uses permanently or temporarily buried dripperline or drip tape located at or below the plant roots.

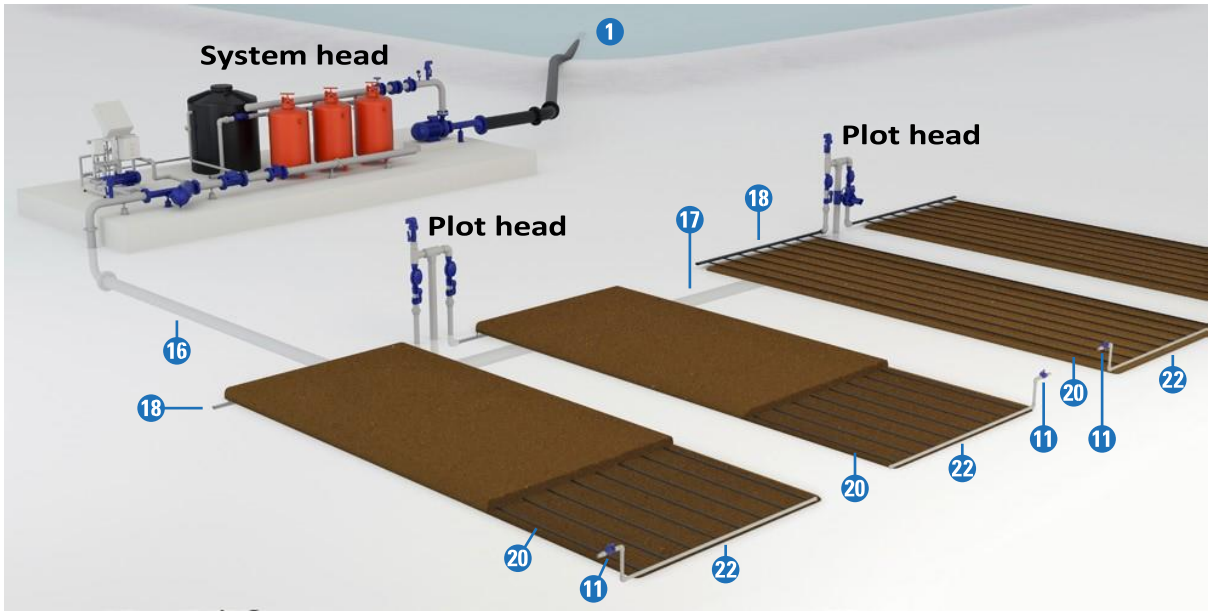
It is becoming popular for row crop irrigation, especially in areas where water supplies are limited or recycled water is used for irrigation. Careful study of all the relevant factors like land topography, soil, water, crop and agro-climatic conditions are needed to determine the most suitable drip irrigation system and components to be used in a specific installation.

Chapter – 3

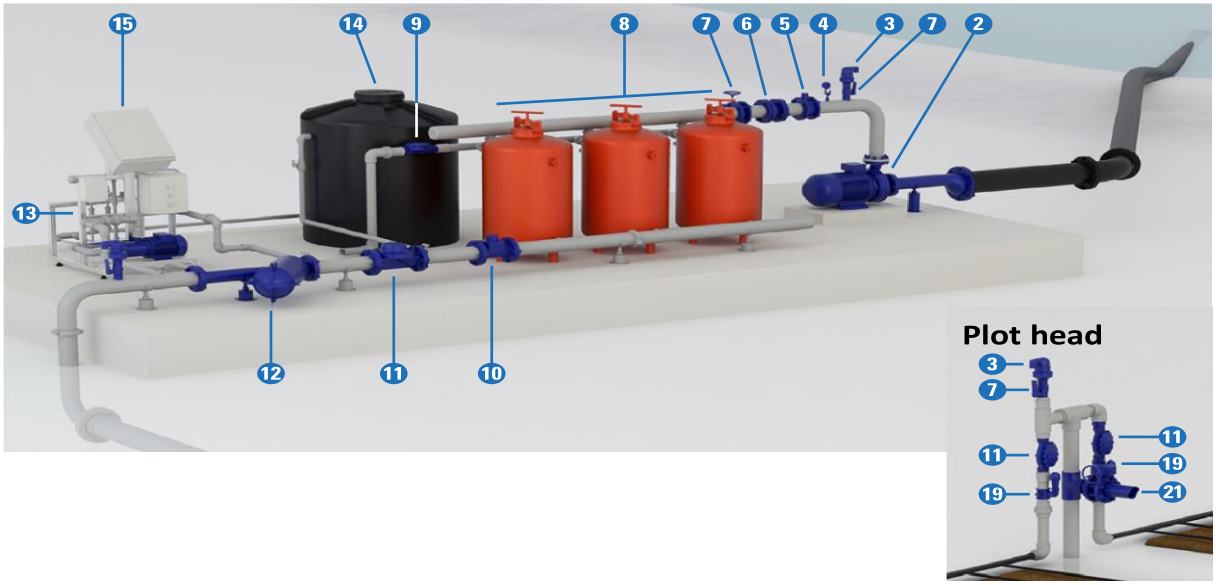
Components and operation:-

1. Water Source
2. Pumping system
3. Distribution system
4. Drip tape (drip tube)
5. Injectors

DRIP IRRIGATION SYSTEM OVERVIEW



System head



A drip irrigation system comprises many components, each one of them playing an important part in the operation of the system. The aim of this chapter is to provide an overview of the drip irrigation system components, their functions and properties. Structure of the drip irrigation system

Water source

There are basically two main types of water sources: groundwater and surface water:

Many existing and potential water supply sources for irrigation systems are derived from surface water, which does not tend to have high levels of salts (with the exception of some coastal areas), and thus systems are usually less prone to formation of precipitates in drippers when using a surface water source.

Surface water, however, tends to introduce biological hazards. If wastewater is being considered as a source, quality and clogging potential will vary depending upon the extent of treatment.

Groundwater is generally of higher quality than surface water. However, iron and manganese levels should be measured, as high levels may lead to dripper clogging, and treatment may be required.

Pumps & pumping stations

Unless the water at the source is supplied at an adequate flow rate and pressure (by municipal or other entity supply, a pre-existing pump upstream from the irrigation system or gravitational pressure*), a pump will be needed to push water from the source through the pipes and drippers. Most irrigation systems include pumps as an integral part of the drip irrigation system.

*__Gravitational pressure__ (also known as hydrostatic pressure) is the pressure at a point in a fluid at rest due to the weight of the fluid above it. If the water source is at a higher elevation than the drippers in the

field, the elevation difference between them will determine the gravitational pressure in the system (e.g. the water level in a tank is 5 meters above the elevation of the pump's axis, the gravitational pressure is 5 meters = 0.5 bar = 7.25 PSI).

Selecting a pump for an irrigation system requires an understanding of the water conditions and local system requirements.

Poor pump selection can lead to high operating costs and shortened pump life; this in turn impacts on the performance and reliability of the whole irrigation system.

When a pump site is selected it is necessary to consider a range of factors, including availability of power, proximity to the development site and water quality issues.

Power source for the pump

The power source for the pump will depend on the availability and accessibility of the energy resource in the local area.

In most instances, electricity is preferred because of reduced labor requirements and higher efficiency, resulting in lower energy cost. Three-phase power is usually required to operate over 10 horsepower (hp) irrigation pumps.

If electricity is not available, alternative power sources such as diesel, gasoline, or solar may be used. The most common alternatives are gasoline engines for small pumps and diesel engines for larger pumps.

Pump types

In most irrigation applications, centrifugal pumps are used.

A centrifugal pump is a rotodynamic pump that adds energy to the water using a rotating impeller. It may be either horizontal-shaft or vertical-shaft (including submersed pumps).

Horizontal pumps are more frequently used to pump water from surface sources such as ponds.

Horizontal-shaft pump **Vertical-shaft pump** **Vertical-shaft submersed pump**

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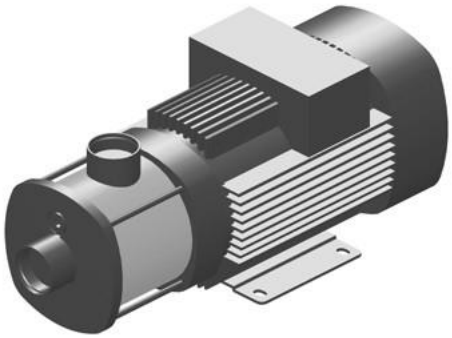
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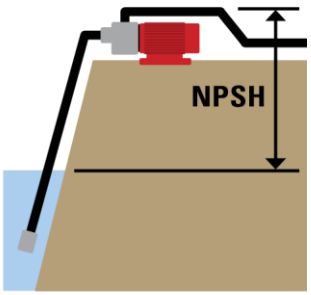


ve system operation and crop production, resulting in a shorter ROI. Pump capacity

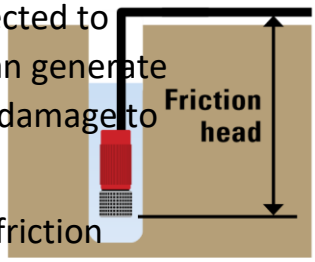
When selecting a pump, four basic factors must be considered:

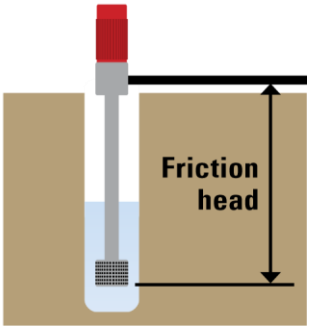
- **Pump discharge (flow rate)** defines the quantity of water supplied by the pump during 1 time unit (units: m^3/hour, liter/second or gallons/hour).
- **Pressure (pressure head)** defines the internal energy of a fluid due to the pressure exerted on its container's walls (also known as static pressure head or static head) (units: bar or psi. 1 bar = 14.5 psi).
- **Net Positive Suction Head (NPSH)** is the required head value (suction lift) at the inlet of a horizontal pump

enabling it to pull water upwards while keeping the water from cavitating* (inherently limited to 0.8 bar net).



*__Cavitation__ - The formation of vapor cavities ("bubbles" or "voids") in a liquid. It usually occurs when a liquid is subjected to rapid changes of pressure that cause the formation of cavities where the pressure is relatively low. When subjected to higher pressure, the voids implode and can generate an intense shockwave causing significant damage to the pump's impeller and chamber.





- **Friction head** - Head loss caused by the friction between the fluid and the inner walls of the shaft enclosure of a vertical pump (or in the outlet pipe of a vertical submersed pump) which pulls the water upwards. Friction loss increases with run length and by the square of the fluid velocity.
  It affects the required pressure and flow rate.

The output pressure of a pump is dependent on pressure head and flow rate (a higher flow rate causes a lower pressure and vice versa, all other variables being unchanged).

Make sure the pump is able to deliver adequate flow rate and pressure for the application. Obtain a performance curve for the pump and have modifications made if it is not adequate - the energy savings alone will easily pay for any upgrades required, which will also impro

Pump selection

The irrigation system design will specify the required pump duty (flow rate and pressure head).

The best pump choice is the pump in which the Best Operating Point (BOP) occurs at this flow rate and pressure head and that can operate at the available suction head.

CAUTION

The farther the pump's Operating Point is from the BOP, the higher the operating costs, the lower the efficiency and the shorter the life expectancy of the pump.

Main considerations:

- How the pump is to be installed and what the suction lift will be (see page 11).
- The performance required in terms of flow rate and pressure head.

Constraints

Pump operating constraints may affect the supply of water and must be considered for effective planning. Common constraints include:

- Energy constraints that do not enable operation of the pump during certain hours of the day.
- Economic constraints that prevent the pump from being operated due to prohibitively high costs of electricity at certain times (days of the week or hours during the day).
- Time constraints where the water source may be unavailable at certain times or days of the week due to the sharing of resources amongst different growers.

NOTE

In order to extend the lifespan of a pump, it should be operated as continuously and evenly as possible (e.g. uninterrupted operation without extreme variations in flow rate).

NOTE

To ensure flow rate stability, the consumption of the individual irrigation shifts should be as equal as possible. wherever possible, It is strongly recommended that the consumption of the smallest shift should not be less than 75% of the consumption of the largest shift.

The pump's performance curve

Each pump must be supplied with its performance curve, as an integral part of the product and the supplier/manufacturer must commit to the data presented in it.

It is very important to keep the pump data documentation available for the whole lifetime of the pump.

The performance curve of the pump (flow rate / pressure range) is indispensable for the design and the construction of the entire irrigation system.

The pump outlet pressure is related to the discharge rate. A change of the flow rate will cause a change in the working pressure. Changes in the flow rate and pressure may be critical, when considering the relationship between the flow rate, the working pressure and the pump's efficiency curve in the planning process.

The steeper the pump's operating curve, the more a change in flow rate will affect the working pressure.

Types of filters

The types of filters used most often in drip irrigation systems are:



Media filters (gravel or sand) are necessary for any surface water source and especially so for wastewater. They consist of a metal or plastic enclosure incorporating small gravel stones or sand, which traps the dirt. This filter includes a flushing system for washing the gravel or sand and returning the dirt to the water source

It is highly recommended to install a screen filter downstream the media filter in order to prevent infiltration of filter medium into the system in the event of a malfunction of the media filter.



Disk filters are used with surface water systems, wells or municipal water sources. These filters are comprised of a series of grooved plastic disks stacked together with a total equivalent screen size ranging from 40 to 400 mesh.

These filters enable deep three-dimensional filtering (e.g. allow entrapping of more particles as water passes through the pores created by the grooves in the surfaces of the filtering disks stacked together in the filter).

Having more surface area than screen filters, disk filters are better suited for higher flow rates.



Screen filters are used mainly as secondary filters with surface water systems or as primary filters with well or municipal water sources. A screen filter is comprised of a cylinder with a net that traps the dirt. This filter is intended for relatively clean water; its use is less common with water from a reservoir or pumped water.

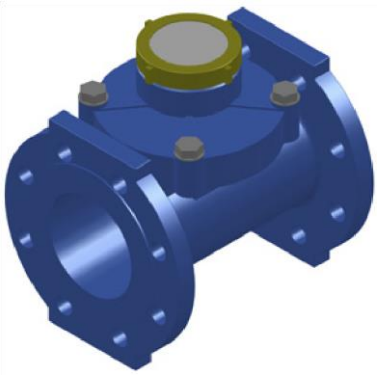
In any type of filter, the dirt returned to the water source should be discharged as far as possible from the suction point. In a streaming source (e.g. a river) the discharge point should be downstream from the suction point.

Water meters and pressure gauges

Make sure your system has a water meter and pressure gauges in working order! Although simple, these gauges are often overlooked or not maintained. These monitoring devices are essential to proper system operation. System flow rate helps detect leaks or clogging, and must be known to determine the application rate for irrigation scheduling purposes. System pressure also helps detect leaks or clogging, and is essential for managing filters, chemical injectors and the whole system within its operating range.

Water meters

Water meters provide information regarding water application that is essential for irrigation scheduling, and for the monitoring of dripper clogging. Propeller meters are the most common type in agricultural applications.

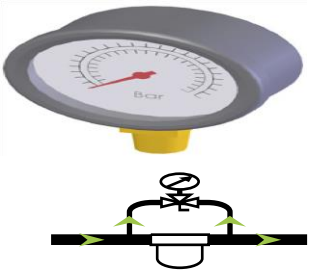


Pressure gauges

Pressure gauges are essential components in a drip irrigation system. Providing vital information concerning the irrigation system, they help in the detection of leaks and clogging and in the management of filters, chemical injectors and in keeping the system in its operating range.



To acquire as accurate as possible data always use a pressure gauge with a scale representing the pressure range of the system. The typical pressure in the system should be roughly at the midpoint of the gauge's scale.



control valve

4 common types of manual control valves are used in drip irrigation systems:

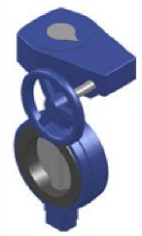
Ball valve

The ball valve is a quarter-turn valve. In a ball valve the closing mechanism is a sphere (ball) with a port through the middle, connected to a lever in line with it that shows the valve's



position. Rotating the lever turns the ball so that when the port is in line with the pipe, flow

will occur, and when perpendicular to the pipe, flow is blocked. Designed to be fully opened or closed and is not suitable for regulating the flow.



Butterfly valve

The butterfly valve is a quarter-turn valve. Operation is similar to that of a ball valve. The closing mechanism takes the form of a disk positioned in the center of the pipe. A rod connected



to the lever passes through the middle of the disc is. Rotating the lever turns the disc either parallel or perpendicular to the flow. Unlike a ball valve, the disc is always present within the



flow; therefore a slight pressure drop is always induced in the flow, regardless of valve position. Designed to be fully opened or closed and is not suitable for regulating the flow.

Gate valve

The gate (sluice) valve opens by lifting a gate (wedge) out of the path of the fluid. When the gate valve is fully open, there is no

obstruction in the flow path, resulting in very low friction loss. Designed to be fully opened or closed and is not suitable for regulating the flow.

Globe valve

A globe valve is the only type of manual valve recommended for regulating the flow with minimum friction loss. It consists of a movable disk plug aligned with a fixed ring located in the stream. Operated by screw action using a handwheel. **Check valve (One-way valve)**

The function of the check valve is to prevent water flow in the opposite direction to that desired. It serves various purposes:



- Installed at the outlet of a pump that pumps water to a field at a higher elevation - protects the pump from the back wave of water hammer.
- Installed at the outlet of a filter, which conveys water to a higher field - prevents water from flowing back through the system's head components.
- Installed upstream from a dosing unit - prevents fertilizers and chemicals infiltration of the water source.

Installed on the inlet pipe of a pump, as a foot valve, enables priming of the

Dosing unit

A dosing unit serves Nutrigation™ and chemigation:

Nutrigation™

The most effective way to increase the yield and quality of a crop is by feeding the plant according to its specific, ever-changing needs. This means delivering the right amount of water and nutrient at the right time. Nutrigation™ refers to injection of nutrients for the plant.

Nutrigation™ is comprised of three stages:

- Dissolving soluble fertilizers (if required).
- Injecting nutrients according to the desired dosing ratios.
- Delivering the precise quantity of nutrients to the plant's root zone.

Chemigation

Chemigation refers to injection of chemicals to prevent or reduce dripper clogging (addition of chlorine, hydrogen-peroxide, acid or others), and the injection of chemicals for crop and soil concerns (herbicides, pesticides and others).

Because the water passages in drippers are relatively small, they can be clogged; therefore, along with filtration, the capability to inject chemicals for dripper clogging control is an important feature.

Benefits of Nutrigation™ and/or chemigation:

- Uniform and timely application of nutrients and chemicals
- Reduced soil compaction due to reduced traffic in fields• Reduced labor requirements, reduced exposure to chemicals
- Reduced environmental contamination.

The design of a chemical injection system involves the selection of injector type and capacity. If the injection system is to be used for Nutrigation™, the injection unit is sized for this use since injection rates for nutrients are usually much higher than injection rates for chemicals such as liquid chlorine or acid.

Any components coming in contact with nutrients, chlorine, or acid should be resistant to corrosion. Some countries require specific types of injectors for agrochemicals. Always follow local laws and chemical labeling requirements.

Nutrients and chemicals may be injected into pressurized drip systems via a variety of methods:

Netafim™ offers a comprehensive array of dosing systems to ensure precise nutrient delivery for any crop, plot size and application.

Relevant terms:

- **Single dosing channel** - for injection of only one type of fertilizer solution at the same time.
- **Multiple dosing channels** - for injection of several fertilizer solutions at the same time or of a single fertilizer solution at a higher rate.
- **Bulk/Quantitative Nutrigation™** - The entire amount of fertilizers is injected in one shot.

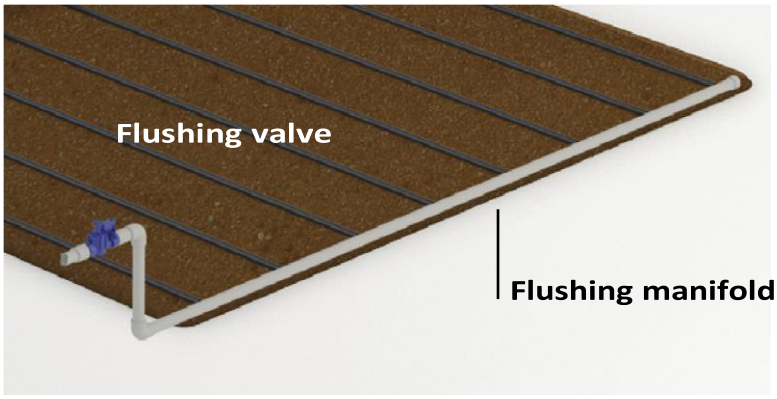
- **Proportional Nutrigation™** - The fertilizers are injected at a constant ratio relative to the flow of irrigation water in the main line.
- **Nutrigation™ based on EC and pH control** - Nutrigation™ is constantly adjusted in order to keep a steady EC and pH level according to the plant's needs.

Can be conveniently accomplished with a controller (Netaflex™, NetaJet™ or FertiKit™) on the dosing system and EC and pH sensors on the dosing unit.

End of dripperlines

Dripperline flushing manifold

The flushing manifold at the end of the dripperlines is fitted with a flushing riser and valve to allow flushing of the dripperlines. When the flushing valve is opened, flow rate and velocity through the dripperlines are greater than those in normal operational mode. The higher



flow velocity allows removal of settled

solids and precipitants from the system, preventing them from clogging the drippers.

Flow regimes may be quite complicated in irregularly-shaped fields with different dripperline lengths within the same irrigation zone.

Since SDI zones with flushing manifolds are closed-loop systems, pressure tends to equilibrate and zones with differing dripperline lengths are designed using an average dripperline length. Flushing manifold pipe sizes are determined in consideration of the flow through the end of the dripperlines during flushing.

The flushing manifold is sized for a flow velocity of at least 0.5 m/sec (1.65 ft/sec) through the dripperlines to ensure sediment removal.

Flushing will temporarily increase the flow requirements of the system, which in turn will decrease the system pressure. In some cases, in order to achieve the desired velocity, especially with pressure regulated zones or with irregular field shapes, the planning of the system may require large amounts of piping to connect the ends of all the dripperlines in a particular section or zone.

A careful balance between flushing velocities in the manifolds and in the dripperlines is critical.

When zones are relatively large, to enable the pumping system to supply the flow rate required to achieve the desired flushing velocity at the ends of the dripperlines, the irrigation zone is divided into two or more flushing manifolds. This separation will allow maintenance of a proper flushing pressure.

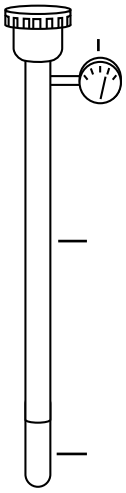
Another solution to supply the flow rate required for flushing is to use an additional pump at the head of the system. The additional pump will be activated only during flushing to add the missing flow rate.

Other flushing solutions

It is possible to flush the dripperlines manually. There are a number of ways to do this:

Solution	Description	Advantages	Disadvantages
Folded dripperline end	• Cut a 5 cm sleeve from the end of the dripperline. • Fold the end of the dripperline in the shape of a “z” and slip the sleeve over the end.	• Least expensive solution. • Requires extensive labor time.	

Tensiometer



A tensiometer measures soil moisture. It is an instrument designed to measure the **Vacuum** tension or suction that a plant's roots must exert to extract water from the soil. This **gauge** tension is a direct measure of the availability of water to a plant.

Tensiometers may be used in any irrigated crop; however, it is with horticultural crops in particular that they provide a suitable method to aid irrigation decisions.

The measurement of soil moisture with a tensiometer provides a valuable tool to schedule irrigation. Tensiometers are particularly useful to determine when to irrigate, and **Water**

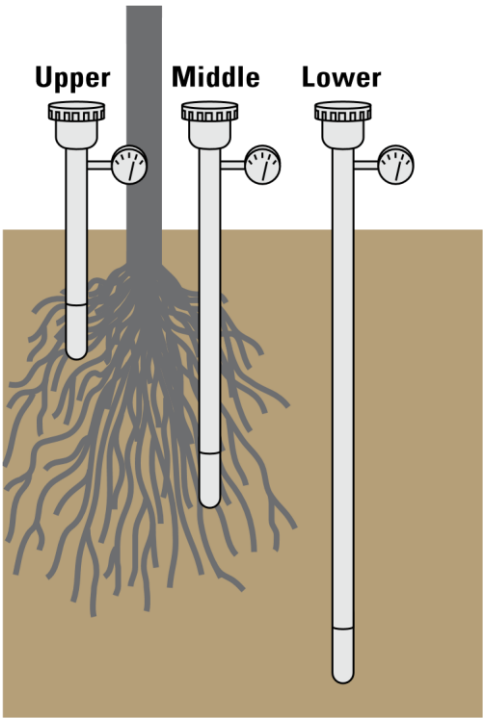
can be used to support a schedule based on estimation of crop water use from reference **filled** crop evapotranspiration (EVT) data. **tube**

A tensiometer consists of an air tight, water filled tube with a porous ceramic tip at the bottom and either a vacuum gauge at the top or a re-sealable rubber bung designed to

insert a portable vacuum meter. During the irrigation season the tensiometer is partly **Porous** inserted into the soil to a suitable depth and, when used properly, will enable improved **ceramic** irrigation management by accurately determining when water should be applied to **tip** maintain optimum crop growth and how much water should be applied to avoid over-irrigating.

Placement of tensiometers

It is recommended to use 3 tensiometers in each tensiometer station. Correct placement is very important. Each tensiometer should be installed with its ceramic tip at a different depth (e.g. 30, 60 and 90 cm or 12, 24 and 36 inches) according to the type of crop (consult an agronomist).



The upper tensiometer placed at the top of the root zone, provides data regarding the development of the wetted bulb in

the soil and indicates when it is time to irrigate.

The middle tensiometer placed at approximately the midpoint of the main fibrous root system (where irrigation water is certain to wet the soil), provides data regarding the wetness of the soil in the root zone. Placement too deep in a shallow rooted crop will result in the crop being irrigated too late and suffering water stress. Shallow placement in a deep rooted crop may result in excessive irrigation and water logging of the deeper roots.

The lower tensiometer placed at the bottom of the root zone serves as a safeguard against excessive irrigation by providing data regarding runoff or deep percolation. Used to determine if too much (never reads above 15 kPa) or too little water (continues to rise) is being applied in each irrigation.

Locating tensiometer stations

In most situations two sites will be needed for each major species or variety





components used in drip irrigation (listed in order from water source) include:

- Pump or pressurized water source
- Water filter(s) or filtration systems: sand separator, Fertigation systems (Venturi injector) and chemigation equipment (optional)
- Backwash controller (Backflow prevention device)
- Pressure Control Valve (pressure regulator)
- Main line (larger diameter pipe and pipe fittings)
- Hand-operated, electronic, or hydraulic control valves and safety valves
- Smaller diameter polytube (often referred to as "laterals")
- Poly fittings and accessories (to make connections)
- Emitting devices at plants (emitter or dripper, micro spray head, inline dripper or inline driptube) In drip irrigation systems, pump and valves may be manually or automatically operated by a controller. Most large drip irrigation systems employ some type of filter to prevent clogging of the small emitter flow path by small waterborne particles. New technologies are now being offered that minimize clogging. Some residential systems are installed without additional filters since potable water is already filtered at the water treatment plant. Virtually all drip irrigation equipment manufacturers recommend that filters be employed and generally will not honor warranties unless this is done. Last line filters just before the final delivery pipe are strongly recommended in addition to any other filtration system due to fine particle settlement and accidental insertion of particles in the intermediate lines. Drip and subsurface drip irrigation is used almost exclusively when using recycled municipal waste water. Regulations typically do not permit spraying water through the air that has not been fully treated to potable water standards. Because of the way the water is applied in a drip system, traditional surface applications of timed-release fertilizer are sometimes ineffective, so drip systems often mix liquid fertilizer with the irrigation water. This is called fertigation; fertigation and chemigation use chemical injectors such as diaphragm pumps, piston pumps, or aspirators. The chemicals may be added constantly whenever the system is irrigating or at intervals. Fertilizer savings of up to 95% are being reported from recent university field tests using drip fertigation and slow water delivery as compared to timed-release and irrigation by micro spray heads. Properly designed, installed, and managed, drip irrigation may help achieve water conservation by reducing evaporation and deep drainage when compared to other types of

irrigation such as flood or overhead sprinklers since water can be more precisely applied to the plant roots. In addition, drip can eliminate many

diseases that are spread through water contact with the foliage. Finally, in regions where water supplies are severely limited, there may be no actual water savings, but rather simply an increase in production while using the same amount of water as before. In very arid regions or on sandy soils, the preferred method is to apply the irrigation water as slowly as possible. Pulsed irrigation is sometimes used to decrease the amount of water delivered to the plant at any one time, thus reducing runoff or deep percolation. Pulsed systems are typically expensive and require extensive maintenance. Therefore, the latest efforts by emitter manufacturers are focused toward developing new technologies that deliver irrigation water at ultra-low flow rates, i.e. less than 1.0 liter per hour. Slow and even delivery further improves water use efficiency without incurring the expense and complexity of pulsed delivery equipment. An emitting pipe is a type of drip irrigation tubing with emitters pre-installed at the factory with specific distance and flow per hour as per crop distance. An emitter restricts water flow passage through it, thus creating head loss required in order to emit water in the form of droplets. This head loss is achieved by friction / turbulence within the emitter.

Chapter – 4

Advantages and disadvantages:-

ADVANTAGES:

- Fertilizer and nutrient loss is minimized due to localized application and reduced leaching.
- Water application efficiency is high if managed correctly
- Field levelling is not necessary.
- Fields with irregular shapes are easily accommodated.
- Recycled non-potable water can be safely used.
- Moisture within the root zone can be maintained at field capacity.
- Soil type plays less important role in frequency of irrigation.
- Soil erosion and Soil salinity is lessened.
- Weed growth is lessened.
- Water distribution is highly uniform, controlled by output of each nozzle.
- Labour cost is less than other irrigation methods.
- Variation in supply can be regulated by regulating the valves and drippers.
- Fertigation can easily be included with minimal waste of fertilizers.
- Foliage remains dry, reducing the risk of disease.

DISADVANTAGES:

- Initial cost can be more than overhead systems.
- The sun can affect the tubes used for drip irrigation, shortening their usable life. (This article does not include a discussion of the effects of degrading plastic on the soil content and subsequent effect on food crops. With many types of plastic, when the sun degrades the plastic, causing it to become brittle, the estrogenic chemicals (that is, chemicals replicating female hormones) which would cause the plastic to retain flexibility have been released into the surrounding environment.)
- If the water is not properly filtered and the equipment not properly maintained, it can result in clogging
- For subsurface drip the irrigator cannot see the water that is applied. This may lead to the farmer either applying too much water (low efficiency) or an insufficient amount of water, this is particularly common for those with less experience with drip irrigation.
- Drip irrigation might be unsatisfactory if herbicides or top dressed fertilizers need sprinkler irrigation for activation.
- Drip tape causes extra clean up costs after harvest. Users need to plan for drip tape winding, disposal, recycling or reuse.
- Waste of water, time and harvest, if not installed properly. These systems require careful study of all the relevant factors like land topography, soil, water, crop and agro-climatic conditions, and suitability of drip irrigation system and its components.
- In lighter soils subsurface drip may be unable to wet the soil surface for germination. Requires careful consideration of the installation depth.
- most drip systems are designed for high efficiency, meaning little or no leaching fraction. Without sufficient leaching, salts applied with the irrigation water may build up in the root zone, usually at the edge of the wetting pattern. On the other hand, drip irrigation avoids the high capillary potential of traditional surface-applied irrigation, which can draw salt deposits up from deposits below.

- the PVC pipes often suffer from rodent damage, requiring replacement of the entire tube and increasing expenses.
- Drip irrigation systems cannot be used for damage control by night frosts
- Usually operated at lower pressure than other types of pressurised irrigation, reducing energy costs.

CONCLUSION: -

Drip irrigation is used in farms, commercial greenhouses, and residential gardeners. Drip irrigation is adopted extensively in areas of acute water scarcity and especially for crops and trees such as coconuts, containerized landscape trees, grapes, bananas, pandey, eggplant,citrus, strawberries, sugarcane, cotton, maize, and potatoes. Drip irrigation for garden available in drip kits are increasingly popular for the homeowner and consist of a timer, hose and emitter. Hoses that are 4 mm in diameter are used to irrigate flower pots.

RNB GLOBAL UNIVERSITY Bikaner

December 2021

Bsc. (Hons) Agriculture

Summer internship project report

2021-22

(Internship)

At

SARAS DAIRY JAIPUR

Poject Report

Submitted to RNB Global University for potential fullfilment for the degree Bsc.agriculture

By :-

MADHU CHOUDHARY

(RNBGU201900019)

Under the guidance of

Dr. Avinash Sharma

(Assitant proffesor school of RNB Global University)

PROJECT SEMESTER PROGRAM

Two week Internship Report

Name of Student	Madhu Choudhary
Enrolment No	RNBGU201900019
Program	Bsc (Hons) agriculture
Semester	5th semester
Intership	One week
Date	23rd December- 29th December
Name of plant	Saras dairy
Training related to	Processing and packaging in milk
Tasks	Assigned task related to milk weight, packaging

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Acknowledgement

First of all, I'm grateful to RNB Global University Bikaner for successfully arranging the internship program for us. I also thank to Mr. Anil gour saras dairy Jaipur for recruiting me as an intern and creating such a wonderful environment for learning.

I am really fortunate that, I had the kind association as well as supervision of mr sonila chaturvedi deputy manager of quality control. His exemplary guidance, constant encouragement, and careful monitoring throughout the internship are so great that, even my most profound gratitude is not enough.

In my internship I was mentored by quality control lab staff member . They have all provided a huge amount of their precious time and effort for me. I feel really lucky to be able to work under there guidance.

I also take this opportunity to express a deep sense of gratitude to all the employees and workers of plant for presenting us such an amazing experience. They are all really wonderful people, and I will never forget these days of mine at URMUL.

At last, I would also like to thank my parents who supported me and help me in finalizing my intership and my friend who helped me a lot during my intership.

Declaration

I, Madhu hereby declare that the presented report of Internship entitled on Milk Processing and packaging, milk supply is uniquely prepared by me after the completion *of one week of work experience in SARAS DAIRY JAIPUR*

I also confirm that the report is only prepared for my academic requirement, not for any other purpose. It might not be used with the interest of the opposite party of the cooperation.

Place:- JAIPUR **Madhu**

Date-

जयपुर डेयरी

जयपुर जिला दुग्ध उत्पादक सहकारी संघ लि.

JAIPUR ZILA DUGDH UTPADAK SAHAKARI SANGH LTD.

(AN ISO 22000 : 2005 CERTIFIED ORGANISATION)

JZDUSS/TRG/21/ 3672.96 Date: 30.12.2021

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Ms. Madhu Choudhary** student of B.Sc. (Agriculture) from **RNB Global University, Bikaner** has completed training from 23.12.2021 to 29.12.2021 at Jaipur Zila Dugdh Utpadak Sahakari Sangh Ltd. Jaipur (Raj.).

During the training period her performance and behavior has been found very good. We wish her all success in her life.

Student Receipt Number :- 155/61 Dated 22.12.2021

30/12/2021

Dy. Manager (Training)

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Introduction

Jaipur dairy is also known as Jaipur zila dugdh utpadak sahakari sangh LTD.. Jaipur it is situated near Gandhi nagar railway station Jaipur. It is fully equipped with modern fluid milk plant facilities.it is a state level apex cooperation organization. The federation has a 15 Boad of directors developed village milk cooperation network.

The federation has chief executive designed as managing director. It was registered in March 1975 at jalmahal in Jaipur. In June 1981 it was shifted to JLN Marg , malviya nagar. Ascetic packing station (APS) was established in April 1984 . There are 21 plant of saras in all over rajasthan and the plant in which we visited dairy cooperative societies.

Towards fulfillment of the national objective of marking India self sufficient in milk production. Initially this union did not have the processing facilities. It started with a modest beginning of procuring 250 liters of milk pre day.

The initial handling capacity of the dairy plant was 1.5 lack Lt . Per day with a powder plant of 10 mt per day capacity, wich was commissioned in the year 1981 under operation flood program 1 by national daily development board for service of thousands of rural farmer families of Jaipur. Over the years, there has not been looking back for Jaipur dairy and the significant growth has been made in all fields i.e procurement, processing and production of various milk and milk products and marketing there of under the brand name of SARAS

The plant is managed and operated by well qualified, competent and experienced managerial codre and highly mativated work force to provide highest quality of products and best of the service to our esteemed customers. To further improve the efficiency and effectiveness of the plant performance, Jaipur dairy (Jaipur zila dugdh utpadak sahakari sangh LTD. Jaipur) Jaipur milk union is having a very iarge network of about 216 bulk milk cooler at 203 DCS with chiling capacity of 4.24 lac LT milk per day

RMRD (Raw Milk Reception Dock)

Introduction:
Raw milk reception dock is the collection center for milk in the dairy, it is the very first section in the dairy plant, it collects good quality of milk from the village in thecans and tankers.

Process following RMRD:

1. Unloading: the motor truck carrying the filled milk cans is backed up to the unloading platform. The milk cans are unloaded manually. Then the milk cans are assembled for grading.

2. Grading: this refers to the classification of milk on the basis of its quality, it is well known that the quality of the finished product depends on that of the raw material used.

The principle of grading is based on organoleptic (sensory) tests, such as those for odor, taste, appearance, touch, acidity, sediments etc. These are included under platform tests.

These are as follow:

I.Smell (odor): the lid of the can is removed and shaking the can vigorously with the help of plunger and sample is taken and raised to the nose, if any off- flavors appears rejection of the can take place.

II.Appearance: by regularly observing the milk in each can after the odor test has been made, any floating extraneous matter, off-color or partially be noted in any of the can that can is rejected. The milk should be normal in color, free from churned fat globules and reasonably free from floating extraneous material.

III.Temperature: The temperature at which milk is delivered is often an indicator of its quality. A temperature of 5℃ or below is satisfactory

IV.Acidity test: It has already been pointed out that natural or apparent acidity of milk does not make the milk taste sour, nor does it affect the normal properties of milk its quality or its behavior towards processing heat. Nevertheless, the acidity test does have its proper place on the milk it is always well to have a certain acidity above which milk should not be accepted.

V.Lactometer reading: The addition of water to milk results in the lowering of its lactometer reading. Hence this test is applied for detection of adulteration of milk with water.

3. Weighing: This is essential step making payments for milk. The milk in cans is dump into the weigh tank manually. The milk in tanker is measured on a weigh bridge.

4. Filtration and Chilling and Storage: from the weighing balance the milk is transferred to the dump tank and from there it is passes through filter for the removal

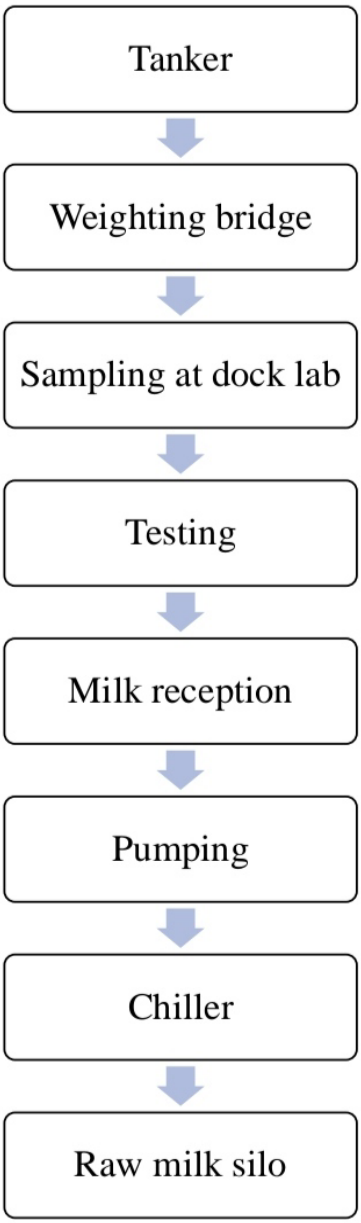
of foreign matter like dust, dirt etc. After that it passes to chilling plate capacity of 20 KLPH to chill the milk at 7℃ for deactivation of bacteria and to increase the shelf life of the milk than milk goes to RMT (raw milk storage tank).

5. Cane washing: after reception of milk, cans and lids go to can washer which is straight through type cane washer, capacity to wash 400 cans in 1hr.





Flow chart of Milk Reception



Milk processing

Processing section is the heart of any dairy. Hence to preserve the milk and improve its

nutritional quality by subjecting it to different process depending upon the final process. Processing section perform various operations such as clarification, pasteurization, standardization, homogenization, chilling.

1. Pasteurization:

The term pasteurization refers to the process of heating every particle of milk to

at least 63℃C for 30 min, or 72℃C for 15 seconds, in approved and properly operated equipment. After pasteurization, the milk is immediately cooled to 5℃C or below.

Objective:

To render milk safe for human consumption by destruction of pathogenic microorganism (target organism).

To improve the keeping quality of milk by destruction of almost all spoilage organism (85- 99%). But it does not kill all vegetative cells or spores (Bacillus and Clostridium spp.)

2. Cream separator:

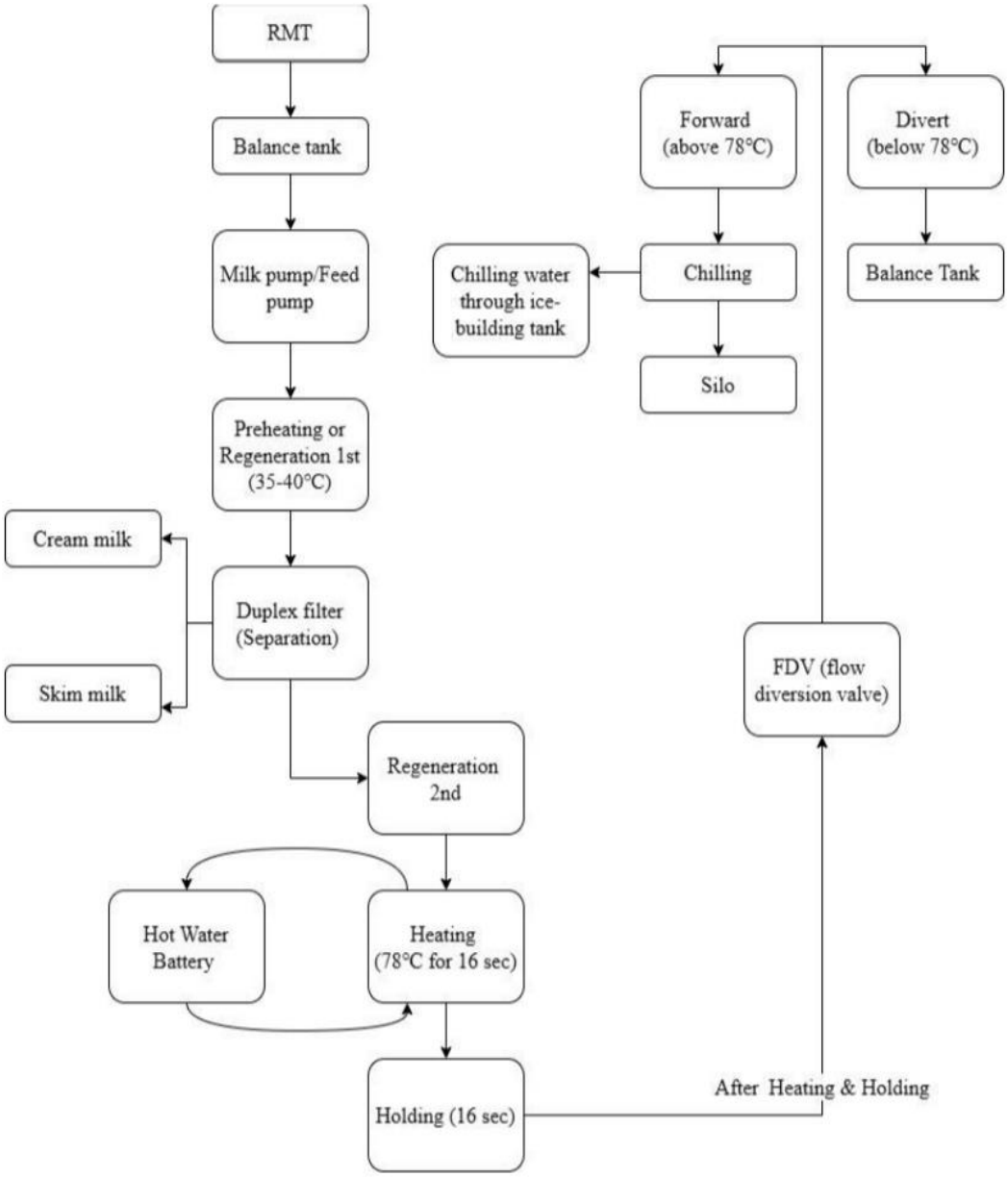
Cream separation based on average density difference of fat and skim milk.

When centrifugal force is subjected to apply due to variation in density separate from one another. Separation of skim milk (about 0.05% fat) and cream (35-40% fat) Separation of milk at 45℃.

3. Standardization:

Standardization of milk refers to the adjustment, i.e., raising or lowering, of the fat and/ or solid not fat % of milk to desired value, so as to conform to the legal or other requirement prescribed.For standardize, to reduce the fat percentage of milk with SMP or skimmed milk is added and to increase the fat percentage cream is added. After standardization milk is stored insilos, sample is taken for analysis of fat, SNF etc. when result is ok milk is used for further process.

Flow chart of milk processing:-


RMT
Balance tank
Milk pump/Feed pump
Preheating or Regeneration 1st (35-40°C)
Cream milk
Duplex filter (Separation)
Skim milk
Regeneration 2nd
Hot Water Battery
Heating (78°C for 16 sec)
Holding (16 sec)
Forward (above 78°C)
Divert (below 78°C)
Chilling water through ice-building tank
Chilling
Balance Tank
Silo
FDV (flow diversion valve)
After Heating & Holding

Milk pouch packaging

Introduction:

Most food consumed is far removed in time and space from the point of its production. Packaging is a necessary aid for the storage and distribution of food. Food is packaged for four primary reasons:

• To protect the product from contamination. by micro- organisms, macro- organisms and filth

• to retard or to prevent either losses or gain of moisture

• to shield the product from oxygen and light

• to facilitate handling.

Pouch material specification:

Adjust the pouch length

500ml	140-150mm
1000ml	15-225mm

Pouch Name	FAT	SNF
Saras standard	4.5%	8.5%
Saras Toned	3%	8.5%
Saras double Toned	1.5%	9.8%

Butter Milk and Curd

Buttermilk is a popular refreshing drink prepared from the by-product produced during the preparation of butter/ makkhan from curd. Butter milk is also known as Mattha, or Chhach in northern part of India.

Curd is well fermented milk product consumed by, large section of the population throughout the country, as a part of the daily diet or as are fresh beverage.

Composition	**Standard**
Fat	Less than 1%
S.N.F	5.0-5.5%-
Acidity	0.4- 1.0%

• *Buttermilk packed in same machine which is used for milk packaging.*

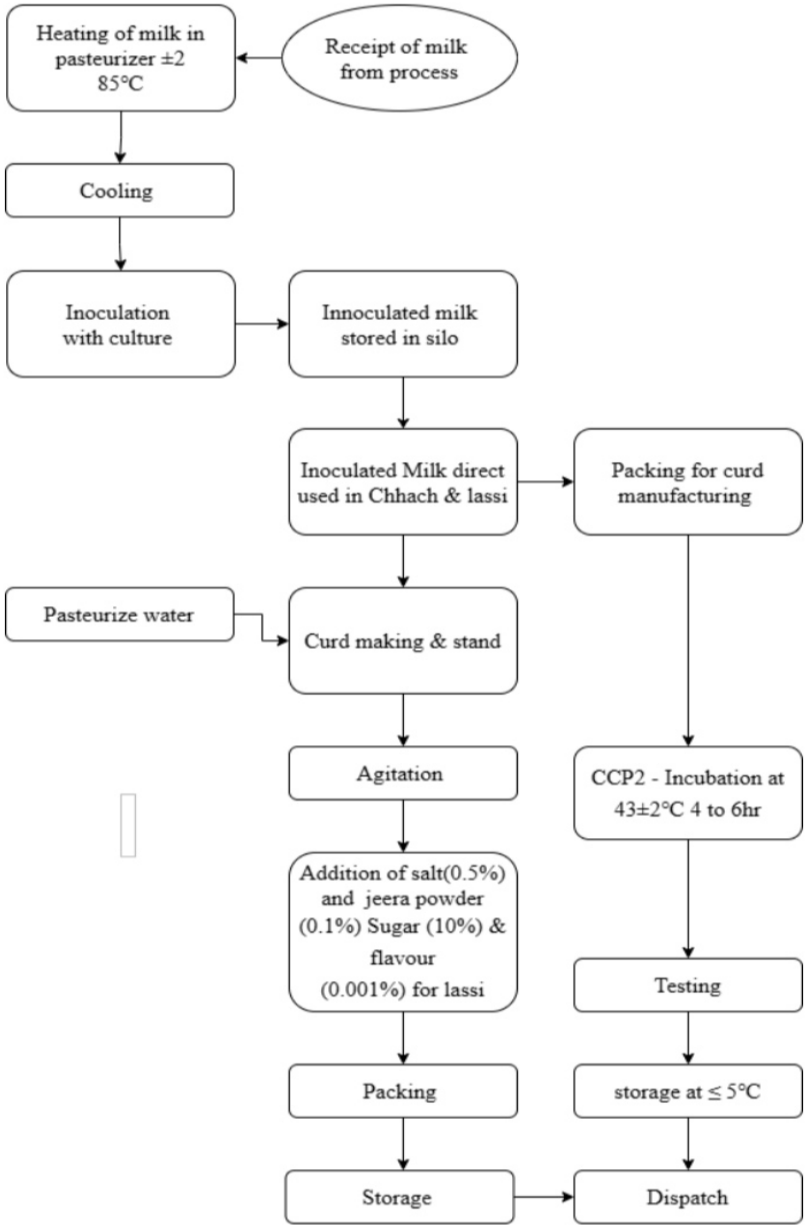


Curd Packaging Machine



Packaged curd

Flow chart of Buttermilk and Curd manufacturing:



Ghee

Ghee production is the largest segment of milk utilization in India. Most of the dairy plants have ghee production facility to meet the demand of the market as well as to utilize the excess fat in profitable manner. Since simple technology involved in ghee production and relatively less

investment for ghee production unit as already plant have steam boiler with them. Following are the various processes available in the industry to make ghee including Desi method which is following largely at rural household level.

Ghee pouch packing material:

Composition: LLDPE +LLDP

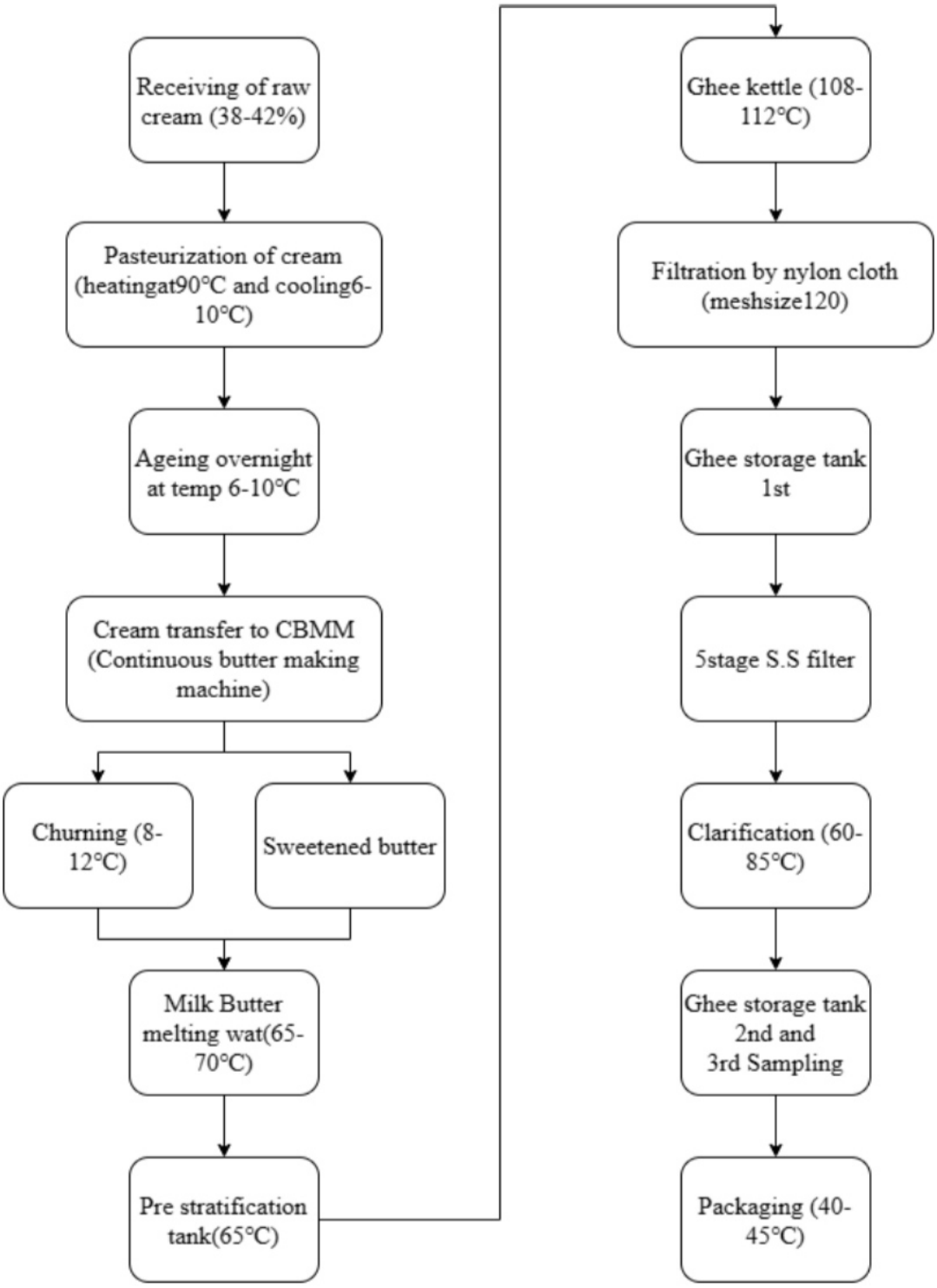
Shelf life: Best before3month/6month /1year from the date of packaging.

Yield:

The yield of ghee from cream or butter is influenced by fat content of raw material



Flow chart:


Receiving of raw cream (38-42%)
Pasteurization of cream (heatingat90°C and cooling6-10°C)
Ageing overnight at temp 6-10°C
Cream transfer to CBMM (Continuous butter making machine)
Churning (8-12°C)
Sweetened butter
Milk Butter melting wat(65-70°C)
Pre stratification tank(65°C)
Ghee kettle (108-112°C)
Filtration by nylon cloth (meshsize120)
Ghee storage tank 1st
5stage S.S filter
Clarification (60-85°C)
Ghee storage tank 2nd and 3rd Sampling
Packaging (40-45°C)

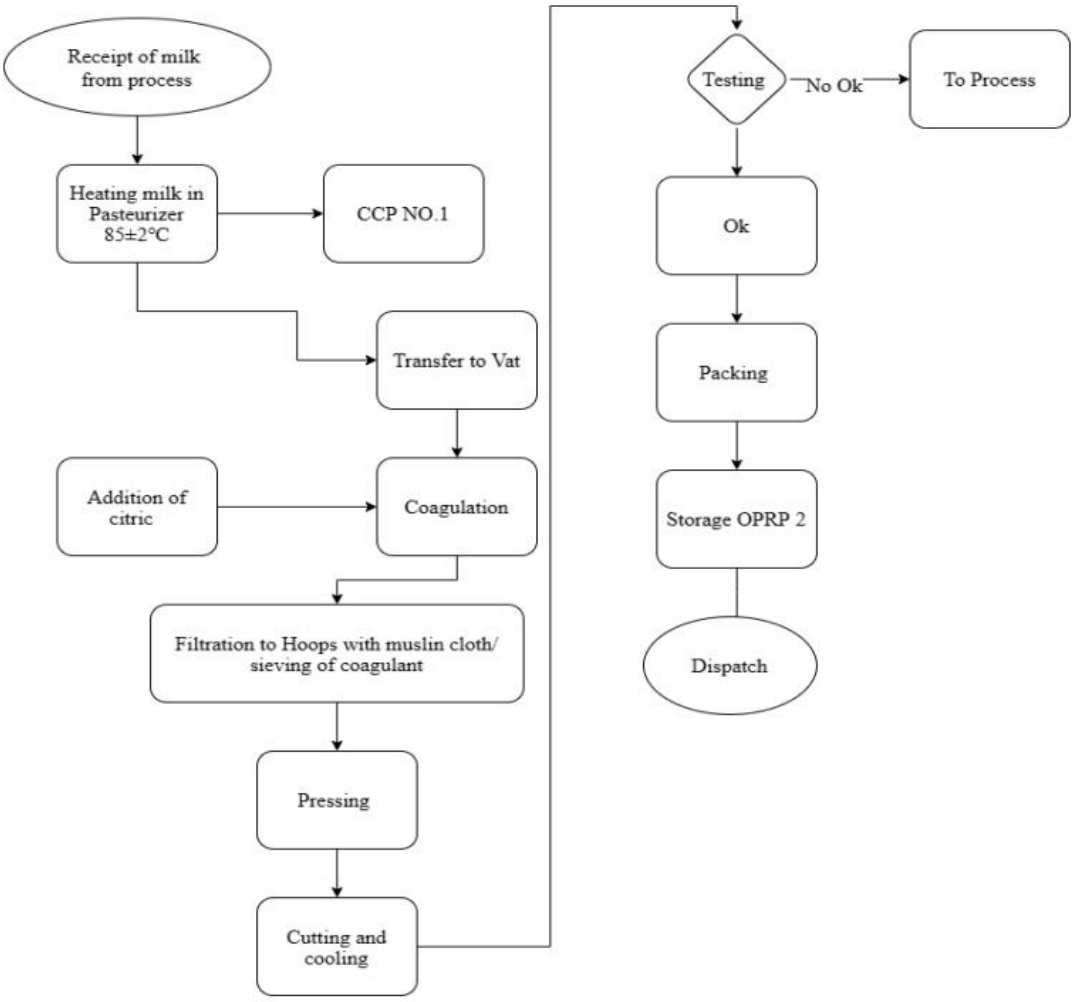
Paneer

Introduction: Is obtained by the acid and heat coagulation of milk at high temperature. The phenomenon of coagulation involves the formation of large structure aggregates of protein in which milk fat and other colloidal and soluble milk solids are entrained with whey. Good quality paneer is characterized by white colour, sweetish, mildly acidic, nutty flavours pongy body and closely-knit texture.

Composition:

Fat 13-14% Moisture 70% Shelf life 15 days from date of packaging

Paneer flow chart:



Experiment no.1

Fat test by Gerber method

Introduction:

The traditional standard reference method for fat analysis is base d on either weight or volumetric determination of the fat content of milk, the Gerber test is widely used all over the world

Principle:

The test is a volumetric method in which fat is separated from milk by centrifugal force. Sulphuric acid is used to dissolve the protein that form membrane around the fat and amyl alcohol is added to improve the separation of fat from other solids.

Equipment and materials:

Sulphuric acid, amyl alcohol, butyrometer, stoppers and shaker stand for butyrometer made from a suitable grade of rubber or plastics, pipette, water bath, centrifuge.

Procedure:

- Add10ml Sulphuric acid into the butyrometer.
- Fill10.75ml pipette with milk and deliver the sample into butyrometer
- Add 1ml of amyl alcohol using1ml pipette and close
- Shake the butyrometer in the shake stand until no white particles are seen and invert it a few times.
- Put the butyrometer in the water bath for 5min.
- Take it out and dry with a cloth, put it in the centrifuge, placing two butyrometer diametrically opposite, centrifuge at maximum speed of 4min.
- Transfer the butyrometer, stoppers downward into water bath for 3- 10 min.
- Bring lower end of fat column on to a main graduation mark by slightly withdrawing stopper.

Setup for fat test:



Result appeared as:



Internship Values:-

❖ The values I understood included:

- Practical knowledge of field.
- How to do quality test.
- Importance of time punctuality.
- Importance of Dress Code.
- Good communication skills.
- How to build team work skills.
- How to build confidence.

Conclusion

During one weeks of Internship, I have accumulated various experience and wide new knowledge through the work had been assigned to me. From my internship at saras , I was able to get a better understanding of practical knowledge of field while performing testing and other plant experiment. I enjoyed working with the plant incharge and other associates to devise and implement different strategies. I had also got the opportunity to see the working of large machinery, how a plant work, packaging and manufacturing. Overall, I found the internship experience to be positive, and I'm sure I will be able to use the skills I learned in my career later.

A

Survey Report

On

"A Study on Consumer Buying Behavior for the Cadbury Products"

Project Report

Submitted to RNB Global University for Partial fulfillment for the degree of B.sc. Agriculture (Urmul Dairy Plant)

By:-

Minakshi

RNBGU201900025

Under the Guidance of

Mr. Avinash Sharma



RNB Global University, Bikaner

December 2021

Acknowledgment

First of all, I'm grateful to RNB Global University Bikaner for successfully arranging the internship program for us. I also thank to Mr. S.N Purohit MD URMUL DAIRY BIKANER for recruiting me as an intern and creating such a wonderful environment for learning

I am really fortunate that, I had the kind association as well as supervision of Mr. R. S. Sengar deputy manager of quality control. His exemplary guidance, constant encouragement, and careful monitoring throughout the internship are so great that, even my most profound gratitude is not enough

In my internship I was mentored by quality control lab staff member Mrs. Manila, Mrs. Jyotsna and Miss Sonali Ma'am. They have all provided a huge amount of their precious time and effort for me. I feel really lucky to be able to work under there guidance.

I also take this opportunity to express a deep sense of gratitude to all the employees and workers of plant for presenting us such an amazing experience. They are all really wonderful people, and I will never forget these days of mine at URMUL.

At last, I would also like to thank my parents who supported me and help me in finalizing my internship and my friend who helped me a lot during my internship.

Minakshi

CERTIFICATE OF INTERNAL (UNIVERSITY) RESEARCH GUIDE

Tin : 08381301453

उत्तरी राजस्थान सहकारी दुग्ध उत्पादक संघ लिमिटेड
UTTARI RAJASTHAN SAHAKARI DUGDH UTPADAK SANGH LIMITED

(An ISO 9001 & IS : 15000 (HACCP) Certified Organisation)

Ref No. Urmul/Estt./2022/ 11859 Date : 5.01.2022

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Minakshi, B.Sc. (Agriculture) student of RNB Global City, Bikaner has successfully completed her 2 weeks internship at this organization w.e.f. 21st December, 2021 to 3rd January, 2022.

She has shown keen interest in learning and knowing the practical aspects of the subject. During the tenure of her training period, her conduct/performance was found satisfactory.

We wish her a bright and excellent future.

5-1-22

(S.N. Purohit)
Managing Director

Urmul Dairy Plant, P.B. No. 55, N.H. 15, BIKANER - 334002 (Raj.)
Ph. MD.: 0151-2225500, 502, PBX:0151-2225502, Fax:0151-2225556, 0151-2225501 (Telefax)
Pur.: 2225504, Plant : 2225501, 503, Mkt.: 2225507 E-mail : rcdfbik1.jp1@gmail.com

SUMMARY

URMUL DAIRY PLANT EXECUTIVE SUMMARY The project report titled "Acceptance of Urmul Dairy products at retail level". This project report draws significant information about the Urmul Retal Sores. The customer's perception for the Urmul Dairy products & the peoblem faced by the Reailen. It gives the information that where the Urmul Dairy need improve the level of customer satisfaction and the role of Retailers for the Urmul Dairy product's distribution. I have done my project under the guidance and supervision of Mr. S.H. Choudhary The analysis and conclusion was carried out from the data collected through various primary and secondary resources (Market survey. Company Website namely Books, company's executives, e-Newspapers, e-Magelaes , jounals, interviews and many other.)

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Declaration

I, Minakshi hereby declare that the presented report of Internship entitled on Milk Processing and packaging, milk supply is uniquely prepared by me after the completion of one months of work experience in **URMUL DAIRY BIKANER**.I also confirm that the report is only prepared for my academic requirement, not for any other purpose. It might not be used with the interest of the opposite party of the cooperation.

Place: **Bikaner**
Minakshi
Date:

Introduction

A dairy is a business enterprise established for the harvesting or processing (or both) of animal milk – mostly from cows or buffaloes, but also from goats, sheep, horses, or camels –for human consumption. A dairy is typically located on a dedicated dairy farm or in a section of a multi-purpose farm (mixed farm) that is concerned with the harvesting of milk.

URMUL Dairy (Uttar Rajasthan Milk Union Limited) was set up in the arid region of Bikaner district on August 29, 1972 as part of the Operation Flood II a cooperative body registered under cooperative act 1956.

With the objective to ameliorate the socioeconomic status of the rural population by providing them market of their milk at their door step, irrespective of their geographical conditions.

Urmul started its business from 9th July 1973 with the initial membership of 64 societies and initially collected 1500 litres of milk per day. Presently there are 851 registered and 333 Proposed societies covered by 52 milk routes and collecting about 80 thousand litres of milk per day against the installed capacity of 150 thousand litres of milk. No one had ever thought that there could exist a tremendous amount of milk in the hot thar desert of Bikaner District. Villages are flushed with milk in this District. During August 1983 Urmul collected 269 thousand litres of milk in a day which was a record collection.

The products manufactured at the plant are Butter, Ghee, and Skim milk powder, Cheddar Cheese, and Paneer besides milk being packed in sachets. Urmul started manufacturing of Chach, Lassi, Dahi and Shrikhand which has gained a very much positive response from the local market.

The product manufactured are marketed with the help of RCDF, Jaipur under a common brand name “SARAS”.

Objectives:-[1] Processing and packaging in milk.

[2] Record and relationship management in milk supply.

OBJECTIVES :1

RMRD (Raw Milk Reception Dock)

Introduction:

Raw milk reception dock is the collection center for milk in the dairy, it is the very first section in the dairy plant, it collects good quality of milk from the village in the cans and tankers.

Process following RMRD:

1. Unloading: the motor truck carrying the filled milk cans is backed up to the unloading platform. The milk cans are unloaded manually. Then the milk cansare assembled for grading.

2. Grading: this refers to the classification of milk on the basis of its quality, it is well known that the quality of the finished product depends on that of the raw material used.

The principle of grading is based on organoleptic (sensory) tests, such as those for odor, taste, appearance, touch, acidity, sediments etc. These are included under platform tests.

- These are as follow

  [1]• **Smell (odor)**: the lid of the can is removed and shaking the can vigorously with the help of plunger and sample is taken and raised to the nose, if any off- flavors appears rejection of the can take place.

  [2]• **Appearance**: by regularly observing the milk in each can after the odor test has been made, any floating extraneous matter, off-color or partially be noted in any of the can that can is rejected. The milk should

be normal in color, free from churned fat globules and reasonably free from floating extraneous material.

[3]•**Temperature**: The temperature at which milk is delivered is often an indicator of its quality. A temperature of 5℃ or below is satisfactory

[4]•**Acidity test**: It has already been pointed out that natural or apparent acidity of milk does not make the milk taste sour, nor does it affect the normal properties of milk its quality or its behavior towards processing heat. Nevertheless, the acidity test does have its proper place on the milk it is always well to have a certain acidity above which milk should not be accepted.

[5]•**Lactometer** reading: The addition of water to milk results in the lowering of its lactometer reading. Hence this test is applied for detection of adulteration of milk with water.

3. Weighing: This is essential step making payments for milk. The milk in cans is dump into the weigh tank manually. The milk in tanker is measured on a weigh bridge.

4. Filtration and Chilling and Storage: from the weighing balance the milk is transferred to the dump tank and from there it is passes through filter for the removal of foreign matter like dust, dirt etc. After that it passes to chilling plate capacity of 20 KLPH to chill the milk at 7℃ for deactivation of bacteria and to increase the shelf life of the milk than milk goes to RMT (raw milk storage tank).

5. Cane washing: after reception of milk, cans and lids go to can washer which is straight through type cane washer, capacity to wash 400 cans in 1hr.

Raw milk Processing

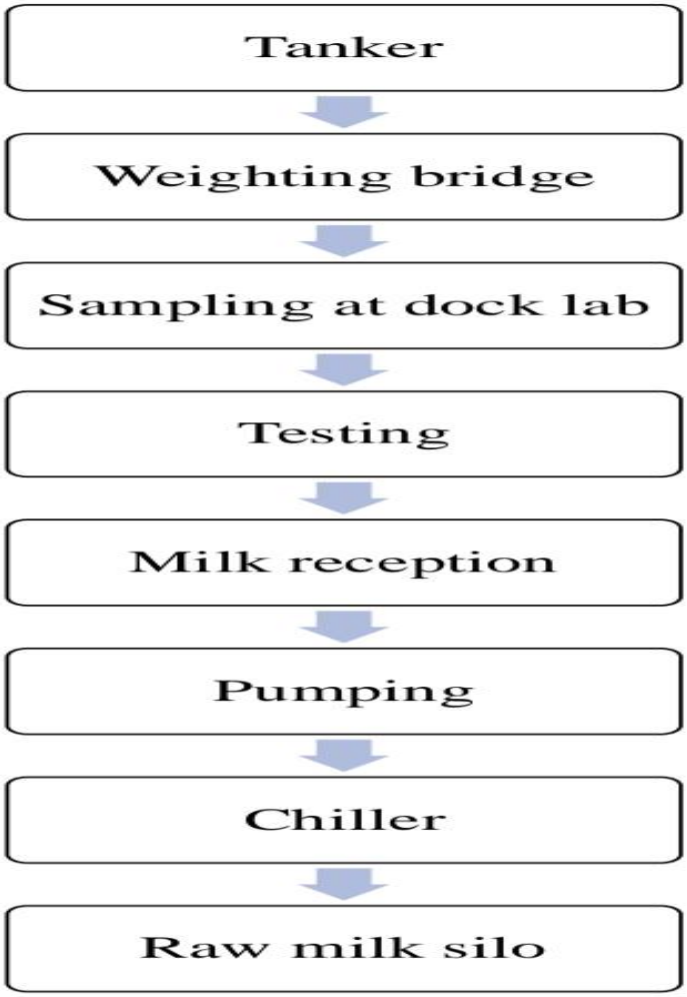


Figure [1]: Raw Milk Receiving



Figure [2]: Raw Milk Receiving

Flow chart of Milk Receptio



Milk processing

Processing section is the heart of any dairy. Hence to preserve the milk and improve its nutritional quality by subjecting it to different process depending upon the final

process. Processing section perform various operations such as clarification, pasteurization, standardization, homogenization, chilling**.**

1. Pasteurization:

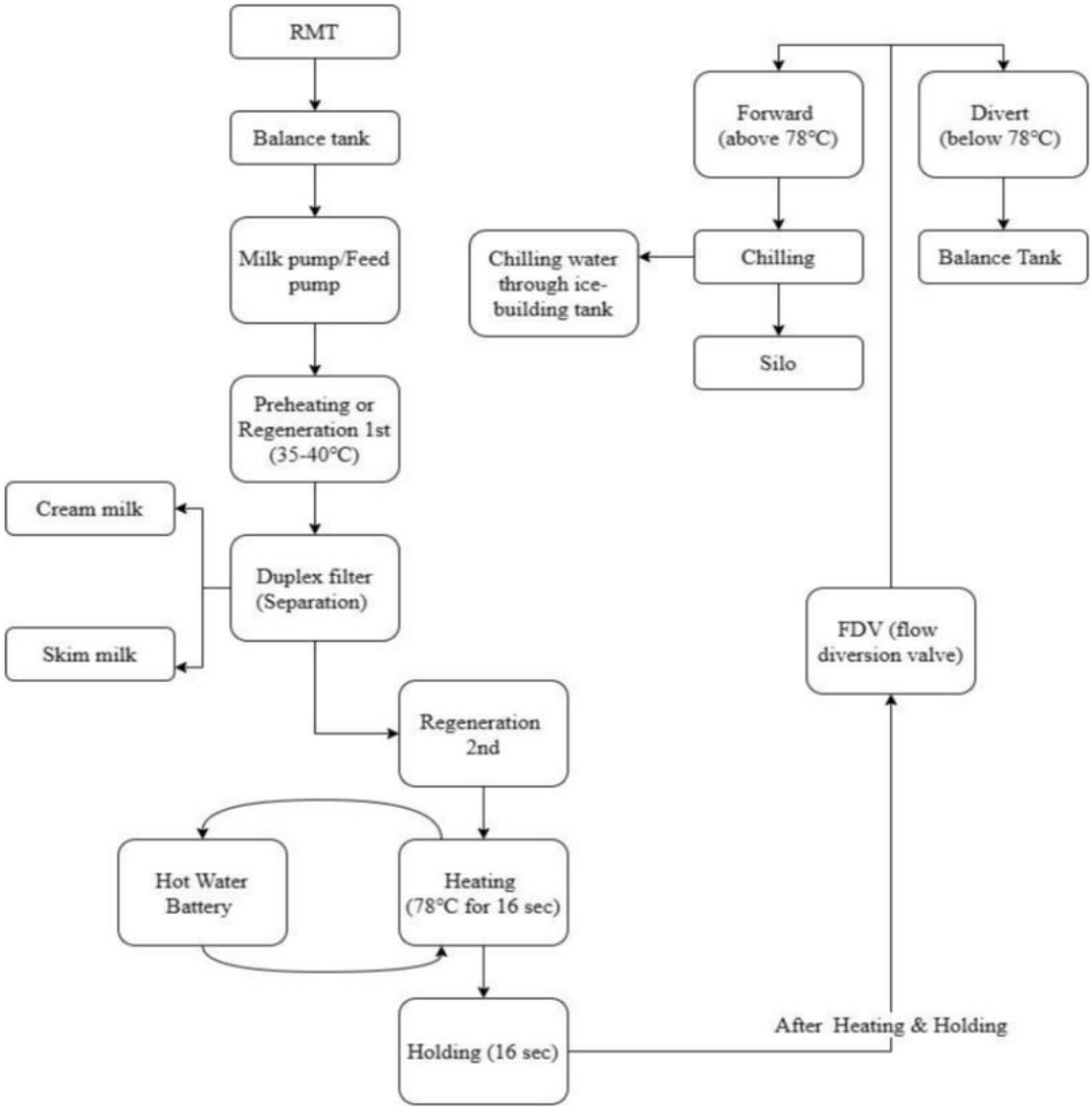
The term pasteurization refers to the process of heating every particle of milk to at least 63℃C for 30 min, or 72℃C for 15 seconds, in approved and properly operated equipment. After pasteurization, the milk is immediately cooled to 5℃Cor below.

Objective:
To render milk safe for human consumption by destruction of pathogenic microorganism (target organism).To improve the keeping quality of milk by destruction of almost all spoilage organism (85- 99%). But it does not kill all vegetative cells or spores (Bacillus and Clostridium spp.)

2. Cream separator:
Cream separation based on average density difference of fat and skim milk. When centrifugal force is subjected to apply due to variation in density separate from one another. Separation of skim milk (about 0.05% fat) and cream (35-40% fat) Separation of milk at 45℃.

3. Standardization:
Standardization of milk refers to the adjustment, i.e., raising or lowering, of the fat and/ or solid not fat % of milk to desired value, so as to conform to the legal or other requirement prescribed.For standardize, to reduce the fat percentage of milk with SMP or skimmed milk is added and to increase the fat percentage cream is added. After standardization milk is stored in silos, sample is taken for analysis of fat, SNF etc. when result is ok milk is used for further process

Flow chart of milk processing:



Milk pouch packaging

Introduction:

Most food consumed is far removed in time and space from the point of its production. Packaging is a necessary aid for the storage and distribution of food. Food is packaged for four primary reasons**:**

- To protect the product from contamination. by micro-

  Organisms ,macro- organisms and filth
- To retard or to prevent either losses or gain of moisture
- To shield the product from oxygen and light
- To facilitate handling

Pouch material specification:

Adjust the pouch length

500ml	140-150mm
1000ml	15-225mm

Pouch Name	**FAT**	**SNF**
Saras Standard	4.5%	8.5%
Saras toned	3%	8.5%
Saras double Toned	1.5%	9.8%

Milk packaging machine:



Figure: 3 Milk Packaging Machine

Packing Milk

Dubble Toned Milk



Toned Milk



Figure: 4 Milk Packing Pouch

Butter Milk and Curd

Buttermilk is a popular refreshing drink prepared from the by-product produced during the preparation of butter/ makkhan from curd. Butter milk is also known as Mattha, or Chhach in northern part of India.

Curd is well fermented milk product consumed by, large section of the population throughoutthe country, as a part of the daily diet or as are fresh beverage.

Composition	**Standard**
Fat	Less than 1%
S.N.F	5.0-5.5%
Acidity	0.4-1.0%

Butter machine



Figure: 5 Butter machine

Curd packing Machine

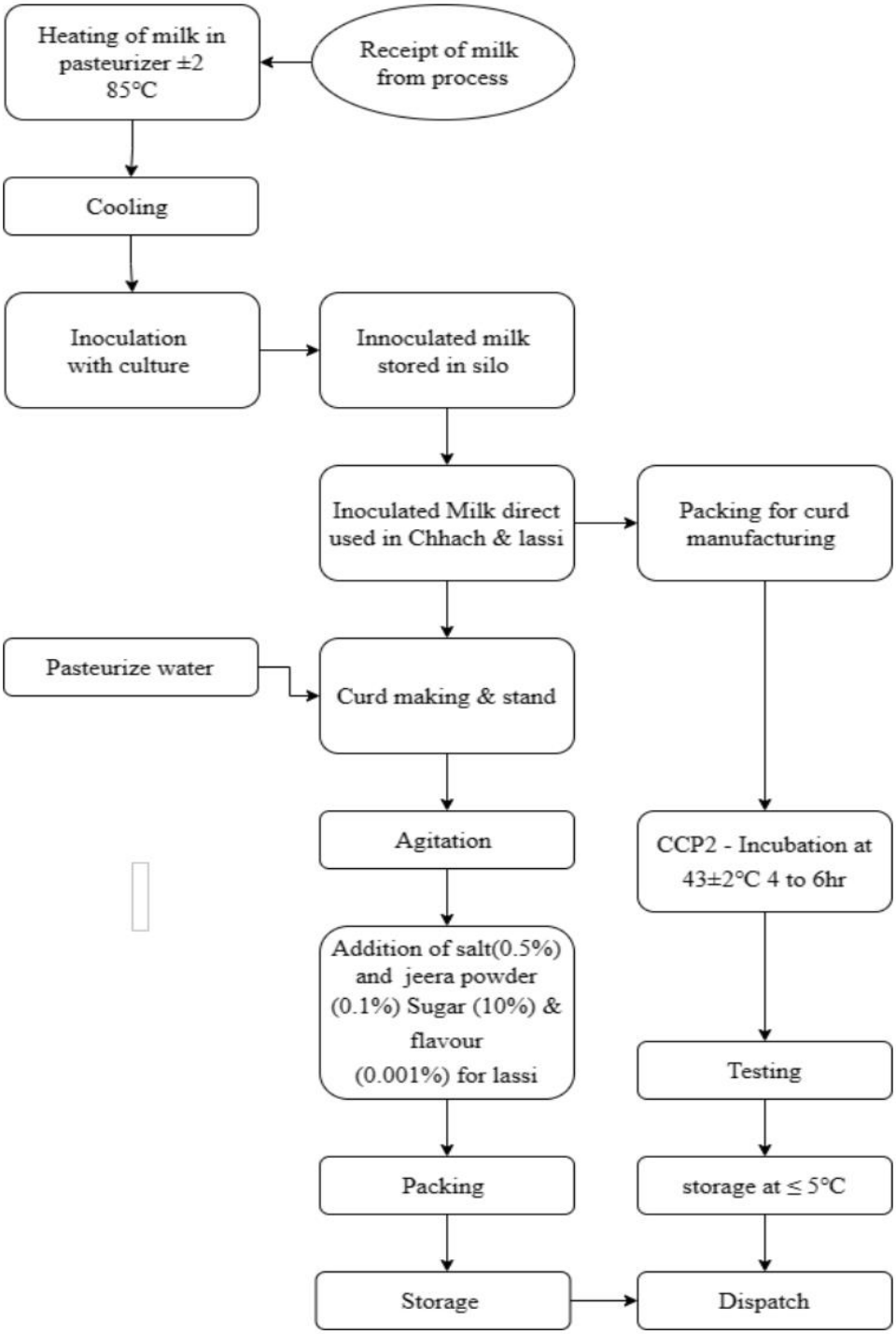






Figure:6 Packaged curd

Flow chart of Buttermilk and Curd manufacturing:



Ghee

Ghee production is the largest segment of milk utilization in India. Most of the dairy plants have ghee production facility to meet the demand of the market as well as to utilize the excess fat in profitable manner. Since simple technology involved in ghee production and relatively less investment for gheeproduction unit as already plant have steam boiler with them.

Following are the various processes available in the industry to make ghee including Desi method which is following largely at rural household level.

Ghee pouch packing material:

Composition: LLDPE +LLDP

Shelf life:
Best before3month/6month /1year from the date of packaging.

Yield:
The yield of ghee from cream or butter is influenced by fat content of raw material.

Ghee Packagi Machine



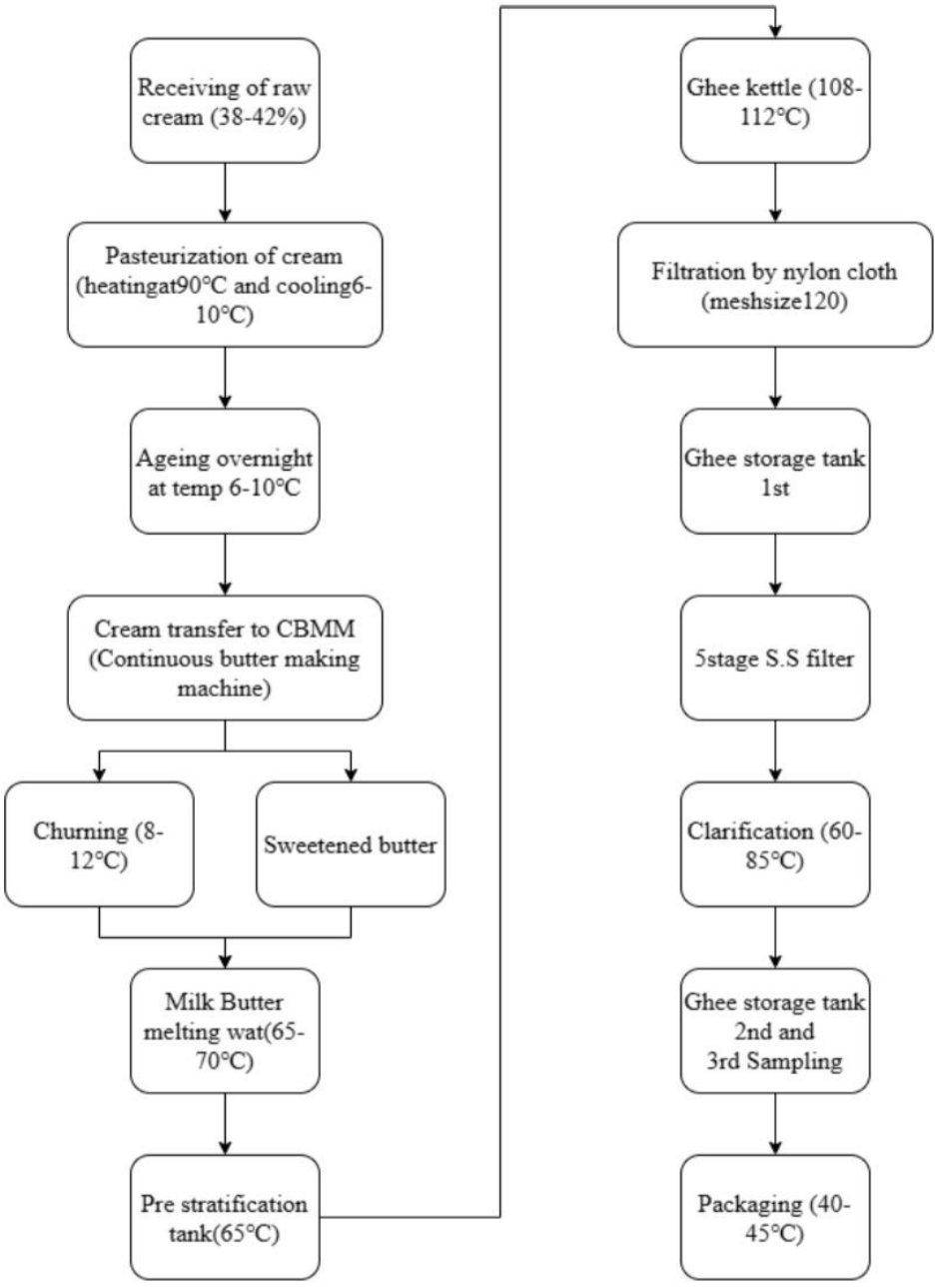




Figure: 7 Ghee Packaging

Flow Chart

Flow chart:



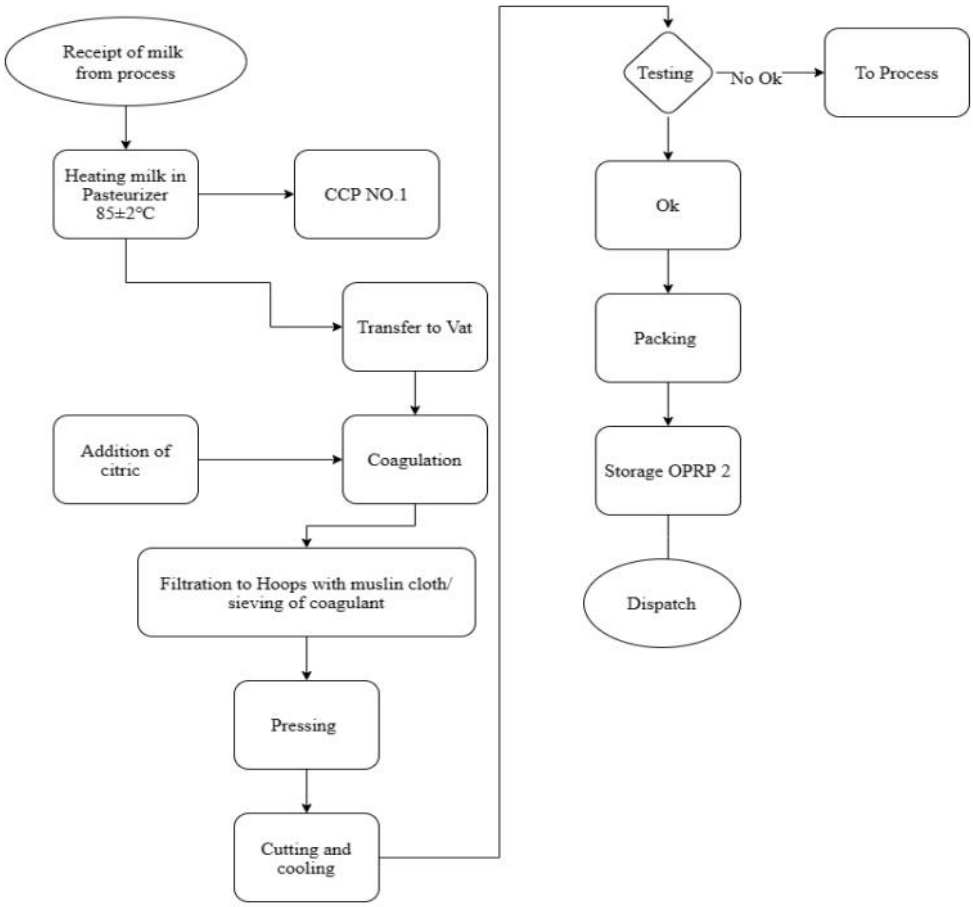
Paneer

Introduction: Is obtained by the acid and heat coagulation of milk at high temperature. The phenomenon of coagulation involves the formation of large structure aggregates of protein in which milk fat and other colloidal and soluble milk solids are entrained with whey. Good quality paneer is characterized by white colour, sweetish, mildly acidic, nutty flavours pongy body and closely-knit texture.

Composition:

Fat 13-14% Moisture 70% Shelf life 15 days from date of packaging

Paneer flow chart:



Paneer Packaging





Figure:8 Paneer Packaging

Experiment no.1

Fat test by Gerber method

Introduction:
The traditional standard reference method for fat analysis is base d on either weight or volumetric determination of the fat content of milk, the Gerber test is widely used all over the world

Principle:
The test is a volumetric method in which fat is separated from milk by centrifugal force. Sulphuric acid is used to dissolve the protein that form membrane around the fat and amyl alcohol is added to improve the separation of fat from other solids.

Equipment and materials:
Sulphuric acid, amyl alcohol, butyrometer, stoppers and shaker stand for butyrometer made from a suitable grade of rubber or plastics, pipette, water bath, centrifuge.

Procedure:
- Add10ml Sulphuric acid into the butyrometer.
- Fill10.75ml pipette with milk and deliver the sample into butyrometer
- Add 1ml of amyl alcohol using1ml pipette and close
- Shake the butyrometer in the shake stand until no white particles are seen and invert it a few times.

- Put the butyrometer in the water bath for 5min.
- Take it out and dry with a cloth, put it in the centrifuge, placing two butyrometer diametrically opposite, centrifuge at maximum speed of 4min.

- Transfer the butyrometer, stoppers downward into water bath for 3- 10 min.
- Bring lower end of fat column on to a main graduation mark by slightly withdrawing stopper.

Setup for fat test:



Result appeared as:



Internship Values:-

❖ The values I understood included:

- Practical knowledge of field.
- How to do quality test.
- Importance of time punctuality.
- Importance of Dress Code.
- Good communication skills.
- How to build team work skills.
- How to build confidence.

Conclusion

During Two weeks of Internship, I have accumulated various experience and wide new knowledge through the work had been assigned to me. From my internship at Urmul, I was able to get a better understanding of practical knowledge of field while performing testing and other plant experiment. I enjoyed working with the plant incharge and other associates to devise and implement different strategies. I had also got the opportunity to see the working of large machinery, how a plant work, packaging and manufacturing. Overall, I found the internship experience to be positive, and I'm sure I will be able to use the skills I learned in my career later.

SUMMER INTERNSHIP PROJECT REPORT

ON

R R FOODS MANUFACTURER & EXPORTER OF MASALA RAAJ SPICES, NAGAUR

Submitted to RNBGU for partial fulfilment for the degree of

B.sc (Hons.) Agriculture

BY

Neha Vyas

Enrolment No. -

RNBGU201900040

Under the Guidance of

Mr. Avinash Sharma



RNB GLOBAL UNIVERSITY

DECEMBER 2021

ACKNOWLEDGEMENT

The internship opportunity I had with R R FOODS Manufacturer & Exporter of MASALA RAAJ spices was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of it.

Bearing in mind previous, using this opportunity to express my deepest gratitude and special thanks to the Mr. Avinash Sharma who in spite of being extraordinarily busy with her duties, took time out to hear , guide and keep me on the correct path and allowing me to carry out my project at their esteemed organization and extending and extending organization and extending during the training .

I am also very thankful to internship guide Mr. Manoj kumar Maheshwari who helped me to learn all the experiments and processes performed at Masala raaj .

I perceive this opportunity as big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement, to attain desired career objectives. Hope to continue cooperation with all of you in the future.

Neha Vyas [B.sc Agriculture 5th sem.]

DECLARATION

I Neha Vyas , Hereby declare that the project report entitled " food quality test and machinery " submitted by me to RNB Global University in partial fulfilment of the requirement for the award of the degree of B.sc in Agriculture is a record of confide project work carried out by me under the guidance of Mr. Avinash Sharma .

I further declare that this is the record of the authentic work carried out by me during summer internship program for the academic Year 2019 – 23 and has not be submitted to any other University or institute towards the award of any degree .

Signature of the student



R R FOODS

Manufacturer & Exporter of MASALA RAAJ Spices

Training Certificate

This is certified that Miss Neha Vyas D/o Sri Rajesh Vyas has completed her training in Spices (Ground Spices, Whole Spices, Blended Spices) in our organization.

Period of Training : 16th Dec. 2021 to 31st Dec. 2021

Place of Training : R R FOODS, Chimrani, Nagaur – 341 001 (Raj.)

FSSAI : 12215035000187

For R R FOODS

(Partner)

9672287228, 9414209187

info@masalaraaj.com www.masalaraaj.com

N.H. 62, Chimrani, Jodhpur Road, Nagaur - 341001 (Raj.)

MASALA RAAJ Spices

CERTIFICATE OF EXTERNAL COMPANY (GUIDE)

CERTIFICATE OF INTERNAL
(UNIVERSITY) FACULTY GUIDE

Enrolment No. – RNBGU201900040

This is to certify that Miss Neha Vyas of B.sc (Agriculture) has completed this summer internship / Research project under my supervision in partial fulfilment for the award of the B.sc agriculture from RNB Global University , Bikaner .

Course Name : summer internship

Course code : 20018500

SIGNATURE OF INTERNAL FACULTY GUIDE

SIGNATURE OF STUDENT

PLACE : RNB GLOBAL UNIVERSITY , BIKANER

DATE :

ABSTRACT

Ramratan Ramdhan , the parent company of Masala Raaj , started its journey in the food grain industry in 1907 . Within a few years of its inception , the company grew to become one of the leading grain trading unit in Nagaur , Rajasthan . As time passed , the company grew and started its spice Brand ‘ Masala Raaj ’ .

We’re one of the few companies in the spices industry that has chosen to stick to its humble beginnings dating back to 1907 . Quality, high standard and Efficiency diffuse through all the core functions of our company . At Masala Raaj , we value our supplier relationships . it is paramount to Masala Raaj that the raw materials we procure are of highest quality available .

we invest significant time and resources in systems designed to ensure that all products are highly hygienic and totally safe for consumption . As part of this process , we audit our production plant regularly to make sure they meet stringent industry – leading standards in food safety , quality and ethical and transparent client relationships .

we wish to work with our broad range of multi-national clients with utmost honesty and integrity . while sophisticated in knowledge , values and experience ,we pride ourselves in providing each of our customers with the individualized attention and professional services they desire .

Here I have studies that all the products are made using selected raw materials procured from best in their category , processed in an isolated and hygienic environment and are untouched by human hand and are packed in a state-of-the-art automated packaging plant

EXECUTIVE SUMMERY

R R FOODS Manufacturer & Exporter of MASALA RAAJ Spices is a pioneer in Nagaur and more than one field . The products range offered to customers is quite extensive . There are around many varieties of masalas .

The company adds a new product item to its list every 16 to 18 months and thus keeps with the competitive market . The products are packaged hygienically untouched by hands , by high-tech, fully automatic machines . The packets are bright and attractive and look modern & thus appeal to the customer .

The prices of the product are administered that is set by the management . company provides prices on point of price policy .

The distribution channels of the company are strong and extensive . The company employs agents as wall as dealers for distribution . There are more than 200 dealers presently working for the company. The company maintains good relations with its dealers and agents .

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INTRODUCTION

1.1 INTRODUCTION TO THE COMPANY:

Ramratan Ramdhan , the parent company of Masala Raaj , started its journey in the food grain industry in 1907 . Within a few years of its inception, the company grew to become one of the leading grain trading unit in Nagaur , Rajasthan . As time passed, the company grew and started its spice Brand ‘Masala Raaj ’ .

Directors of R R FOODS Manufacturer & Exporter of MASALA RAAJ are Mr. Manoj kumar Maheshwari, ramratan

There are about 120 workers/employees in the company. They are provided with all the basic amenities a company should provide with, like group insurance for all the workers, medical aids, mess, etc., The company provides its employees with bonus, festival offers and likewise from time to time. They are also provided with leave encashment scheme.

The production takes place on a large scale. To provide its customers with the best quality of masala the company has a well-established quality

control lab. Every day the first lot is checked and then other lots are made, if the first one is fine.

There are usually no complaints for the quality of the products. To meet the rising demand the company has installed many automatic machines and even installed high tech. Packaging inclines procured from flex and digipack. The machines used for production are checked on a regular basis and are replaced or repaired as and when required.

Hygienic Packaging :

During the packing of grinded powder, there is no use of spilled products and it is strictly obligatory to wear gloves ans masks, and thus the packing process is followed through in an unsoiled and hygienic way.

Double Door Policy :

Our Double Door policy helps our production facility be free of dust and other minute particles that hinder the quality we promise to provide. The Level-One layer door keeps the dust away and the Level-Two door helps in refining and purifying the air entering our facility.

Quality Assurance by Thorough Cleansing :

All our machines are cleaned thoroughly by skilled workers with an eye for any kind and degree of contamination post production. In addition to this, the entire factory is cleaned and maintained every day to eliminate and mitigate any kind of contamination that hinders us from delivering on our promise of quantity.

SPICES :-

In the culinary arts, the word spice refers to any dried part of a plant, other than the leaves, used for seasoning and flavouring a recipe, but not used as the main ingredient. Why not the leaves? Because the green leafy parts of plants used in this way are considered herbs .

Every other part of the plant, including dried bark, roots, berries, seeds, twigs, or anything else that isn't the green leafy part, is considered a spice. Today, India is the world's largest consumer, producer, and exporter of spices.[1] They even created the Indian Insitute of Spices Research devoted to the study of spices.

Examples of Spices

- Cinnamon is the bark of a tree.

  Cardamom is a seed pod.

- Allspice is a dried berry.
- Cloves are dried flower buds.

These are all examples of spices. Note too that spices are used in dried form while herbs can be used either fresh or dried.

1.2 PRODUCTION :

Production and operation management are concerned itself with the conversion of input outputs using physical resources so as to provide the desired utility utilities of farm, place possession or state or a combination there of to the customer while meeting the other organizational objectives of effectiveness efficiently and adaptability.

(1). Selection Criterion for Location:-

Since Masala industry are considered to be complementary to each other therefore choice for location of this high tech. Plant in Nagaur is obvious. companies have tried to open this Masala industry in other parts of India but are not successful reason may be due to climatic condition. The factors, which influenced to open it in Nagaur, are: -

(a). Raw Material Processing :-

The raw material is obtained and stored in bulk quantities in the deep freeze. The process of cleaning the raw material is carried out in a separate dust proof chamber**.**

(b). Use of Pallets :-

The employment of ground and wall pallets helps to keep the raw material moisture free**.**

(c). Rooftop Drying :-

The raw material is dried on rooftops instead of roads and grounds to avoid adulteration in the product. The dried material is then transferred to the grinding zone in plastic bags in lieu of Jute bags.

(d). Isolated Grinding Zone :-

The process of grinding is done in an isolated grinding zone which allows only authorized staff members.

(e). **Availability of land:-**

Since Nagaur is industrially a poor city land is no problem to start an enterprise her

(f). Availability of workers:-

Since 100 years this industry has grown to many folds and the no of persons employed are growing day by day and thus skilled labour for Masala production are easily available here and this company also inducts people from west Bengal and Bihar which are cheaply available in every part of county so it is also an advantage for this industry in Nagaur.

(g). Availability of water:-

It is a miracle done in desert by presence of Indira Gandhi Nahar pariyojna. Now due to the availability of water it has given opportunities for many entrepreneurs to convert their dreams into reality at this place.

(2). Capacity management:

Capacity management is very important for achieving the organizational objectives of efficiency, customer service and overall effectiveness.

In maximum capacity is 20 tons per day and utilization is also 100% because they are working in full demand condition.

Working shifts:

They are working on the basis of single shift but can adjust on double shift if needed for skilled labour thee shift starts at 4.00 am to 12.00 noon and thereafter Masala is treated and packed for general staff shift start form 9.00am from 6.00 p.m.

(3). Raw Material :

The raw material required for the industry are condiments and spices growing in the our field and export too.

Chapter 1

REVIEW OF LITERATURE

2.1 Food Science



It is a distinct field involving the application of basic sciences such as chemistry and physics, culinary arts, agronomics and microbiology. It is a broad discipline concerned with all the technical aspects of food, beginning with harvesting or slaughtering and ending with cooking and consumption.

Food Scientists have to use the knowledge of biology, physical sciences and engineering to study the composition of foods, changes that occur atvarious stages from harvest through different processes and storage, causes of their spoilage and the principles underlying food processing. Food scientists deal with physio-chemical aspects of food, thus helping us to understand the nature and properties of food.

2.2 Food Processing:



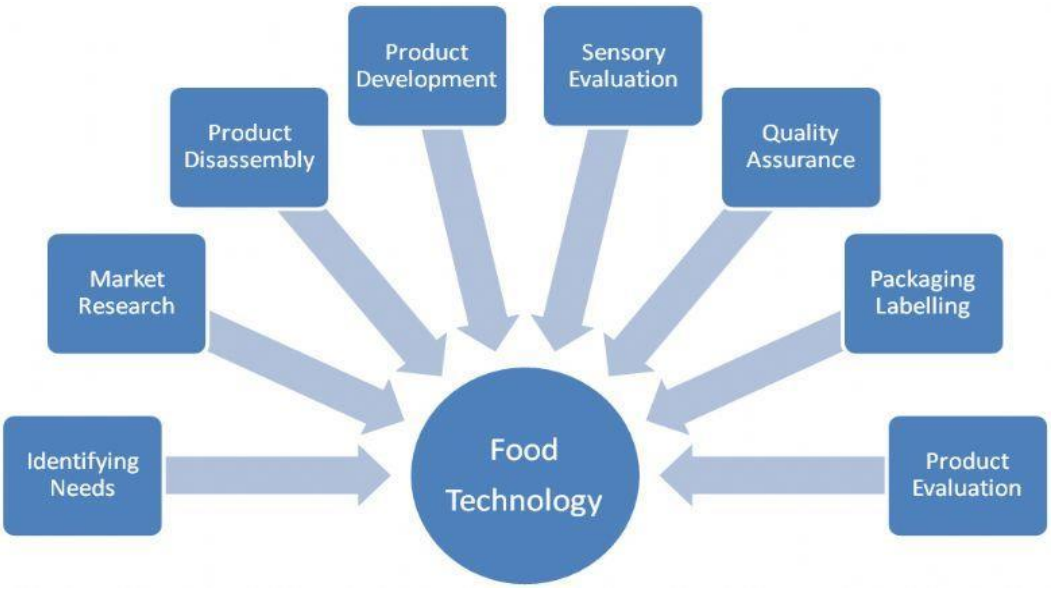
Fig: Unit Machine

It is the set of methods and techniques used to transform raw ingredients into finished and semi-finished products. Food processing requires good quality raw materials from either plant and/or animal source to be converted into attractive, marketable and often long shelf-life food products.

2.3Food Technology:

Technology is the science and application of scientific, as well as socio-economic knowledge and legal rules for production.

Food technology uses and exploits knowledge of Food Science and Food Engineering to produce varied foods. Study of Food Technology gives in-depth knowledge of science and technology, and develops skills for selection, storage, preservation, processing, packaging, distribution of safe, nutritious, wholesome, desirable as well as affordable, convenient foods. Another significant aspect of food technology is to save and utilize all the food produced.



2.4 Food manufacturing:



It is the mass production of food products using principles of food technology to meet the diverse needs of the growing population. Food manufacturing is one of the largest manufacturing industries in the present times.

2.5 Importance of Food Processing and Preservation:

It has already been mentioned that food processing is a branch of manufacturing wherein raw materials are transformed into intermediate foodstuffs or edible products through the application of scientific knowledge and technology.

Various processes are used to convert bulky, perishable and sometimes inedible food materials into more useful, concentrated, shelf-stable and palatable foods or potable beverages. Changes in the products often reduce preparation time for the cook. Most of the time, processing of foods adds value to the resultant product by increasing storability, portability, palatability and convenience. Professionals in thefood processing needs to be knowledgeable about general characteristics of raw food materials, principles of food preservation, processing factors which

influence quality, packaging, water and waste management, good manufacturing processes and sanitation procedures.

Let us briefly examin the need, principles, methods and modernization

of food processing: -

Foods are subject to physical, chemical and biological deterioration. Food deterioration is associated with spoilage, development of off-flavors, deterioration of textures, discoloration and loss of nutritional value in varying degrees, reducing aesthetic appeal and rendering it unfit/unsafe for consumption.

A number of factors can lead to food deterioration or spoilage e.g. pests, infestation by insects, inappropriate temperatures used for processing and/or storage, excessive exposure to light and other radiations, oxygen, moisture

Food is also contaminated by microorganisms [bacteria, fungus and molds) or chemicals such as pesticides. Food can also be spoiled due to degradation by naturally present enzymes (a specific class of protein molecules that act as biological catalysts to accelerate chemical reactions).

In addition, physical and chemical changes in certain constituents of food from plant and animal sources occur soon after harvesting or slaughtering, altering the food quality.

Therefore, food processing and preservation are required to preserve food in edible and safe form. Methods by which food is preserved from spoiling after harvesting or slaughtering date back to prehistoric times. The oldest methods were sun drying, controlled fermentation, salting/pickling, candying, roasting, smoking, baking and using spices as preservatives.

These tried and tested techniques are still used although, with the advent of industrial revolution, new methods have been developed. Food processing incorporates and unifies the general characteristics of different classes of foods and principles of food science, chemistry, food microbiology, nutrition, sensory analysis and statistics including good manufacturing practices as per regulations.

Chapter 2

METHODOLOGY:

3.1 CALIBERATION OF LAB EQUIPMENTS:

(a). WEIGHING BALANCE:

There is a weight box separately in a lab for calibration. We put the weight on a weighing box and check the weight. We get the three parameters Actual weight, Observed value, Variance.





Chapter 3

MASALA MAKING PROCESS

- **CHILLI MASALA PROCESS**

- **CHILLI INTRODUCTION -:**

- The chilli is a fruit of plant belongs to the family SOLANACEAE & genus of capsicum.
- The chilli is also being termed as chilli pepper in many parts of world.
- Chilli is one of the most valuable crops of india .
- The crop is grown largely for its fruits all over the india .
- It id used in india as principle ingredient of various curries and chutneys .

- **BOTANICAL NAME :-**

- **Capsicum Annum L.**

(fruits are large of small, but pungency is high)

- **Capsicum frutescence L.**

(Large and inflated variety with very little pungency)

- **FAMILY :-**

- **Solanaceous**

- **CLIMATE :-**

- The chilli is a plant of tropical and sub-tropical region . It grows well in warm and humid climate and a temperature 200 C To 250 C .

- Chilli requires a warm and humid climate for its best growth and dry weather during the maturation of fruits .
- As a rained crop , it is grown in areas receiving an annual precipitation of 25-30 inches .

➢ SOIL :-

- Chilli can be grown in all type od soft but the sandy – loam , clay loam and loam soil .
- Acidic soils are not suitable for chilli cultivation.
- The land is prepared by giving 2-3 ploughings and clod crushing after each ploughing .
- Compost or FYM @ 150-200 quintals should be spread and mixed well in the soil at least 15-20 before sowing .

➢ SEED TREATMENT :-

- Seed should not be treated with any chemical fungicide or pesticides in chilli farming .
- Trichorderma & pseudomonas sp @ 10g/kg .

➢ NURSERY RAISING CHILLI :-

- Fresh chilli seeds are sown in well prepared nursery beds .
- Although in can be sown by broadcasting method in the main field .
- Transplanting method is preferred for better quality to survival .
- Seed germination time is 5-7 days .
- 40-5 days old seedlings are transplanting the actual field .

➢ SOWING TIME AND SEED RATE :-

- In case of chilli crops of for kharif it sown in may -june and for summer crop , it is sown in the month of January .
- **1/2kg seed is required for 1 hectare area .**

➢ MANURES & FERTILIZERS :-

- 9-10 tones/ha. Of FYM or compost is applied at the time of field preparation .

- In chilli for rained crop 50kg N and 25kg P should be applied ½ dose of N full dose of P applied at the time od transplanting .
- Irrigated crop 100g N , 50g P & 50g K should be applied per hectare .
- Fertilizers are applied in four equal doses .

➢ INSECT PEST OF CHILLI :-

- Chilli Thrips
- Pod borer
- Aphids

➢ DISEASES :-

- Damping off
- Bacterial leaf spot
- Anthracnose
- Leaf curl

➢ IMPROVED VARIETIES :-

- Kankan kirti
- Agnirekha
- Musahvadi
- Phule jyoti
- Pbiile Sai

➢ IRRIGATION :-

- Chilli is grown both as rain fed and irrigated crop .
- First irrigation is given after the transplanting and subsequent irrigation are given 5-7 days .
- Every 10-15 days in winter .
- The maintenance of uniform soil moisture is essential to prevent blossom & fruit drops .
- Flowers and /or flowers bud abscission was increased under short day (day length 12 hours) and hing temperature 28 c .

➢ HARVESTING:-

➢ PRE- HARVESTING :-

The quality of any product depends upon the quality of raw material used and the practices adopted in its processing, packing, storing and transportation. In the case of agricultural products, therefore, constant care right from the pre-harvest operation until the product reaches the consumers becomes imperative.

Care should be taken to select seed material free from pests and diseases. In areas prone to fruit-rot or dieback disease, seeds may be treated with suitable fungicide under the recommendation and supervision of experts. The site for raising seedlings should be well drained and with facilities for irrigation .

In case the crop is affected by insect pests use biopesticides as far as possible in place of chemical pesticides. To control fungal disease suitable fungicides may be used in consultation with agricultural experts. Pesticides banned in the countries importing chillies should never be used. It has to be borne in mind that buying countries check imported spices for pesticide residues.

Harvesting - Important Points

Harvest the crop only at the right time. When the pods are well ripened and partially withered at the plant itself they would have superior pungency and colour retention properties.

- **POST-HARVESTING :-**

The harvested pods have to be kept in heaps either indoor or in shade away from direct sunlight for 2-3 days so as to develop uniform red colour. The ideal temperature is 22-25°C. Subsequent to this, pods should be dried in the sun by spreading them out on clean, dry mats, cemented or concrete surfaces/terraces etc. ensuring that the product does not get any contamination from the drying yard or premises. The drying surface/mats should not be smeared with mud/cow dung. Pods have to be spread out in thin layers for uniform drying with frequent stirring which is essential for preventing mould growth and discolouration. The material should be heaped and covered by clean gunny bags/tarpaulin at night. Unless the pods are dried properly they may lose their colour, glossiness and pungency. The

safe moisture level of dried chilli pods is below 15 per cent. Instead of the conventional sun drying method, improved drying system could be used to ensure cleanliness and uniformity of colour of the product.

- **Storage Precautions :-**

Well dried pods after removing plant parts and the foreign matter should be packed in clean, dry gunny bags and stored ensuring protection from dampness. Dunnage has to be provided to stack the packed bags to prevent moisture ingress from the floor. Care should be taken to stack the bags 50 to 60 cms away from the wall.

The product may be preferably sold soon after drying provided the farmer gets a remunerative price as long as storage may lead to deterioration. However, if cold storage facilities are used the product may be stored for 8- 1 0 months.

Insects, rodents and other animals should be effectively prevented from getting access to the premises where materials are stored. The stored product should preferably be exposed to sun periodically. If care is taken during all stages of cultivation, harvesting, post-harvest handling, processing, packing, storage and transportation by following good practices and sound methods we will be able to effectively prevent contamination and arrest deterioration of quality in any farm produce and ensure consumer satisfaction.

Conformance to the quality requirements of the buying countries, meeting the consumers' expectations and ability to maintain price competitiveness are the key factors which determine our survival in the international market. Improved productivity and quality will enhance the farmers income and increase the country's foreign exchange.

Chapter 5

CHILLI POWDER MASALA MAKING PROCESS

PROCESS :-

1) **CLEANING AND DRYING :-**

chilli dry washing cleaning machine is use to clean the dry chilli pepper surface dust or dust . it adopts advanced air flow to dry wash the red pepper without water. It has become one the most necessary pepper processing equipment . this chilli dry washing cleaning machine is made of high quality still and equipped with international standard motor. Make sure the stable performance and long life span of chilli dry washing and cleaning machine.

Working of chilli dry cleaning machine:-

Connect the machine to electricity , one worker will put dry chilli into the machine from material feeding port manually. Under the strong power of air blow, the dry chilli will touch with each other with the drum rolling. The dust will be beloved out of the machine and the cleaned chillis will come out automatically from the discharging port .



Fig: Cleaning and Drying machine

2. GRINDING:-

Pepper grinder is a practical production q=equipment that can help people to reduce the difficulty of pepper processing, at the same time improve work efficiency. By using pepper grinders, one can achieve the requirement to grind pepper into a powdery material.

Chilli grinder machine working:-

In actual production , the peppers are usually crushed first, and after reaching the set size , the chunks are sent to the storage hopper by a belt conveyor , and then the chilli scrapes are uniformly and continuously feed by the screw feeder chilli grinder host mill room , due to the different

speeds of the to rollers to productions relative movement to form squeeze and peel force pepper mill into powder .the chunks of mixed powder formed after the grinding of chilli pieces are sucked by the fan to enter duster.

Next, the pepper powder mixes into the sorting process. One of the larger size of the pepper particles through the screw feeder back into the chilli grinder machine host mill chamber, while the qualified powder with the air into the finished product set powder, the powder tube discharge, is the finished product. In the grinding chamber of the mill, there is a certain amount of moisture in the ground chili pieces, heat generated when grinding and water vapor evaporated, and the pipe joints of the whole machine are not tight enough. The outside air is sucked in to increase the circulation pressure so that the grinding machine In the negative pressure state of work, the increase of the air flow through the exhaust duct into the dust collector, after being purified into the atmosphere.



Fig: Chili grinder machine

3. GRADING :-

Lets ride through the grading system of chilli. Chilli is considered as one of the most important commercial spice crop and widely used universal spice . grading is pre requisite for development of modern marketing, trade and economy of any country. The Indian chillies are graded on the basis of color and size before they are brought to market .at traders level the quality parameters are moisture and stalk .

There are four men features of grading chillies :
(a). Seed and pod ratio .
(b). Seed size and hardness .

(c). Thikness of the skin of pod .
(d). Pungency .

The visual assessments of grades is done by seeing the heaps and by packing hand full of pods and analysing them to enable traders to adequate and assess prices .
It is impossible to imagine Indian cuisine without red chillies . whether in the poder form or the whole spice.



Fig: Grading

4. SIEVING:-

Sieving is carried out with vibratory sifters to remove lumps and unwanted contaminants if any along with getting desired sized fine and smooth chili powder. Our modern day & technology advanced sifters can definitely be wise option for sieving & check screening chili powder.

5. PACKAGING:-

Packaging means the wrapping of products to make them safe from damages during transportation and storage. It keeps a product safe and marketable and helps in identifying, describing, and promoting the product.

Packing means putting all the packages in a big box, container, chest, crate etc. for the purposes of storage, transportation, handling etc. Moreover the functions of packing and

packaging, in the present context have gone beyond the basic expectations of protection of the product.

Machines are fully automatic and procured from digipack, which is adjustable according to weight required for pack. After receiving packs of different types, it is packed again in cartons depending upon the lot and all these cartons are then stacked and handed over to sates department for their dispatch.

The pouch and foils are produced from cartons are procured from Gaurav packaging which is also supplying corrugated sheets. Electronic weighing matching is also employed there on which workers are regularly weighing the pack and all those packs ate rejected which weight are less than desire and masala is again utilized.

A great care is then during the packing a used for making those foils sterile as it is essential to avoid food poisoning. To maintain the quality standard which is one of the objectives of this organization and since climatic conditions installed a glass cabin around this highly sensitive packaging machine.

Maintenance :-

Since the company is engaged in continuous production activities so failure of machine's or breakdown is bound to occur. Though the high-tech machine for packing do not pose problem of maintenance as such, but certain other machines such a pump, motors etc. have breakdown due to bearing failures, belt snapping, transformer also require regular overhauling. Company is following the policy of maintenance after breakdown.

Layout :-

Plant layout is the relative allocation of adequate spaces at the appropriate places for work equipment for working men, material, and other supporting activities. The basic theme behind the arrangement of work areas is to produce the product economically and to provide a safe and good working environment for worker.

Industry has proper and efficient utilization of moor space, economies in materials facilitate manufacturing process and handling of semi-finished and finished products.

Industry layout has careful planning to avoid frequent changes in layout, which may result in under increase in cost of production and provide adequate safely to workers from accidents.



Fig: layout technique



CHILLI POWDER MASALA MAKING PROCESS

PRODUCT LIST OF R.R. FOODS MANUFACTURER & EXPORTER OF MASALA RAAJ SPICES

ITEM NAMES:-

- BLENDED SPICES :-
  Tea masala
  Garam masala etc.

- GROUND SPICES :-
  Red chilli powder
  Turmeric powder etc.

- WHOLE SPICES :-
  Cumin seeds
  Fenugreek seeds etc.

- CHAT MASAL
- CHHOLE MASALA
- SAMBAR MASALA
- PAV BHAJI MASALA
- CHICKEN MASALA
- DRIED MANGO MASALA
- KITCHEN KING MASALA



PRODUCTS OF MASALA RAAJ

CONCLUSIONS

- Dunning festive season, consumption of Masala increases & even more then 100%.

- Only 17 % respondents prefer multi-brands while 83 % are brand loyal. Some of them have purchased other brands also, but for changing the taste.

- 45 % respondents are satisfied with prices of Masala while others are not. The persons who are unsatisfied with the prices, however some of them don't want to switch over to other brand due to the taste and quality. And some of them (unsatisfied) will decrease the consumption but they will not switch over brand Remaining will switch over to another brand.

- All person knows the quality and prices of other brand`s Masala from their friends & who consume other brand`s Masala irrespective of the fact that they themselves purchase of not. The shows that Masala industry is affected by word of mouth publicity

- All respondents responded that prices of Masala don`t increase in various occasions, it increases when prices of raw material increase.

- 20% respondents found deterioration regarding quality, but they didn`t make any complain against this. However, company should take a note of this.

Weekly Reports: -

Weekly Progress Report

Name of Student	**Neha Vyas**
Enrolment no.	**RNBGU201900040**
Program	**B.Sc. (Hons.) Agriculture**
Report Date	
Week	**2**
Name of the organisation	**R.R FOODS Manufacturer & Exporter Of Masala Raaj Spices, Nagaur**
Report	**Processing and Management in Firm**
Thursday (16/12/21)	**Introduction to the working of the Firm**
Friday (17/12/21)	**Introduction with other employees in Firm unit and understanding the work**
Monday (20/12/21)	**Introduction the basics of Firm work**
Tuesday (21/12/21)	**The main work of the firm how they make and processing other material**
Wednesday (22/12/21)	**Introduction with vendors with whom the firm purchases raw material**
Thursday (23/12/21)	**Understanding the process of making complete spices process and meeting with other processes**
Friday (24/12/21)	**Detailed information about product handling**

Monday (27/12/21)	**Detailed information about grievance handling which includes types of grievances**
Tuesday (28/12/21)	**Introduction about recording every aspect of completion of spices processing in Books**
Wednesday (29/12/21)	**Started working on the final project topic for summer internship programme, studied about the manufacture and its process**
Thursday (30/12/21)	**Learnt about various kind of process**
Friday (31/12/21)	**Understanding all about Masala raaj work**

A Project Report on Wheat Flour Shree Govindam Primefood Pvt. Ltd.

Submitted to RNB Global University for Partial fulfillment for the degree of B.SC (Hons) Agriculture

By:

Rajender singh

Enrolment no.

RNBGU201900106

Under the Guidance of

Mr . Avinash Sharma

RNB GLOBAL University

29 December 2021

Declaration

Rajender Singh Student of RNB Global University submitting

Project report entitled " Post Harvest of Wheat flour " to the School of Agriculture,

Is an original piece of work done by meduring the period from 22 Dec.

To 29 Dec. 2021. This Project work has not been submitted or presented

Anywhere or in any other University for the award of any degree/ diploma etc.

Rajender Singh

B.Sc (hons.) Agriculture 6thSemester

School of Agriculture

R.N.B. Global University

Certificate

This is to certify that Mr. Rajender singh of R. N. B Global University, School Of Agriculture has successfully completed the project work titled ***Post Harvest of wheat flour*** in partial fulfilment of requirement for the completion of Working Model/Project as prescribed by the R. N. B Global University, School Of Basic & Applied Sciences. This project report is the record of authentic work carried out by him during the period from ***22 Dec. to 29 Dec. 2021***. He/She has worked under my guidance.

Internal Examiner External Examiner Dean

Acknowledgment

I would like to take the opportunity to thank and express my deep sense of gratitude to my mentor and guide MR. Avinash Sharma, Associate Professor, School of Agriculture, RNB Global University, Bikaner. I am greatly indebted to Dr. Surendra Singh Shekhawat, Dean, School of Agriculture for providing valuable guidance at all stages of the study, their advice, constructive suggestions, positive and supportive attitude and continuous encouragement, without which it would have not been possible to complete the project.

Name of the Student Signature

CERTIFICATE OF ORIGINALITY

Enrollment No.: RNBGU201900106

This is to certify that Mr. Rajender singh of B.sc(Hons.) Agriculture (SHREE GOVINDAM PRIMEFOOD PVT.LTD.) has completed this research project under my supervision in Wheat flour Cleaning, Packing and Marketing, Processing for the award of the Bachelor's Degree in Agriculture from RNB GLOBAL UNIVERSITY, BIKANER.

Course Name: Summer Internship and Report

Course Code: 20018500

Signature of internal Research Guide

Signature of Student

SHREE GOVINDAM PRIMEFOOD PVT. LTD.

Factory : B-180 - I.G.C. Khara, Bikaner (Raj.)

Regd. Off : 230 New Dhan Mandi, Sri Ganganagar (Raj)

CIN : U17117RJ2005PTC020417

E-mail : grovergovind@yahoo.com

Telephone : 0154-2474255, 01522-260155

This is to certify that Mr. RAJENDER SINGH, S/O Mr. KEHAR SINGH a student of B.sc Agriculture RNB GLOBAL UNIVERSITY, BIKANER has successfully completed 07 days (22ND Dec. 2021 to 29th Dec. 2021) internship program at this Industries. During the period of this internship programs with us he was found punctual, hardworking and inquisitive.

We wish him every success in life

For,

Shree Govindam Primefood Pvt. Ltd.

SHREE GOVINDAM PRIME FOODS PVT. LTD.

Post Harvest of wheat

How do the work?

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Chapter 1

Introduction

It is the most important human food grain and ranks second in total production as a cereal crop behind maize and the third being rice. Wheat is the staple food for over ten billion people in as many as 43 countries of the word. Wheat provides nourishment to 35% of world population. Wheat cultivation has traditionally been dominated by the northern region of india. The northern states of Punjab and Haryana plains in india have been prolific wheat production. Today,india is exporting sufficient quantities of all types of wheat and extensive research efforts are underway for improving its cereals and grain output in the years to come.



Production of wheat in india

Year	Area (000ha)	Productivity (000tonns)	Yield (quintals/ha)
2000-01	25731	69681	27.1
2001-02	26350	72766	27.6
2002-03	24860	65096	26.2
2003-04	26600	72160	27.1
2004-05	26380	68640	26.0
2005-06	26480	69350	26.0
2006-07	27990	75810	27.1
2007-08	28040	78570	28.0
2008-09	27750	80680	29.1
2009-10	28460	80800	28.4
2010-11	29070	86870	29.9
2011-12	29860	94880	31.8
2012-13	29650	92460	31.1

Economic Importance

Wheat is the staple food for most of the temperate and sub tropical regions of the world.

The chief use of wheat is the flour for making bread biscuits, cookies, chapatti, etc.

Industrially, it is used in preparation of starch, gluten, malt, and distilled spirit.

Wheat bran is rich in protein and used as valuable livestock feed.

From straw corrugated

chapter 2

Importance of Seed Processing

Seed processing is a vital part of the total technology involved in making available high-quality seed. It assures the end users, seeds of high quality with minimum adulteration. In Agriculture, the term seed processing includes cleaning, drying, seed treatment, packaging and storage.

Processing of the seed.

Seed processing is a vital part of the total technology involved in making available high-quality seed. It assures the end users, seeds of high quality with minimum adulteration.

Seed testing

Seed testing is determining the standards of a seed lot viz., physical purity, moisture, germination and ODV and thereby enabling the farming community to get quality seeds.



Seed Storage

Seed storage is the preservation of seeds under controlled environmental conditions which will prolong the viability of the seeds for long periods.



Supply chain management

Supply chain management (SCM) implies **managing the relationships between the businesses responsible for the efficient production and supply of products from the farm level to the consumers** to meet consumers' requirements reliably in terms of quantity, quality and price.



chapter. 3
Processing of wheat flour

The wheat grain consists for 85% of endosperm (flour body), 13% bran (various layers) and 2% germ.

The chemical composition of the wheat grain is:

59% carbohydrates (starches and sugars)
14% moisture
13% protein
10% of dietary fiber
2% fat
2% minerals
Different types of meal and flour can be produced from wheat grains. The criteria for flour is that it can only contain the endosperm; meal also consist of bran parts. Whole meal has a very coarse structure, because it contains the entire husk of the grain, namely the bran. In contrast, Super Patent flour is of a very fine structure, containing only the endosperm. The similarities between the different types of flour is the fact that the germ is always removed. This is due to the fact that the high fat content of the germ speeds up the oxidative spoiling, resulting in a rancid smell and flavor.

The flour quality, and especially the protein content, is determining for its applications. For instance, flour with a low protein content (below 10%) is suitable for use in confectionery products, such as biscuit, and cake. Flour with a protein content of between 10 and 15% is suitable for use in bread. An even higher protein content (higher than 15%) is used in the production of rusk.
The protein content of the flour is determined by the degree of grinding. The core of the grain contains the most proteins; towards the outside of the grain, the protein contents becomes gradually lower. The husk layers virtually do not contain any protein. The higher the degree of milling, the higher the protein content of the meal. The skin layers contain virtually no more protein. So the higher the degree of milling, the higher the protein content of the flour.

Meal and flour production process

Harvesting and threshing

The harvesting of wheat preferably takes place when the grain is sufficiently dry and the grass is properly matured. The harvest takes place during autumn. Threshing can damage the grains, especially when the moisture levels in the grains are low. The combine harvester has to be adjusted properly, ensuring as little grain damage as possible, but with sufficient threshing. Also impurities (like stem and leaf residues) should be avoided. The stems of the wheat plants can be processed into straw.

Storage

First, the grains are stored. This is done in large silos, where dry air is blown through. This dry air is necessary because moisture content of the grain is usually on the high side. By lowering the moisture content below 14%, overheating and deterioration are prevented. Moreover, the brittleness and toughness of the grain can be adjusted, giving it the ideal characteristics for grinding.

Cleaning

There are six purification steps to rid the grains of any impurities.

Sieving

The grains are sieved, removing any coarse contaminants such as paper, sand, straw, husks and twigs.

Magnet

A magnet is used to retrieve any iron particles from the grain. These iron particles are removed in order to guarantee the safety of the final product and to prevent damage to the machines, such as damage to the rollers in the milling process.

Separator (Aspirator)

During the third cleaning step in the separator, also called aspirator, both coarse materials (husks and strands) and fine particles (sand and dust) are removed. The grain is guided over two sieve screens. On top a sieve for coarse materials, and below a small sieve. The grain can fall through the course sieve; the small particles such as sand and dust will fall through the small sieve. What is left over passes through an upward stream of air, any remaining dust particles are sucked away with the air flow, while the grains are collected below.

Destoner

During the fourth cleaning step, stones are removed using a destoner. A vibrating screen (sieve) carries the grains and any stones upwards. A powerful air stream lifts the grains up while the impurities remain on the vibrating screen and are disposed above.

Trieur (Triage)

The fifth cleaning step separates the different types of grains. In a trieur, a rotating drum with indentations in its sides, the cereals are rotated. The indentations are made to exactly catch the grains that have to be collected. Grains that do not fit exactly (being either too big or too small) drop from the slot. The desired grain kernels remain in place longer, and then fall into a collecting tray, which is a stationary part in the middle of the drum. The remaining grains are used for different products, for example, for another meal or flour type, or in the animal feed industry. The trieur is not used if a mix of different types of cereals is purposely made, because then this step would separate the grains again.

Scouring

The final purification step takes place in the scouring machine. Here, the grains are beaten against the coarse side in a drum. Any impurities that were attached to the grain are removed in this way.

Temporary storage

After cleaning, the grains are temporarily stored according to class and protein content.

Conditioning

In order to effectively remove the bran during grinding, the grains are conditioned. The desired moisture content is 16-17%. The cereal grains have a moisture content of 13-16%. In most cases, the cereal grains are thus moistened with 1 to 4% of water. This moistening can be carried out using steam and pressure, and takes up to 8 to 20 hours to complete.

Blending

To obtain the desired grain composition of the meal or flour, some grains are mixed. This mixing process is referred to as blending.

Grinding

After the conditioning step, the grinding process can be started. The grinding process is divided into two phases: the scrap phase and grinding phase.

Scrap phase

During the scrap phase, the conditioned grains are divided into three segments, namely, the germ and bran, large parts of endosperm (middlings/ grouts), and a small amount of fine flour. The distance between the rollers, that are rotating in opposite directions, at different speeds, is reduced after each rolling step. Furthermore, the grooves in the rollers are becoming finer and after every step the whole is sieved.

Brushing

The germs are separated during the scrap phase and the brans are further processed in a bran brushing machine, where any flour particles sticking to these parts are removed. These particles can be ground further down to flour using grinding rollers. The endosperm advances to the final phase: the milling/grinding phase.

Milling/ grinding phase

In this phase the endosperm is first divided into two groups: coarse and fine grinding. The coarse grind (middlings, groat) is finely rolled using up to 12 consecutive smooth rolls. After every rolling step, the whole is sieved, creating different fractions.

The fine grinding, which consists of lumps of endosperm and flour, is cleaned in the middlings purifier. After brushing, the semolina (finest parts) are also milled. The middlings go with the bran to a dissolution roll. Here, the bran is separated from the endosperm.

Chapter 4

Packaging of wheat flour

The entire packaging process is fully automated to make sure that there are no microbes or external factors that come into play. The flour that is ready to be packaged is put into the packets. These packets are FDA approved and are made of food grade plastic. This makes sure that the flour does not react with the packet.

The packaging is done in a way to make sure that no air or moisture can go through the bag. However, if some moisture does pass through, the packaging should be such that it does not react with it. For example, there are some packaging colors that would dissolve in water. This could be dangerous for the flour. Our food grade packaging makes sure that the packaging does not react with any environmental factor, and keeps the contents safe.

Flour packaging is done in many ways. There are small as well as large packets. The packaging of flour also depends on its quantity. With smaller quantity, there is no special need regarding the robustness of the packet. However, with larger quantity, the packet should be strong enough to be carried to different places. Plus, it should have features to allow it to be used multiple times. Zippers would do the trick here, as they can be opened and closed multiple times.

For even larger quantities that are used in professional bakeries, there are simple flour bags with hang holes. This way they can be hung on hooks to save space.

The material used to package flour in standup pouches is made by laminating several plastic layers together. This makes a barrier against external factors like sunlight, air, moisture, and germs. Because of these qualities, it is also known as barrier packaging. This barrier packaging is highly preferred for easily perishable food products. Since flour can easily go rancid with the slightest of moisture, it is important to use barrier packaging to keep it safe.



figure. wheat flour packing machine

page 10

chapter 5

labelling of wheat

Regarding Use of Term Wheat Flour on Labels of Food Products

The FSSAI had recently issued directions through its order dated 30 April 2019 the FSSAI regarding the extension of the time period for the usage of the term Wheat Flour (Atta) and Refined Wheat Flour (Maida) on the labels of the packaged food products. The FSSAI had also decided to replace the nomenclature Whole Wheat Flour (Atta) with Wheat Flour (Atta) Food Products

The FSSAI has since received reports that several Food Business Operators have already got packaging material that has been printed with the nomenclature Whole Wheat Flour (Atta). The FBOs had got these printed on the basis of the 1 February 2019 order which had asked FBOs to use the English nomenclature for Atta and Maida as

Atta should be labelled as Whole Wheat Flour (Atta) wherever the same is used singly or as an ingredient in food items

Maida Should be labelled as 'Refined Wheat Flour' whenever the same is used singly or as an ingredient in food items.

FSSAI has since received representations from the FBOs in this regard. Since FBOs have so much printed material with them FSSAI has decided that such FBOs shall be permitted to use the nomenclature Whole Wheat Flour (Atta) on their packaging material up to 31 December 2019. Any further extensions in this regard will be considered by the FSSAI on a case by case basis.

Conclusion

In this paper, the wheat flour and the starch and protein contained were introduced briefly. Then five types of wheat flour were selected and their quality was tested, including total starch content, amylose content, ratio of amylose to amylopectin, total protein content, dry and wet gluten content and gluten index. Then the wheat flour was processed into flour products by extrusion extruder, and the relevant quality was detected, including water absorption index, water solubility index, oil holding capacity and radial expansion rate. Finally, the correlation analysis of quality index was carried out. The results are as follows: (1) the variation coefficients of quality indexes of wheat flours and flour products were large, and the quality differences between different kinds of wheat flours and flour products were large, which was representative; (2) the water absorption index of flour products was negatively correlated with the total starch content, dry gluten content and gluten index of wheat flour, among which the gluten index was more correlated; the water solubility index of flour products is negatively correlated with the total starch content and gluten index of wheat flour and more positively correlated with the ratio of amylose to amylopectin; the oil holding capacity was not significantly correlated with the quality indexes of wheat flour; there was a significant negative correlation between the radial expansion rate and the wet gluten content of wheat flour; (3) the regression equation between the quality of flour products and the quality of

wheat flour was: water absorption index = 491.36–0.817 × total starch content − 0.835 × dry gluten content − 0.956 × gluten index; water solubility index = 12.1–0.911 × total starch content + 0.935 × ratio of amylose to amylopectin − 0.874 × gluten index; radial expansion rate = 14.21–1.011 × wet gluten content.

PROJECT REPORT

ON

"Processing and management in dairy industry"(urmul dairy plant)

Submitted to RNB Global University for Partial fulfillment for the degree of

Bachelors of Agriculture science

By:-

POONAM KUMARI

Enrollment No-

RNBGU201900012

Under the Guidance of

Mr. Avinash Sharma

RNB Global University, Bikaner December 2021

Acknowledgment

First of all, I'm grateful to RNB Global University Bikaner for successfully arranging the internship program for us. I also thank to Mr. S.N Purohit MD URMUL DAIRY BIKANER for recruiting me as an intern and creating such a wonderful environment for learning

I am really fortunate that, I had the kind association as well as supervision of Mr. R. S. Sengar deputy manager of quality control. His exemplary guidance, constant encouragement, and careful monitoring throughout the internship are so great that, even my most profound gratitude is not enough

In my internship I was mentored by quality control lab staff member Mrs. Manila, Mrs. Jyotsna and Miss Sonali Ma'am. They have all provided a huge amount of their precious time and effort for me. I feel really lucky to be able to work under there guidance.

I also take this opportunity to express a deep sense of gratitude to all the employees and workers of plant for presenting us such an amazing experience. They are all really wonderful people, and I will never forget these days of mine at URMUL.

At last, I would also like to thank my parents who supported me and help me in finalizing my internship and my friend who helped me a lot during my internship.

CERTIFICATE OF INTERNAL (UNIVERSITY) RESEARCH GUIDE

SUMMARY

URMUL DAIRY PLANT EXECUTIVE SUMMARY

The project report titled "Acceptance of Urmul Dairy products at retail level". This project report draws significant information about the Urmul Retal Sores. The customer's perception for the Urmul Dairy products & the problem faced by the Retailer. It gives the information that where the Urmul Dairy need improve the level of customer satisfaction and the role of Retailers for the Urmul Dairy product's distribution. I have done my project under the guidance and supervision of Mr. S.H. Choudhary The analysis and conclusion was carried out from the data collected through various primary and secondary resources (Market survey, Company Website namely Books, company's executives, e-Newspapers, e-Magelaes , jounals, interviews and many other.)

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Declaration

I poonam kumari, hereby declare that the presented report of Internship entitled on Milk Processing and packaging, milk supply is uniquely prepared by me after the completion of 9 days of work experience in **URMUL DAIRY BIKANER**. I also confirm that the report is only prepared for my academic requirement, not for any other purpose. It might not be used with the interest of the opposite party of the cooperation.

Place: **Bikaner**
Date:

Introduction

A dairy is a business enterprise established for the harvesting or processing (or both) of animal milk – mostly from cows or buffaloes, but also from goats, sheep, horses, or camels –for human consumption.

A dairy is typically located on a dedicated dairy farm or in a section of a multi-purpose farm (mixed farm) that is concerned with the harvesting of milk.

URMUL Dairy (Uttar Rajasthan Milk Union Limited) was set up in the arid region of Bikaner district on August 29, 1972 as part of the Operation Flood II a cooperative body registered under cooperative act 1956.
With the objective to ameliorate the socioeconomic status of the rural population by providing them market of their milk at their door step, irrespective of their geographical conditions.
Urmul started its business from 9th July 1973 with the initial membership of 64 societies and initially collected 1500 litres of milk per day. Presently there are 851 registered and 333 Proposed societies covered by 52 milk routes and collecting about 80 thousand litres of milk per day against the installed capacity of 150 thousand litres of milk. No one had ever thought that there could exist a tremendous amount of milk in the hot thar desert of Bikaner District. Villages are flushed with milk in this District. During August 1983 Urmul collected 269 thousand litres of milk in a day which was a record collection.

The products manufactured at the plant are Butter, Ghee, and Skim milk powder, Cheddar Cheese, and Paneer besides milk being packed in sachets. Urmul started manufacturing of Chach, Lassi, Dahi and Shrikhand which has gained a very much positive response from the local market.
The product manufactured are marketed with the help of RCDF, Jaipur under a common brand name “SARAS”.

Objectives:-[1] Processing and packaging in milk.

[2] Risk and storage management of milk

OBJECTIVES :1

Processing and packaging in milk

Introduction:

Processing-

1. Unloading: the motor truck carrying the filled milk cans is backed up to the unloading platform. The milk cans are unloaded manually. Then the milk cansare assembled for grading.

2. Grading: this refers to the classification of milk on the basis of its quality, it is well known that the quality of the finished product depends on that of the raw material used.

The principle of grading is based on organoleptic (sensory) tests, such as those for odor, taste, appearance, touch, acidity, sediments etc. These are included under platform tests.

- These are as follow

  [1]• **Smell (odor)**: the lid of the can is removed and shaking the can vigorously with the help of plunger and sample is taken and raised to the nose, if any off- flavors appears rejection of the can take place.

  [2]• **Appearance**: by regularly observing the milk in each can after the odor test has been made, any floating extraneous matter, off-color or partially be noted in any of the can that can is rejected. The milk should be normal in color, free from churned fat globules and reasonably free from floating extraneous material.

  [3]•**Temperature**: The temperature at which milk is delivered is often an indicator of its quality. A temperature of 5°C or below is satisfactory

  [4]•**Acidity test**: It has already been pointed out that natural or apparent acidity of milk does not make the milk taste sour, nor does it affect the normal properties of milk its quality or its behavior towards processing heat. Nevertheless, the acidity test does have its proper place on the milk it is always well to have a certain acidity above which milk should not be

accepted.

[5]•**Lactometer** reading: The addition of water to milk results in the lowering of its lactometer reading. Hence this test is applied for detection of adulteration of milk with water.

3. Weighing: This is essential step making payments for milk. The milk in cans is dump into the weigh tank manually. The milk in tanker is measured on a weigh bridge.

4. Filtration and Chilling and Storage: from the weighing balance the milk is transferred to the dump tank and from there it is passes through filter for the removal of foreign matter like dust, dirt etc. After that it passes to chilling plate capacity of 20 KLPH to chill the milk at 7°C for deactivation of bacteria and to increase the shelf life of the milk than milk goes to RMT (raw milk storage tank).

5. Cane washing: after reception of milk, cans and lids go to can washer which is straight through type cane washer, capacity to wash 400 cans in 1hr.

Raw milk Processing

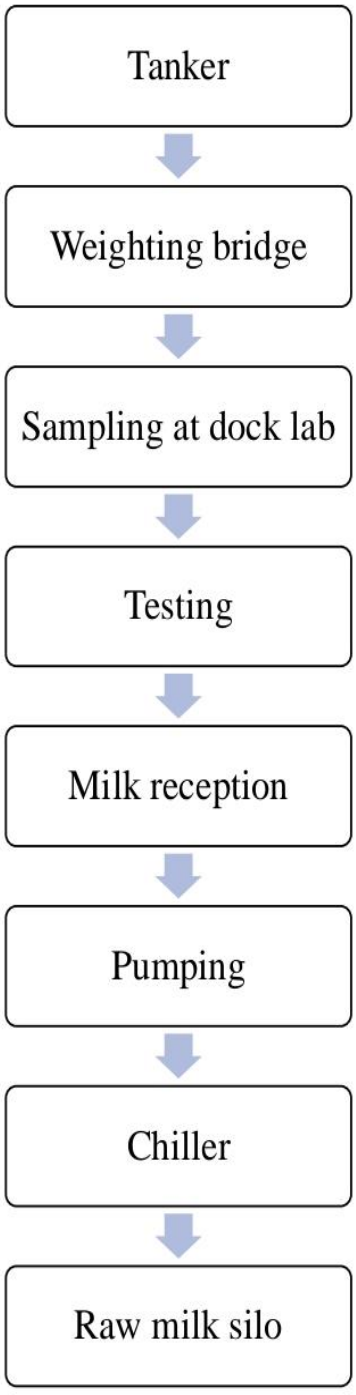


Figure [1]: Raw Milk Receiving



Figure [2]: Raw Milk Receiving

Flow chart of Milk Reception



Milk processing

Processing section is the heart of any dairy. Hence to preserve the milk and improve its nutritional quality by subjecting it to different process depending upon the final process. Processing section perform various operations such as clarification, pasteurization, standardization, homogenization, chilling**.**

1. Pasteurization:

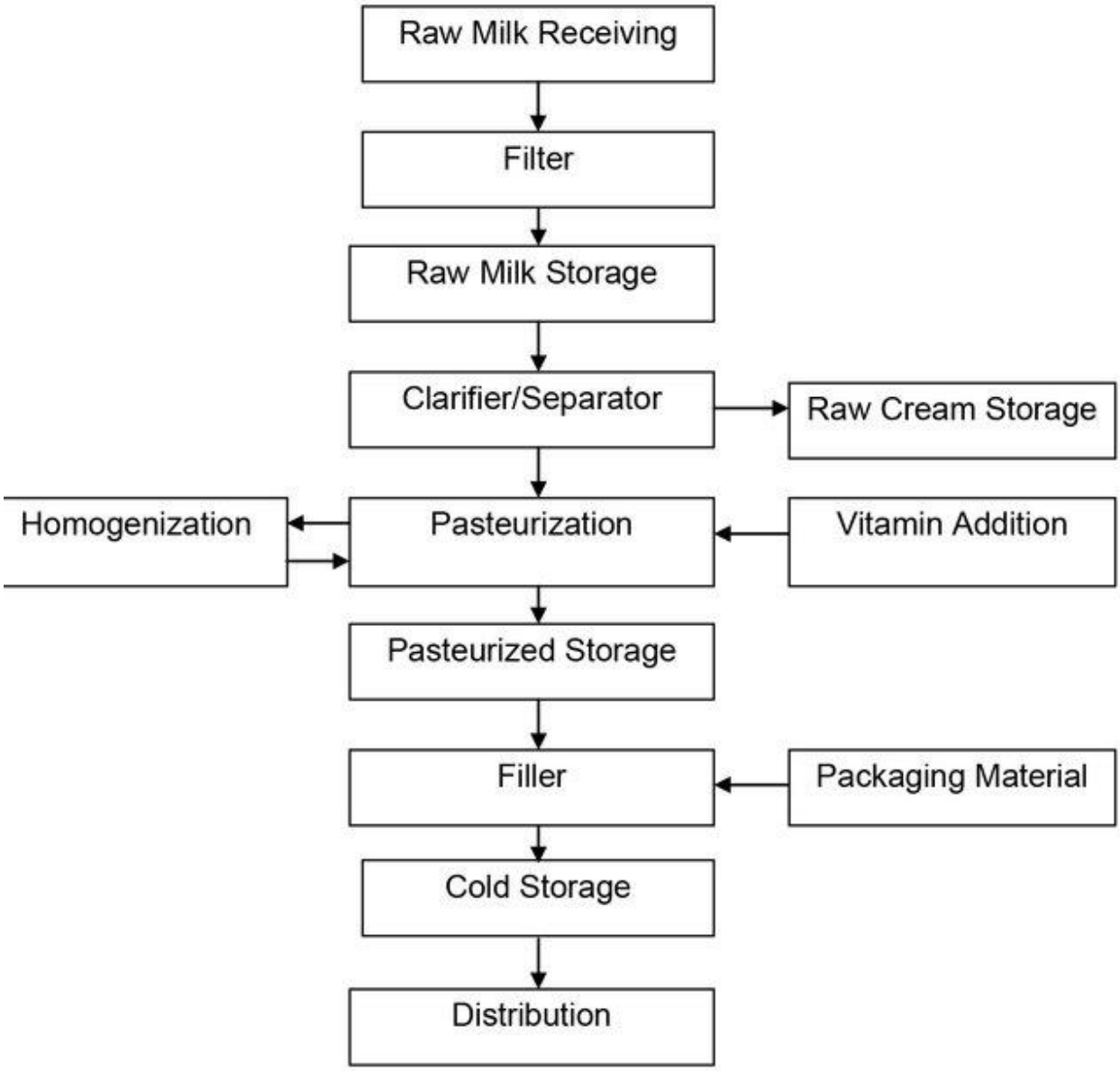
The term pasteurization refers to the process of heating every particle of milk to at least 63℃C for 30 min, or 72℃C for 15 seconds, in approved and properly operated equipment. After pasteurization, the milk is immediately cooled to 5℃Cor below.

Objective:
To render milk safe for human consumption by destruction of pathogenic microorganism (target organism).To improve the keeping quality of milk by destruction of almost all spoilage organism (85- 99%). But it does not kill all vegetative cells or spores (Bacillus and Clostridium spp.)

2. Cream separator:
Cream separation based on average density difference of fat and skim milk. When centrifugal force is subjected to apply due to variation in density separate from one another. Separation of skim milk (about 0.05% fat) and cream (35-40% fat) Separation of milk at 45℃.

3. Standardization:
Standardization of milk refers to the adjustment, i.e., raising or lowering, of the fat and/ or solid not fat % of milk to desired value, so as to conform to the legal or other requirement prescribed.For standardize, to reduce the fat percentage of milk with SMP or skimmed milk is added and to increase the fat percentage cream is added. After standardization milk is stored in silos, sample is taken for analysis of fat, SNF etc. when result is ok milk is used for further process

Flow chart of milk processing:



Milk pouch packaging

Introduction:

Most food consumed is far removed in time and space from the point of its production. Packaging is a necessary aid for the storage and distribution of food. Food is packaged for four primary reasons**:**

- To protect the product from contamination. by micro-

  Organisms ,macro- organisms and filth
- To retard or to prevent either losses or gain of moisture
- To shield the product from oxygen and light
- To facilitate handling

Pouch material specification:

Adjust the pouch length

500ml	140-150mm
1000ml	15-225mm

Pouch Name	**FAT**	**SNF**
Saras Standard	4.5%	8.5%
Saras toned	3%	8.5%
Saras double Toned	1.5%	9.8%

Milk packaging machine:



Figure: 3 Milk Packaging Machine

Packing Milk

Dubble Toned Milk



Toned Milk



Figure: 4 Milk Packing Pouch

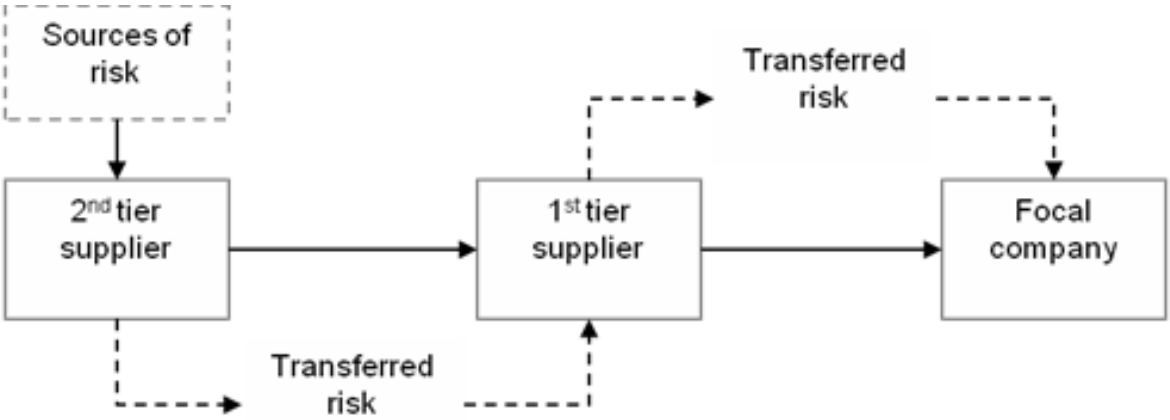
Objective 2-

Risk and storage management of milk

Agricultural production is actually a risky business. Risks exist in every stage of production carried out by each of the actors along the production chain. This implies that the success of improving the performance of the agricultural business will mostly rely on the actors' ability to manage risks. This paper reports the results of an exploratory study on the risks that the milk supply chain in Bikaner faces.
The focus is to identify the sources of risks that may appear in the existing milk supply chain and their implication on production behavior of the chain. Informal interviews and focus group discussion were conducted with farmers, farmer's organizations, and dairy manufacturers in a milk-producing area in Bikaner.

These reveal some early findings concerning the sources of risks in the milk supply chain, and the likely consequences for the actors of the upstream and downstream segments. Finally, it preliminary concludes that extensive risk management practices are crucial for the entire milk supply chain.

Based on the previous studies, the framework for identifying risks in the milk supply chain can be established. In the case of the milk supply chain, there are three main actors; (i) traditional farmers as the main milk producers who raise a small number of cows; (ii) cooperatives as farmers' social organization which also serve as a marketing body for the raw milk produced by farmers; and (iii) manufacturers as privately-owned business entities which procure and process raw milk into dairy products (i.e. mostly bottled and powdered milk, etc.). However, although the milk supply chain includes many actors, we simplify the milk chain into the dyadic setting, suppliers and buyers. In this setting, suppliers of the milk supply chain include farmers and cooperatives, while the buyers are dairy manufacturers. This framework is presented in the following figure.



STORAGE MANAGEMENT OF MILK

As a food storage area, the milk storage room needs to be managed to minimise the risk of contamination.

- The approach and surrounds must be kept clean.
- Doors should be kept closed.
- Vermin, birds and other animals must be excluded.
- The milk storage room must be kept clean at all times.
- The structure of the milk storage room must not expose milk to the risk of contamination.
- The milk storage room should not be used for purposes other than the cooling and storage of milk, and the cleaning and storage of milking equipment**.**

Siting & Structure

The milk storage room must be sited in a clean area, away from obvious sources of contamination. The structure of the milk storage room must protect the milk from contamination and be kept clean and free from vermin. Siting of compressors in the milk storage area is not recommended.

Access - The access should have a hard standing, normally concrete. This needs to be large enough to allow clean access for the tanker driver from cab to milk storage area and the collection hose to be positioned on a clean surface.



- **Access to Other Areas** - Direct access between the milk storage room and livestock housing or handling areas, toilets or feed stores is not allowed. Direct access to parlours, motor rooms and offices is not recommended.

- **Floor and Drainage** - Floors must be impervious to water and free draining, with a good slope to a suitable trapped drain, preferably within the milk storage room. External drainage must not be allowed to enter the milk storage area.
- **Walls and Doors** - All surfaces should be in good condition to full height. Surfaces liable to soiling should be smooth, impervious and easy to clean. Pervious masonry can be smooth cement rendered, covered with wall cladding or smooth coating materials. Joints around and between cladding sheets need to be sealed. Doors may be hinged or sliding, but must fit well. Self closing doors are recommended.
- **Roof/Ceiling** - This should be so constructed as to minimise the entry of dust and should be smooth, impervious and easy to clean.
- **Windows and Lighting** - Windows, where fitted, should be free from damage and kept closed, unless protected with fly-proof mesh. Artificial lighting is required and all areas should be well lit. Light fittings should be free from rust or flaking paint and fitted with shatter-proof covers.

Ventilation - Sufficient natural or fan-assisted ventilation should be provided. To avoid condensation wash troughs should be covered and water heaters sited outside the milk storage area in a clean environment.



Fittings - To ensure effective cleaning all fittings within the milk storage area should be smooth and impervious. They should be free from flaking paint and rust. This includes electrical fittings, which will generally need to be waterproof.

Protection against Vermin - The milk storage room must be protected against vermin.

Separate Washrooms - Where a separate washroom is provided for the washing of milking equipment, it must be constructed and managed to avoid contamination of the milk i.e. as per milk storage area.

Management

The whole area must be managed to ensure satisfactory hygiene conditions. The approach and surrounds must be kept clean at all times. Doors should be kept closed. Walls and floors must be kept clean. Areas that become soiled must be washed after every milking. Upper areas and fittings should be cleaned regularly to prevent accumulations of dirt, dust and cobwebs.

The aim is to create a clean, dedicated food storage room. It should not be used as a thoroughfare, storeroom or general delivery point. It should be a restricted area for storing and cooling milk for human consumption and for washing of milking and milk storage equipment.

Milk must be protected from contamination and steps must be taken to minimise the risk of contamination e.g. avoid using for the preparation of calf feed, feeding other animals, washing and storage of calving aids or calf buckets. Poisons, medicines and veterinary materials should not be kept in the milk storage room, neither should it be used as a tearoom, office, for general boot washing or for use by veterinary or A.I. personnel.

A small, covered bin may be provided but should only be used for the disposal of any rubbish generated in the milk storage room. To prevent the accumulation of damp and dirty material, the bin should be emptied daily.

Smoking is not permitted in the milk storage area.

Experiment no.1

Fat test by Gerber method

Introduction:

The traditional standard reference method for fat analysis is based on either weight or volumetric determination of the fat content of milk, the Gerber test is widely used all over the world.

Principle:

The test is a volumetric method in which fat is separated from milk by centrifugal force. Sulphuric acid is used to dissolve the protein that form membrane around the fat and amyl alcohol is added to improve the separation of fat from other solids.

Equipment and materials:

Sulphuric acid, amyl alcohol, butyrometer, stoppers and shaker stand for butyrometer made from a suitable grade of rubber or plastics, pipette, water bath, centrifuge.

Procedure:

- Add10ml Sulphuric acid into the butyrometer.
- Fill10.75ml pipette with milk and deliver the sample into butyrometer
- Add 1ml of amyl alcohol using1ml pipette and close
- Shake the butyrometer in the shake stand until no white particles are seen and invert it a few times.
- Put the butyrometer in the water bath for 5min.
- Take it out and dry with a cloth, put it in the centrifuge, placing two butyrometer diametrically opposite, centrifuge at maximum speed of 4min.
- Transfer the butyrometer, stoppers downward into water bath for 3-10 min.
- Bring lower end of fat column on to a main graduation mark by slightly withdrawing stopper.

Setup for fat test:



Result appeared as:



Internship Values:-

- ❖ The values I understood included:
  - Practical knowledge of field.
  - How to do quality test for fat.
  - Importance of punctuality.
  - Importance of dress code.
  - Good communication skills.
  - How to build team work skills.
  - How to build confidence.
  - Connecting to dairy products and values of farmers.

Conclusion

During 9 days of Internship, I have accumulated various experience and wide new knowledge through the work had been assigned to me. From my internship at Urmul, I was able to get a better understanding of practical knowledge of field while performing testing and other plant experiment. I enjoyed working with the plant incharge and other associates to devise and implement different strategies. I had also got the opportunity to see the working of large machinery, how a plant work, packaging and manufacturing. Overall, I found the internship experience to be positive, and I'm sure I will be able to use the skills I learned in my career later.

A

Survey Report

On

"A Study on Consumer Buying Behavior for the Cadbury Products"

Project Report

Submitted to RNB Global University for Partial fulfillment for the degree of B.sc. Agriculture (Urmul Dairy Plant)

By:-

Rahul

RNBGU201900014

Under the Guidance of

Mr. Avinash Sharma



RNB Global University, Bikaner

December 2021

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Objectives:-[1] Processing and packaging in milk.

[2] Record and relationship management in milk supply.

OBJECTIVES :1

RMRD (Raw Milk Reception Dock)

Introduction:

Raw milk reception dock is the collection center for milk in the dairy, it is the very first section in the dairy plant, it collects good quality of milk from the village in the cans and tankers.

Process following RMRD:

1. Unloading: the motor truck carrying the filled milk cans is backed up to the unloading platform. The milk cans are unloaded manually. Then the milk cansare assembled for grading.

2. Grading: this refers to the classification of milk on the basis of its quality, it is well known that the quality of the finished product depends on that of the raw material used.

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[5]•**Lactometer** reading: The addition of water to milk results in the lowering of its lactometer reading. Hence this test is applied for detection of adulteration of milk with water.

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4. Filtration and Chilling and Storage: from the weighing balance the milk is transferred to the dump tank and from there it is passes through filter for the removal of foreign matter like dust, dirt etc. After that it passes to chilling plate capacity of 20 KLPH to chill the milk at 7℃ for deactivation of bacteria and to increase the shelf life of the milk than milk goes to RMT (raw milk storage tank).

5. Cane washing: after reception of milk, cans and lids go to can washer which is straight through type cane washer, capacity to wash 400 cans in 1hr.

Raw milk Processing

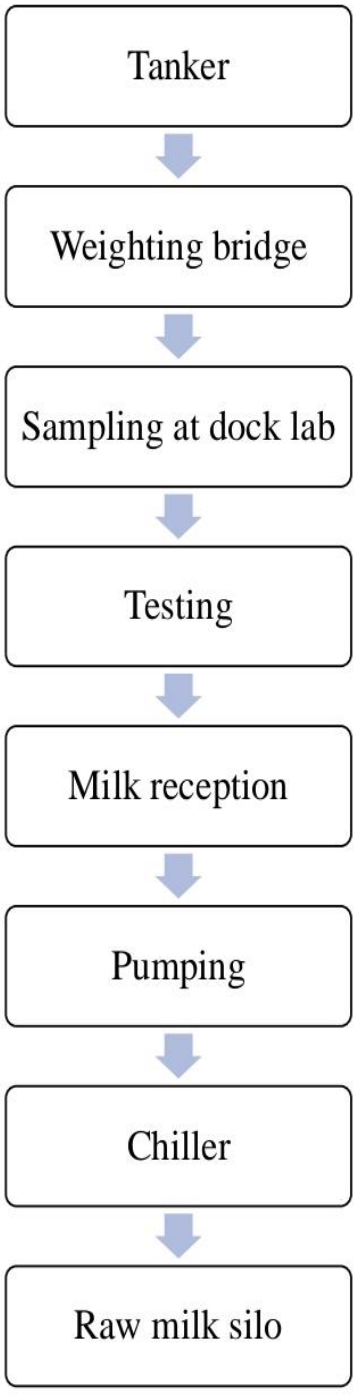


Figure [1]: Raw Milk Receiving



Figure [2]: Raw Milk Receiving

Flow chart of Milk Reception



Milk processing

Processing section is the heart of any dairy. Hence to preserve the milk and improve its nutritional quality by subjecting it to different process depending upon the final process. Processing section perform various operations such as clarification, pasteurization, standardization, homogenization, chilling**.**

1. Pasteurization:

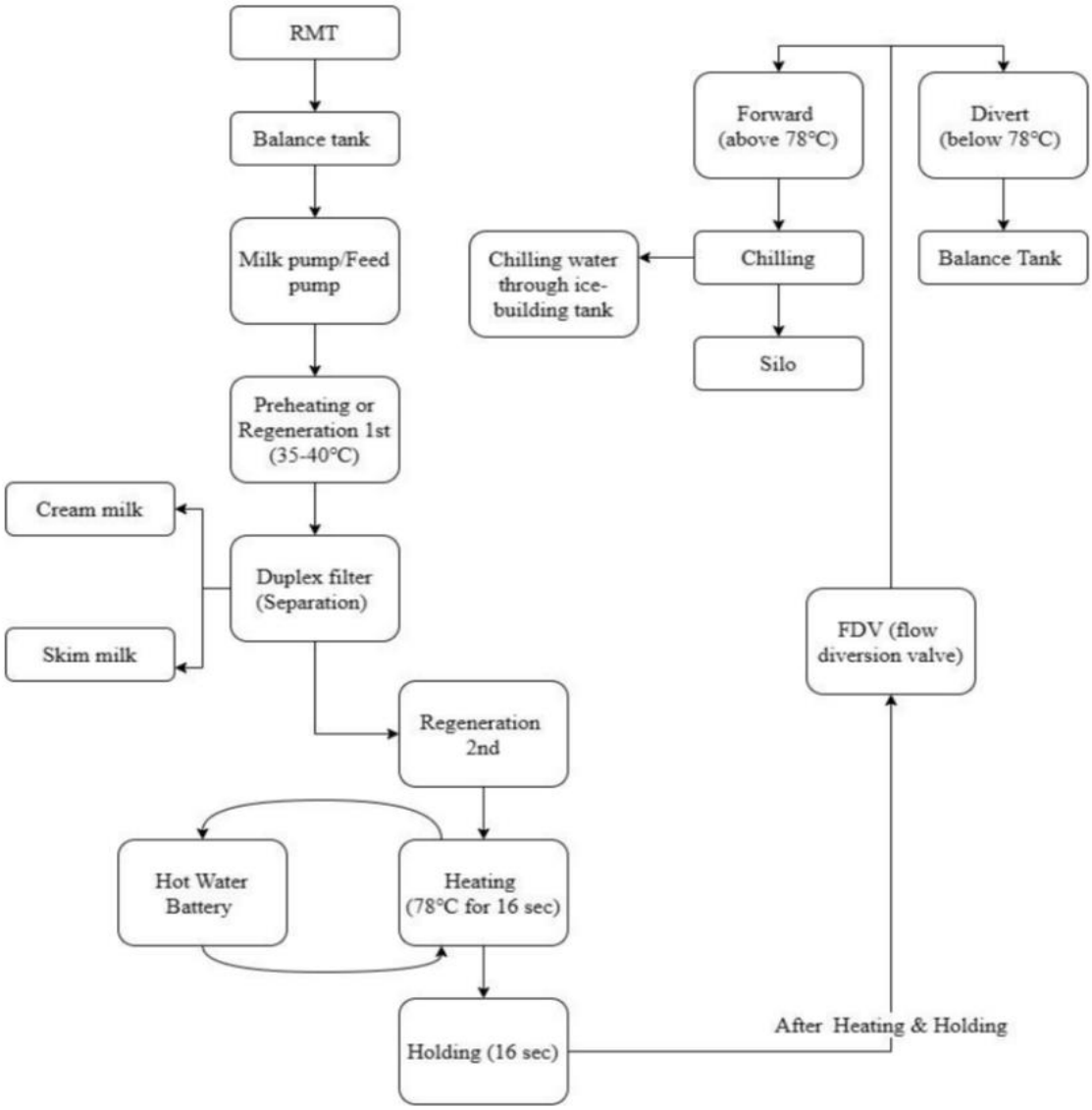
The term pasteurization refers to the process of heating every particle of milk to at least 63℃C for 30 min, or 72℃C for 15 seconds, in approved and properly operated equipment. After pasteurization, the milk is immediately cooled to 5℃Cor below.

Objective:
To render milk safe for human consumption by destruction of pathogenic microorganism (target organism).To improve the keeping quality of milk by destruction of almost all spoilage organism (85- 99%). But it does not kill all vegetative cells or spores (Bacillus and Clostridium spp.)

2. Cream separator:
Cream separation based on average density difference of fat and skim milk. When centrifugal force is subjected to apply due to variation in density separate from one another. Separation of skim milk (about 0.05% fat) and cream (35-40% fat) Separation of milk at 45℃.

3. Standardization:
Standardization of milk refers to the adjustment, i.e., raising or lowering, of the fat and/ or solid not fat % of milk to desired value, so as to conform to the legal or other requirement prescribed.For standardize, to reduce the fat percentage of milk with SMP or skimmed milk is added and to increase the fat percentage cream is added. After standardization milk is stored in silos, sample is taken for analysis of fat, SNF etc. when result is ok milk is used for further process

Flow chart of milk processing:



Milk pouch packaging

Introduction:

Most food consumed is far removed in time and space from the point of its production. Packaging is a necessary aid for the storage and distribution of food. Food is packaged for four primary reasons**:**

- To protect the product from contamination. by micro-

  Organisms ,macro- organisms and filth
- To retard or to prevent either losses or gain of moisture
- To shield the product from oxygen and light
- To facilitate handling

Pouch material specification:

Adjust the pouch length

500ml	140-150mm
1000ml	15-225mm

Pouch Name	**FAT**	**SNF**
Saras Standard	4.5%	8.5%
Saras toned	3%	8.5%
Saras double Toned	1.5%	9.8%

Milk packaging machine:



Figure: 3 Milk Packaging Machine

Packing Milk

Dubble Toned Milk



Toned Milk



Figure: 4 Milk Packing Pouch

Butter Milk and Curd

Buttermilk is a popular refreshing drink prepared from the by-product produced during the preparation of butter/ makkhan from curd. Butter milk is also known as Mattha, or Chhach in northern part of India.

Curd is well fermented milk product consumed by, large section of the population throughoutthe country, as a part of the daily diet or as are fresh beverage.

Composition	**Standard**
Fat	Less than 1%
S.N.F	5.0-5.5%
Acidity	0.4-1.0%

Butter machine



Figure: 5 Butter machine

Curd packing Machine

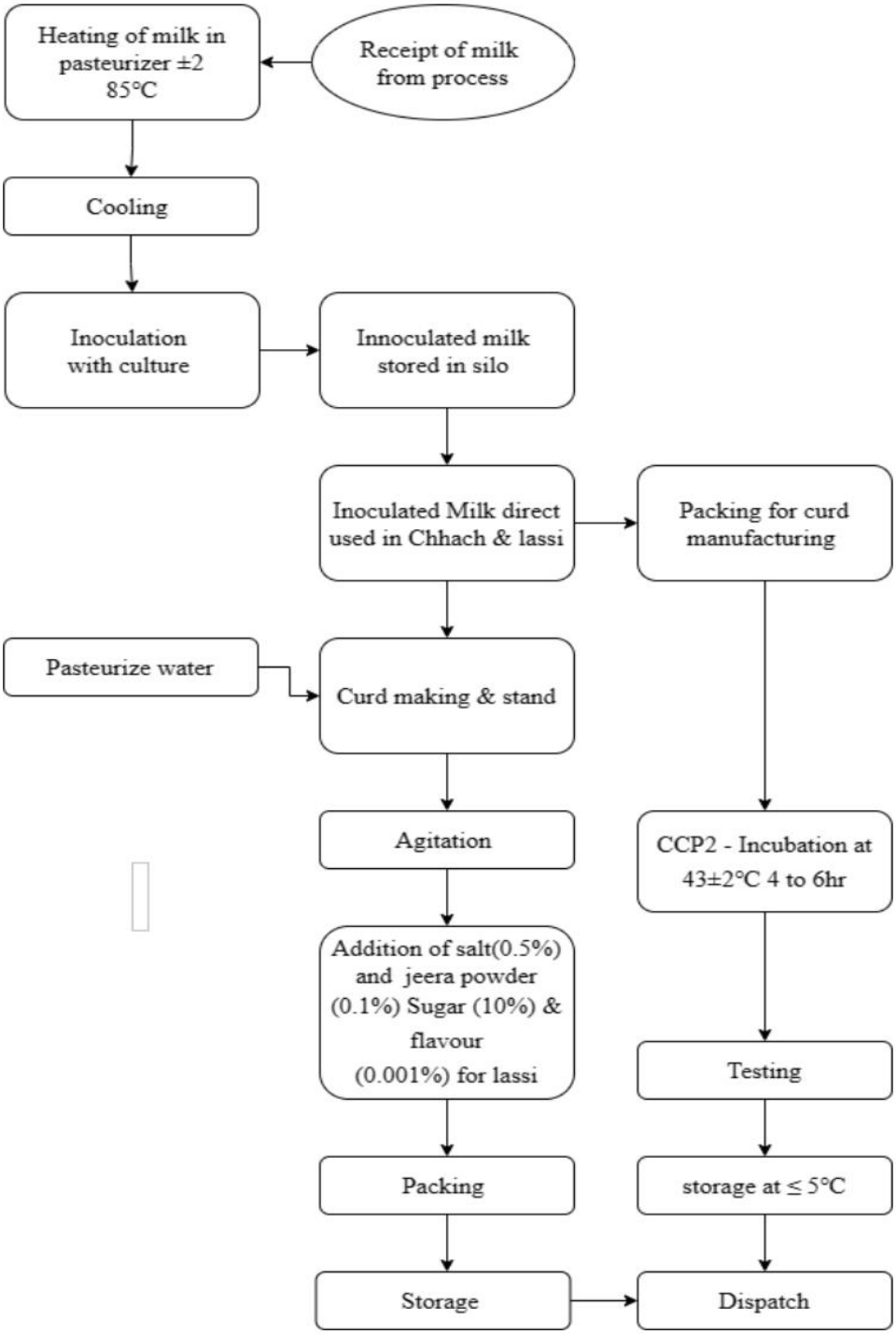






Figure:6 Packaged curd

Flow chart of Buttermilk and Curd manufacturing:



Ghee

Ghee production is the largest segment of milk utilization in India. Most of the dairy plants have ghee production facility to meet the demand of the market as well as to utilize the excess fat in profitable manner. Since simple technology involved in ghee production and relatively less investment for gheeproduction unit as already plant have steam boiler with them.

Following are the various processes available in the industry to make ghee including Desi method which is following largely at rural household level.

Ghee pouch packing material:

Composition: LLDPE +LLDP

Shelf life:
Best before3month/6month /1year from the date of packaging.

Yield:
The yield of ghee from cream or butter is influenced by fat content of raw material.

Ghee Packagi Machine





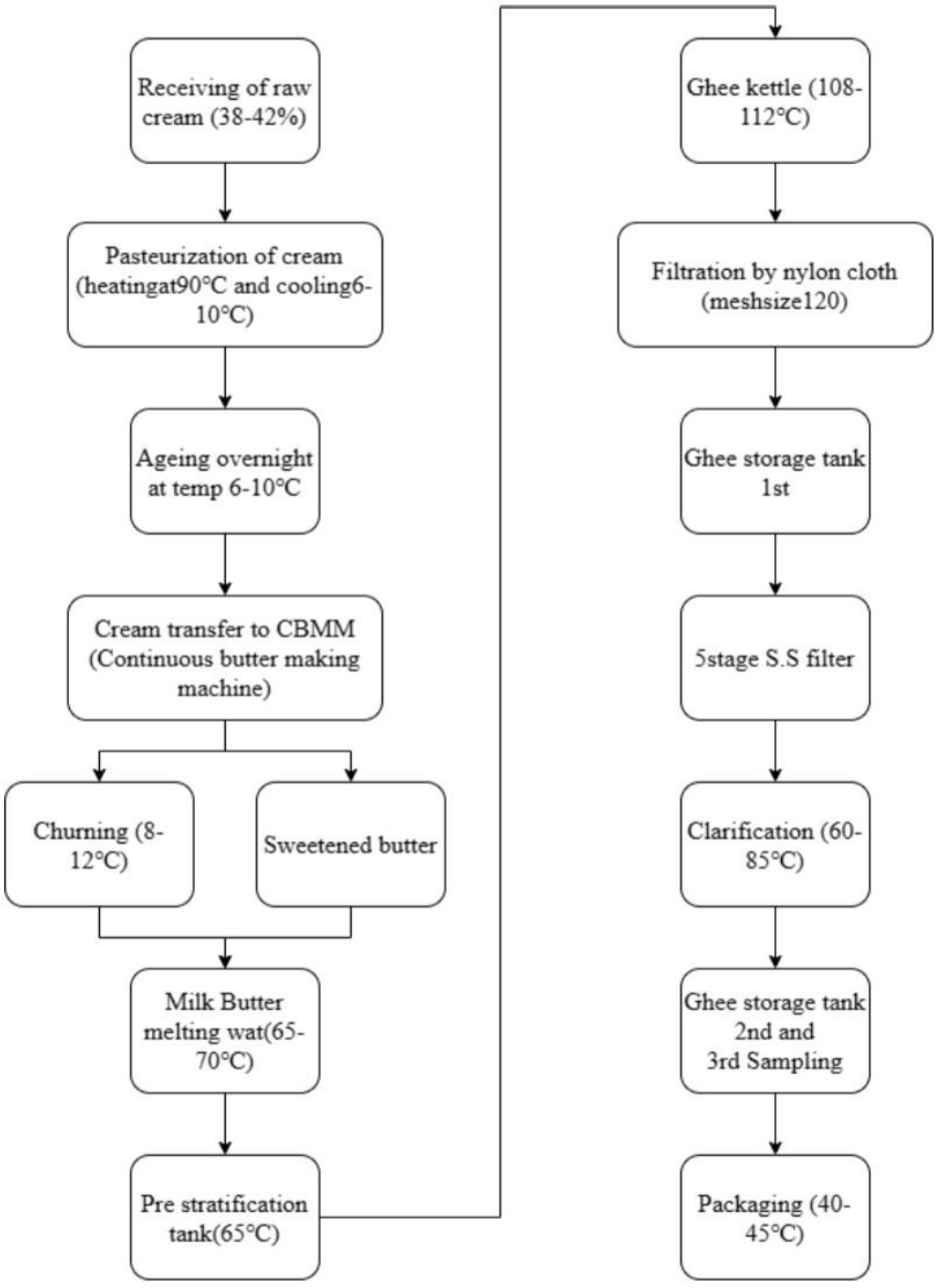


15kg

Figure: 7 Ghee Packaging

Flow Chart

Flow chart:



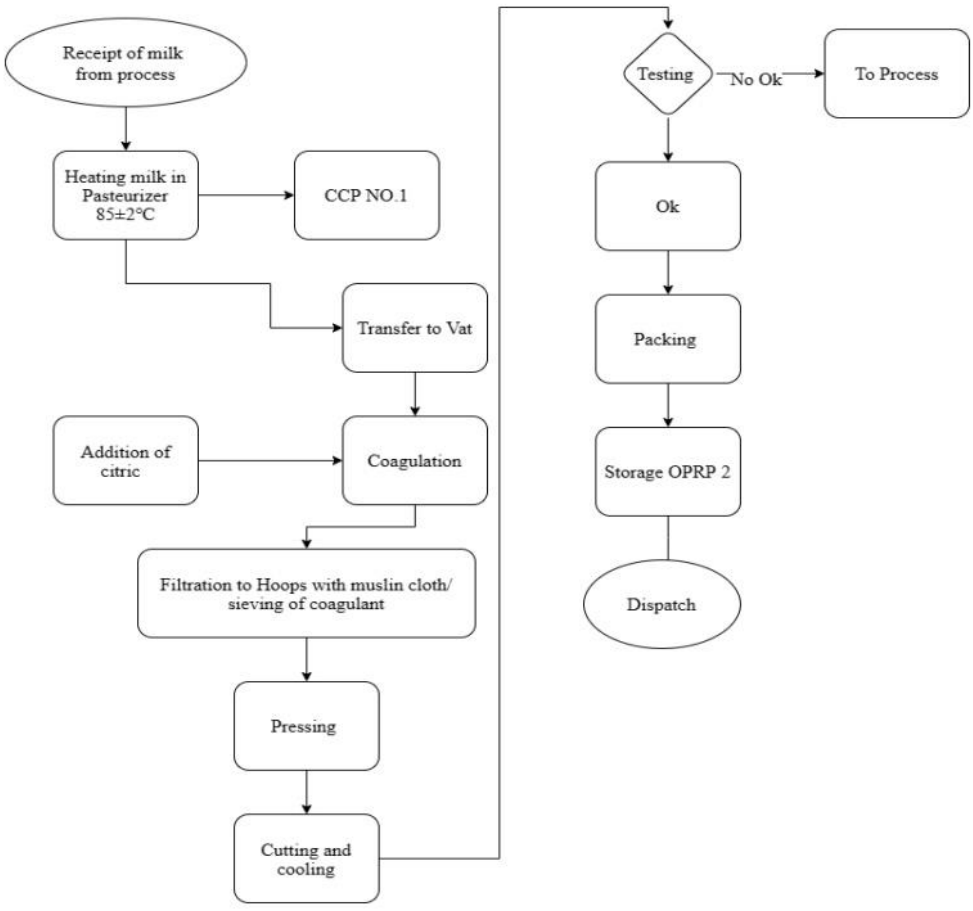
Paneer

Introduction: Is obtained by the acid and heat coagulation of milk at high temperature. The phenomenon of coagulation involves the formation of large structure aggregates of protein in which milk fat and other colloidal and soluble milk solids are entrained with whey. Good quality paneer is characterized by white colour, sweetish, mildly acidic, nutty flavours pongy body and closely-knit texture.

Composition:

Fat 13-14% Moisture 70% Shelf life 15 days from date of packaging

Paneer flow chart:



Paneer Packaging





Figure:8 Paneer Packaging

Experiment no.1

Fat test by Gerber method

Introduction:
The traditional standard reference method for fat analysis is base d on either weight or volumetric determination of the fat content of milk, the Gerber test is widely used all over the world

Principle:
The test is a volumetric method in which fat is separated from milk by centrifugal force. Sulphuric acid is used to dissolve the protein that form membrane around the fat and amyl alcohol is added to improve the separation of fat from other solids.

Equipment and materials:
Sulphuric acid, amyl alcohol, butyrometer, stoppers and shaker stand for butyrometer made from a suitable grade of rubber or plastics, pipette, water bath, centrifuge.

Procedure:
• Add10ml Sulphuric acid into the butyrometer.
• Fill10.75ml pipette with milk and deliver the sample into butyrometer
• Add 1ml of amyl alcohol using1ml pipette and close
• Shake the butyrometer in the shake stand until no white particles are seen and invert it a few times.

• Put the butyrometer in the water bath for 5min.
• Take it out and dry with a cloth, put it in the centrifuge, placing two butyrometer diametrically opposite, centrifuge at maximum speed of 4min.

• Transfer the butyrometer, stoppers downward into water bath for 3-10 min.
• Bring lower end of fat column on to a main graduation mark by slightly withdrawing stopper.

Setup for fat test:



Result appeared as:



Internship Values:-

❖ The values I understood included:

- Practical knowledge of field.
- How to do quality test.
- Importance of time punctuality.
- Importance of Dress Code.
- Good communication skills.
- How to build team work skills.
- How to build confidence.

Conclusion

During Two weeks of Internship, I have accumulated various experience and wide new knowledge through the work had been assigned to me. From my internship at Urmul, I was able to get a better understanding of practical knowledge of field while performing testing and other plant experiment. I enjoyed working with the plant incharge and other associates to devise and implement different strategies. I had also got the opportunity to see the working of large machinery, how a plant work, packaging and manufacturing. Overall, I found the internship experience to be positive, and I'm sure I will be able to use the skills I learned in my career later.

Summer Internship Project Report

ON

Processing and Management in Urmul Dairy, Bikaner

Submitted to the RNBGU for partial fulfilment for the

Degree of

"B.Sc.(Hons.) Agriculture"

By-

Saraswati Bishnoi

Enrolment No-

RNBGU2019001038

Under the Guidance of

Mr. Avinash Sharma



RNB GLOBAL UNIVERSITY

DECEMBER 2021

Declaration

I, Saraswati Bishnoi hereby declare that the presented report of Internship entitled on Milk Processing and Quality Control Testing is uniquely prepared by me after the completion of Two weeks of work experience in URMUL DAIRY BIKANER.

I also confirm that the report is only prepared for my academic requirement, not for any other purpose. It might not be used with the interest of the opposite party of the cooperation.

Place: Bikaner **Saraswati Bishnoi**

Date:

ACKNOWLEDGEMENT

Sometimes words fall short to show our gratitude to some people the same happened with me during my project work. The gigantic help and support received from Urmul dairy, Bikaner overwhelmed me during the project work.

Through this acknowledgment, I express my sincere gratitude to all those people who have been associated with this assignment and have helped me with it and made it a worthwhile experience.

First of all, I'm grateful to RNB Global University Bikaner for successfully arranging the internship program for us. I also thank to Mr. S.N Purohit MD URMUL DAIRY BIKANER for recruiting me as an intern and creating such a wonderful environment for learning.

I am really fortunate that, I had the kind association as well as supervision of Mr. R.S. Sengar Deputy manager of quality control. His exemplary guidance, constant encouragement, and careful monitoring throughout the internship are so great that, even my most profound gratitude is not enough.

In my internship I was mentored by quality control lab staff member Miss Sonali Ma'am and Plant Manager Mr. Shravan Kumar Sir . They have all provided a huge amount of their precious time and effort for me. I feel really lucky to be able to work under there guidance.

I also take this opportunity to express a deep sense of gratitude to all the employees and workers of plant for presenting us such an amazing experience. They are all really wonderful people, and I will never forget these days of mine at URMUL.

I have an enormous pleasure in expressing my deepest sense of gratitude and humble indebtedness towards my college guide Mr. Avinash Sharma Professor, school of Agriculture, RNBGU, for his steadfast inspiration, expert guidance, painstaking effort and keen abiding interest during the entire internship.

At last, I would also like to thank my parents who supported me and help me in finalizing my internship and my friends who helped me a lot during my internship.

Date: Saraswati Bisnoi

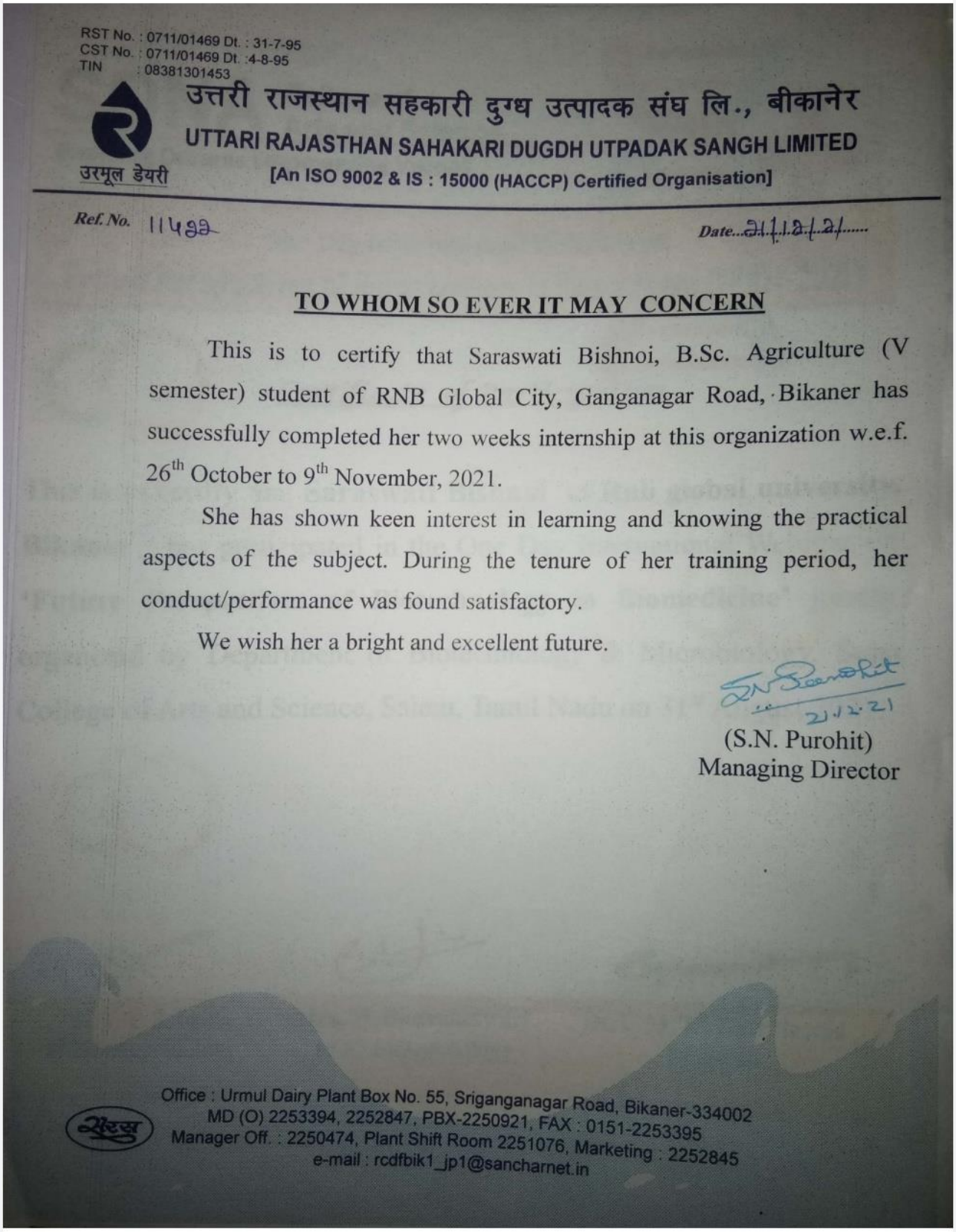
CERTIFICATE OF ORIGINALITY

I hereby certify that I have completed the summer training in partial fulfilment for the award of Bachelor of science in Agriculture. I have done my training at **"Urmul Dairy, Bikaner (Raj.)"** from 26-10-21 to 9-11-2021.

I, hereby declare that the project entitled **"project report on processing and management in Urmul Dairy"** written and submitted by me to the **RNB Global University, Bikaner** in partial fulfilment of the requirements for the award of Degree of Bachelor of science of Agriculture under the guidance of Asst.prof. Mr. Avinash Sharma is my original work and the conclusions drawn therein are based on the material collected by myself.

Saraswati Bishnoi
B.Sc.(Hons.)Agriculture
RNB GLOBAL UNIVERSITY, BIKANER

CERTIFICATE OF EXTERNAL GUIDE



RST No. : 0711/01469 Dt. : 31-7-95
CST No. : 0711/01469 Dt. :4-8-95
TIN : 08381301453

उत्तरी राजस्थान सहकारी दुग्ध उत्पादक संघ लि., बीकानेर
UTTARI RAJASTHAN SAHAKARI DUGDH UTPADAK SANGH LIMITED
उरमूल डेयरी
[An ISO 9002 & IS : 15000 (HACCP) Certified Organisation]

Ref. No. 11499 Date. 21/12/21

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Saraswati Bishnoi, B.Sc. Agriculture (V semester) student of RNB Global City, Ganganagar Road, Bikaner has successfully completed her two weeks internship at this organization w.e.f. 26th October to 9th November, 2021.

She has shown keen interest in learning and knowing the practical aspects of the subject. During the tenure of her training period, her conduct/performance was found satisfactory.

We wish her a bright and excellent future.

21.12.21

(S.N. Purohit)
Managing Director

Office : Urmul Dairy Plant Box No. 55, Sriganganagar Road, Bikaner-334002
MD (O) 2253394, 2252847, PBX-2250921, FAX : 0151-2253395
Manager Off. : 2250474, Plant Shift Room 2251076, Marketing : 2252845
e-mail : rcdfbik1_jp1@sancharnet.in

EXECUTIVE SUMMARY

Uttari Rajasthan Sahkari Dugdh Utpadak Sangh Ltd, Famous as URMUL was established on August 28, 1972 --- a cooperative body registered under cooperative act 1956.

With the onset Urmul covered Bikaner, Shri Ganga Nager and Churu districts. However, in mid-eighties separate unions were established for Churu and Shri Ganganagar districts with the objective to ameliorate the socioeconomic status of the rural population by providing them market of their milk at their door step, irrespective of their geographical conditions.

Urmul started its business from 9th July 1973 with the initial membership of 64 societies and initially collected 1500 liters of milk per day. The milk union acquired its own facilities during the year 1977. Presently there are 851 registered and 333 Proposed societies covered by 52 milk routes and collecting about 80 thousand liters of milk per day against the installed capacity of 150 thousands liters of milk. Urmul had paid Rs.57.35 cores to the milk producers during the year 2015-2016.

No one had ever thought that there could exist a tremendous amount of milk in the hot thar desert of Bikaner District. Villages are flushed with milk in this District.
During August 1983 Urmul collected 269 thousands liters of milk in a day which was a record collection. The Milk Union has five chilling centers located at Loonkarnsar, Bajju, Chattargarh, Dungargarh and Khajuwala with the handling capacity of 1,00,000 liters, 30,000 liters, 30,000 Litres 10,000 litres and 15,000 litres respectively.

The report gives us basic idea about functioning at Urmul Dairy, Bikaner (Raj.) During 14 days program each and every aspect of milk processing and its management and its impact on milk products. With the help of this report, we can get each step taken in order of maintenance.

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INTRODUCTION

A dairy is a business enterprise established for the harvesting or processing (or both) of animal milk – mostly from cows or buffaloes, but also from goats, sheep, horses, or camels – for human consumption. A dairy is typically located on a dedicated dairy farm or in a section of a multi-purpose farm (mixed farm) that is concerned with the harvesting of milk.

URMUL Dairy (Uttar Rajasthan Milk Union Limited) was set up in the arid region of Bikaner district on August 29, 1972 as part of the Operation Flood II a cooperative body registered under cooperative act 1956.

With the objective to ameliorate the socioeconomic status of the rural population by providing them market of their milk at their door step, irrespective of their geographical conditions.

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The products manufactured at the plant are Butter, Ghee, and Skim milk powder, Cheddar Cheese, and Paneer besides milk being packed in sachets. Urmul started manufacturing of Chach, Lassi, Dahi and Shrikhand which has gained a very much positive response from the local market.

The product manufactured are marketed with the help of RCDF, Jaipur under a common brand name “SARAS”.

Chapter 1

RMRD (Raw Milk Reception Dock)

Introduction:

Raw milk reception dock is the collection centre for milk in the dairy, it is the very first section in the dairy plant, it collects good quality of milk from the village in the cans and **tankers.**

Process following RMRD:

1. **Unloading**: the motor truck carrying the filled milk cans is backed up to the unloading platform. The milk cans are unloaded manually. Then the milk cans are assembled for grading.

2**. Grading**: this refers to the classification of milk on the basis of its quality, it is well known that the quality of the finished product depends on that of the raw material used.

The principle of grading is based on organoleptic (sensory) tests, such as those for odour, taste, appearance, touch, acidity, sediments etc. These are included under platform tests.

These are as follow:

I. **Smell (odour):** The lid of the can is removed and shaking the can vigorously with the help of plunger and sample is taken and raised to the nose, if any off- flavours appears rejection of the can take place.
II. **Appearance**: by regularly observing the milk in each can after the odour test has been made, any floating extraneous matter, off-colour or partially be noted in any of the can that can is rejected. The milk should be normal in colour, free from churned fat globules and reasonably free from floating extraneous material.
III. **Temperature**: The temperature at which milk is delivered is often an indicator of its quality. A temperature of 5℃ or below is satisfactory.

IV. **Acidity test**: It has already been pointed out that natural or apparent acidity of milk does not make the milk taste sour, nor does it affect the normal properties of milk its quality or its behaviour towards processing heat. Nevertheless, the acidity test does have its proper place on the milk it is always well to have a certain acidity above which milk should not be accepted.

V. **Lactometer reading**: The addition of water to milk results in the lowering of its lactometer reading. Hence this test is applied for detection of adulteration of milk with water.

3. **Weighing:** This is essential step making payments for milk. The milk in cans is dump into the weigh tank manually. The milk in tanker is measured on a weigh bridge.

4. **Filtration and Chilling and Storage**: from the weighing balance the milk is transferred to the dump tank and from there it is passes through filter for the removal of foreign matter like dust, dirt etc. After that it passes to chilling plate capacity of 20 KLPH to chill the milk at 7℃ for deactivation of bacteria and to increase the shelf life of the milk than milk goes to RMT (raw milk storage tank).

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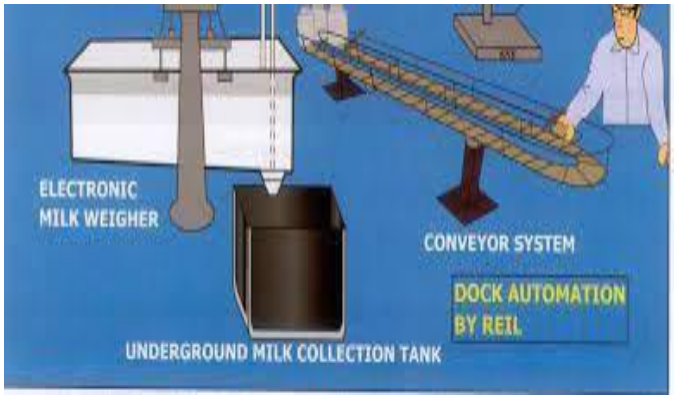
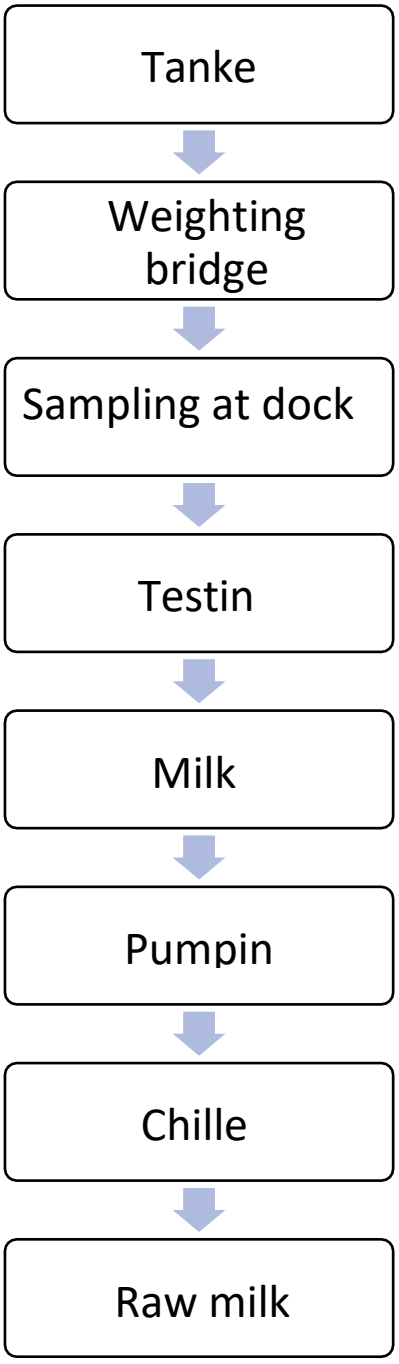


Fig: Raw milk reception dock



Flow chart of Milk Reception



Chapter 2

Milk processing

Processing section is the heart of any dairy. Hence to preserve the milk and improve its nutritional quality by subjecting it to different process depending upon the final process. Processing section perform various operations such as clarification, pasteurization, standardization, homogenization, chilling.

Pasteurization:

The term pasteurization refers to the process of heating every particle of milk to at least 63℃C for 30 min, or 72℃C for 15 seconds, in approved and properly operated equipment. After pasteurization, the milk is immediately cooled to 5℃Cor below.

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Cream separator:

Cream separation based on average density difference of fat and skim milk.

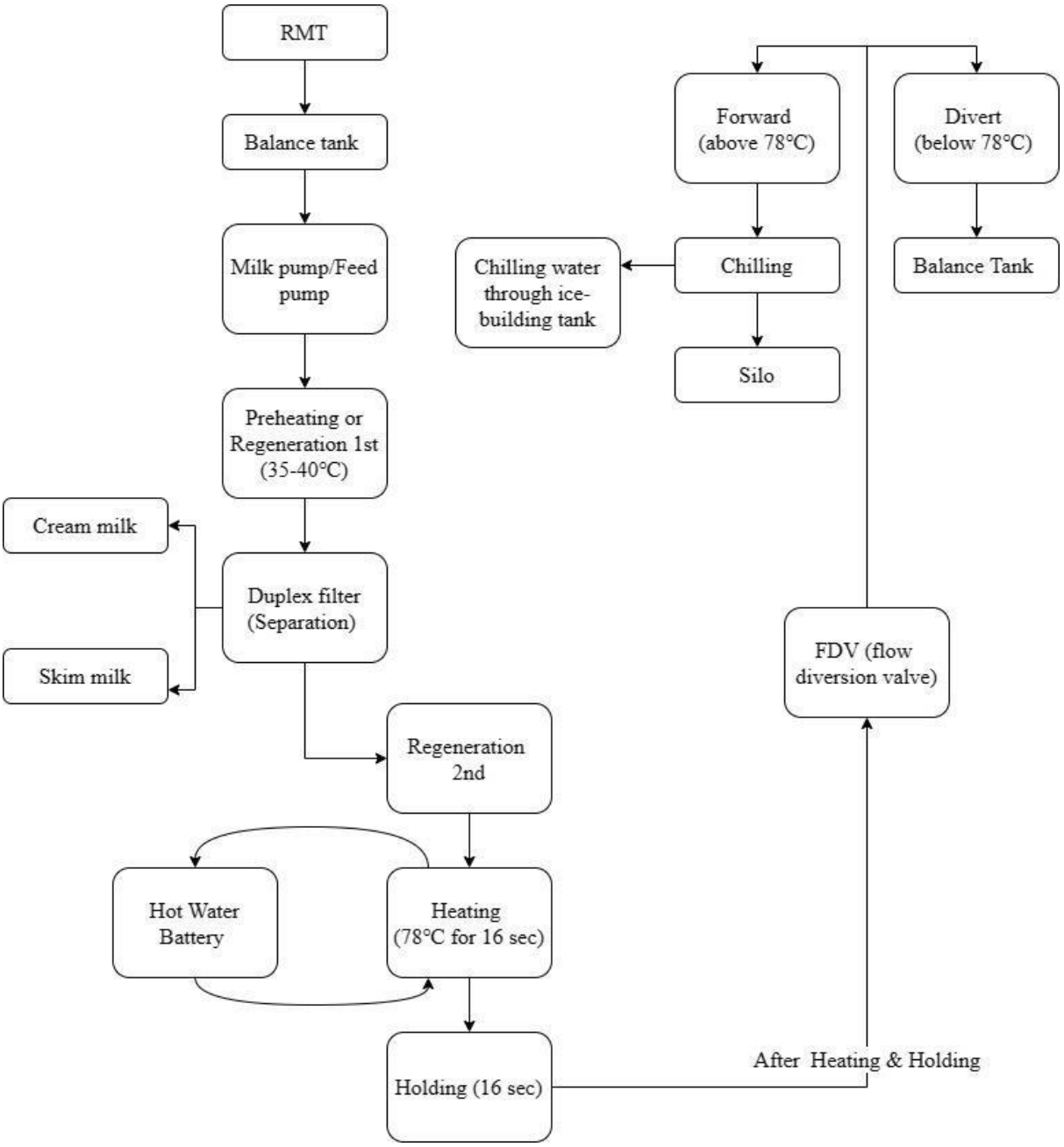
When centrifugal force is subjected to apply due to variation in density separate from one another. Separation of skim milk (about 0.05% fat) and cream (35-40% fat) Separation of milk at 45℃.

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For standardize, to reduce the fat percentage of milk with SMP or skimmed milk is addedand to increase the fat percentage cream is added. After standardization milk is stored in silos, sample is taken for analysis of fat, SNF etc. when result is ok milk is used for furtherprocess.

Flow Chart Of Milk Processing



Operational parameters

1. Milk chiller:

Initial temperature of milk	**4 – 7 ℃**
Cooling medium	chilled water at1-20c

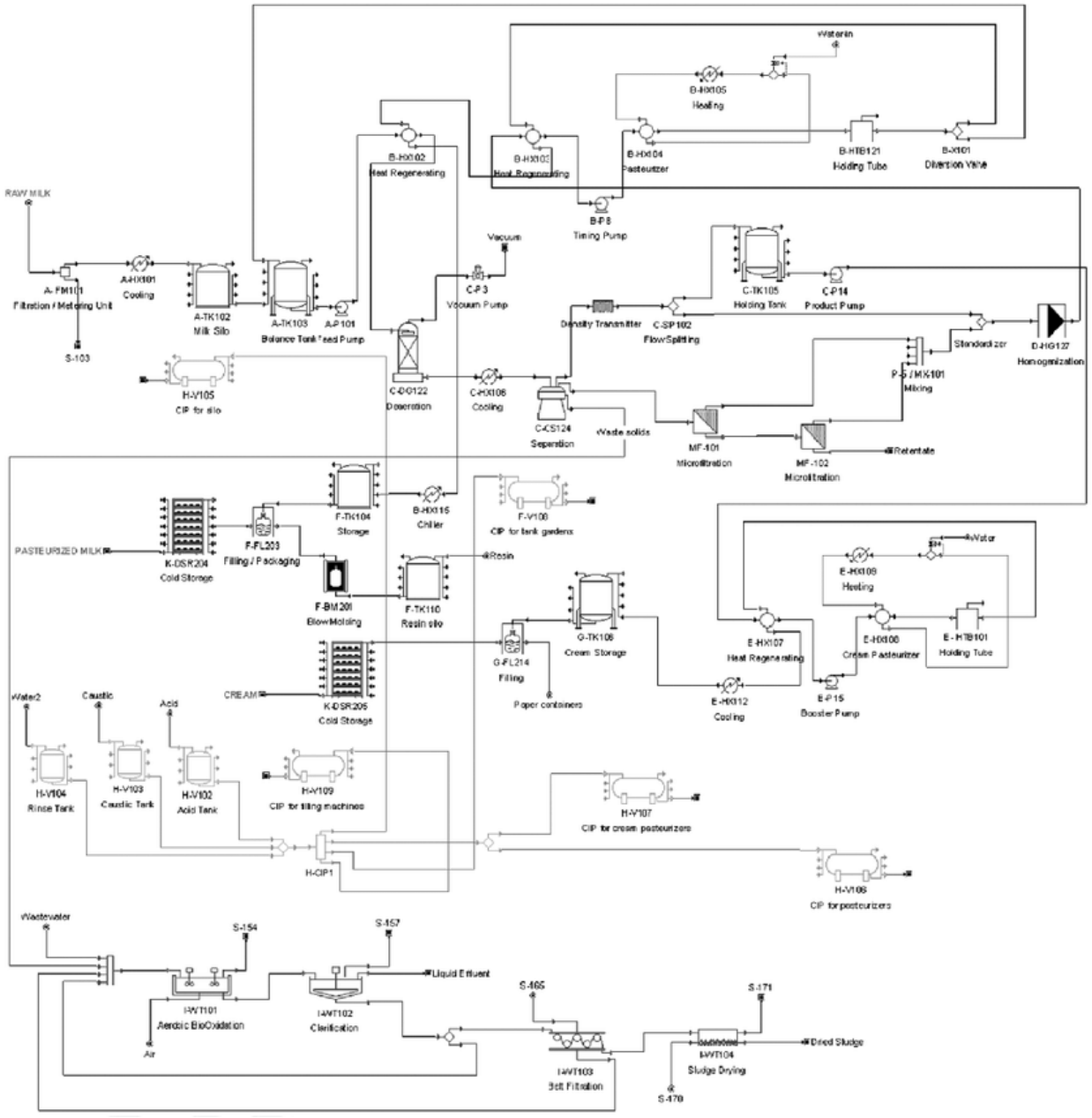
2. Milk pasteurizer:

Time temp. Combination	**80℃ for 15seconds**
Stem pressure	6kg/cm3
Chilled water temp	1 ℃
Chilled milk temp	4 ℃

3. Cream separator:

Separation temp	40 to 500℃

Milk Processing Plant with Full Homogenization and Microfiltration



Chapter 3

Milk pouch packaging

Introduction:

Most food consumed is far removed in time and space from the point of its production. Packaging is a necessary aid for the storage and distribution of food. Food is packaged for four primary reasons:

- To protect the product from contamination. by micro- organisms, macro- organisms and filth
- to retard or to prevent either losses or gain of moisture
- to shield the product from oxygen and light
- to facilitate handling.

Pouch material specification:

Adjust the pouch length

500ml	140 - 150 mm
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Pouch Name	**FAT**	**SNF**
Saras Standard	4.5%	8.5%
Saras toned	3%	8.5%
Saras double Toned	1.5%	9.8%

- **Milk packaging machine:**



- **Packaged Milk:**



Chapter 4

Butter Milk and Curd

Buttermilk is a popular refreshing drink prepared from the by-product produced during the preparation of butter/ makkhan from curd. Butter milk is also known as Mattha, or Chhach in northern part of India.

Curd is well fermented milk product consumed by, large section of the population throughout the country, as a part of the daily diet or as are fresh beverage.

Composition	**Standard**
Fat	Less than1%
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Acidity	0.4-1.0%

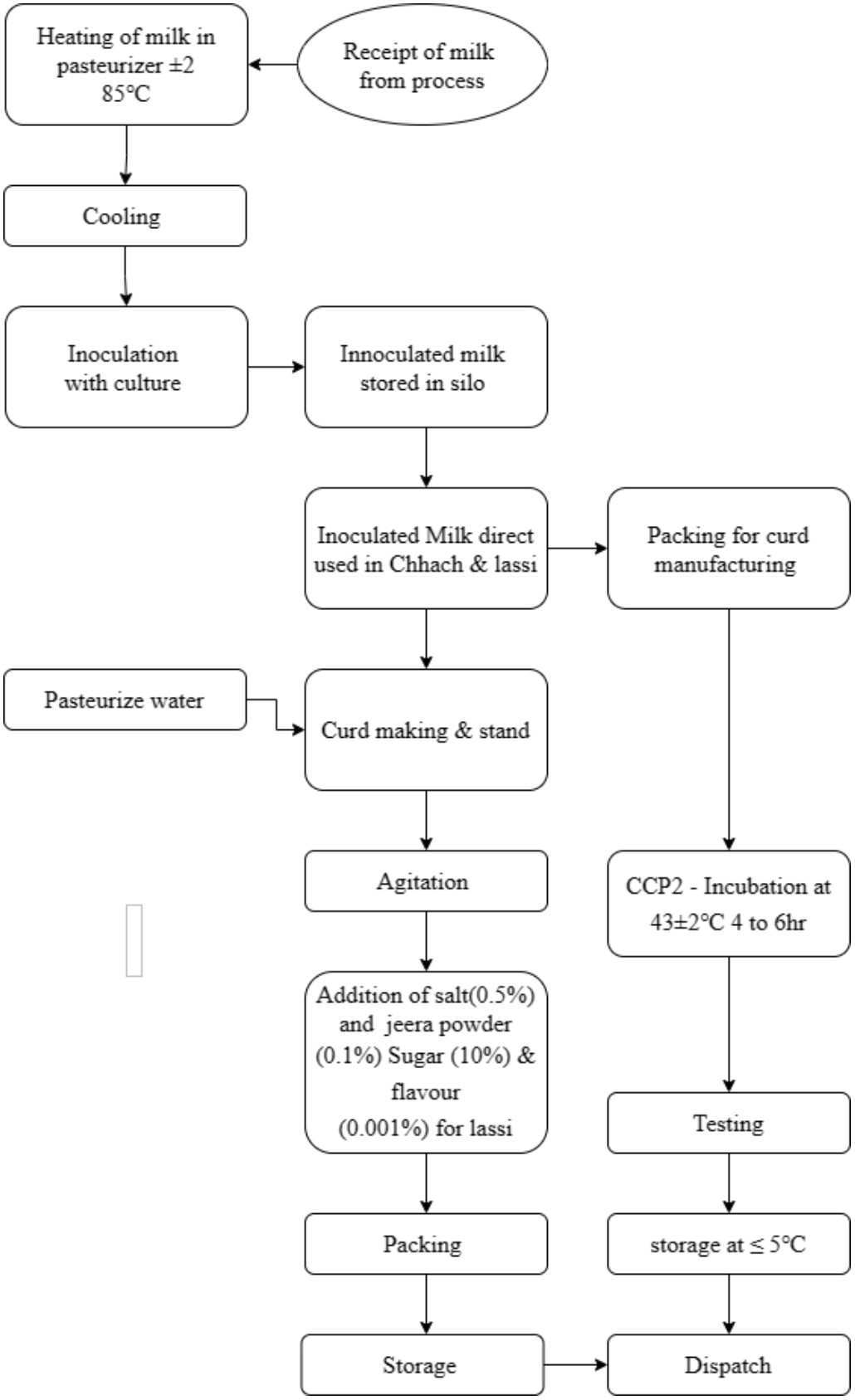
- Buttermilk packed in same machine which is used for milk packaging.

Fig: Curd PackagingMachine





Packaged curd



Flow chart of Buttermilk and Curd manufacturing

Chapter 5

Ghee

Ghee production is the largest segment of milk utilization in India. Most of the dairy plants have ghee production facility to meet the demand of the market as well as to utilize the excess fat in profitablemanner. Since simple technology involved in ghee production and relatively less investment for ghee production unit as already plant have steam boiler with them.

Following are the various processes available in the industry to make ghee including Desi method which is following largely at rural household level.

Ghee pouch packing material:

Composition: LLDPE +LLDP

Shelf life:

Best before3month/6month /1year from the date of packaging.

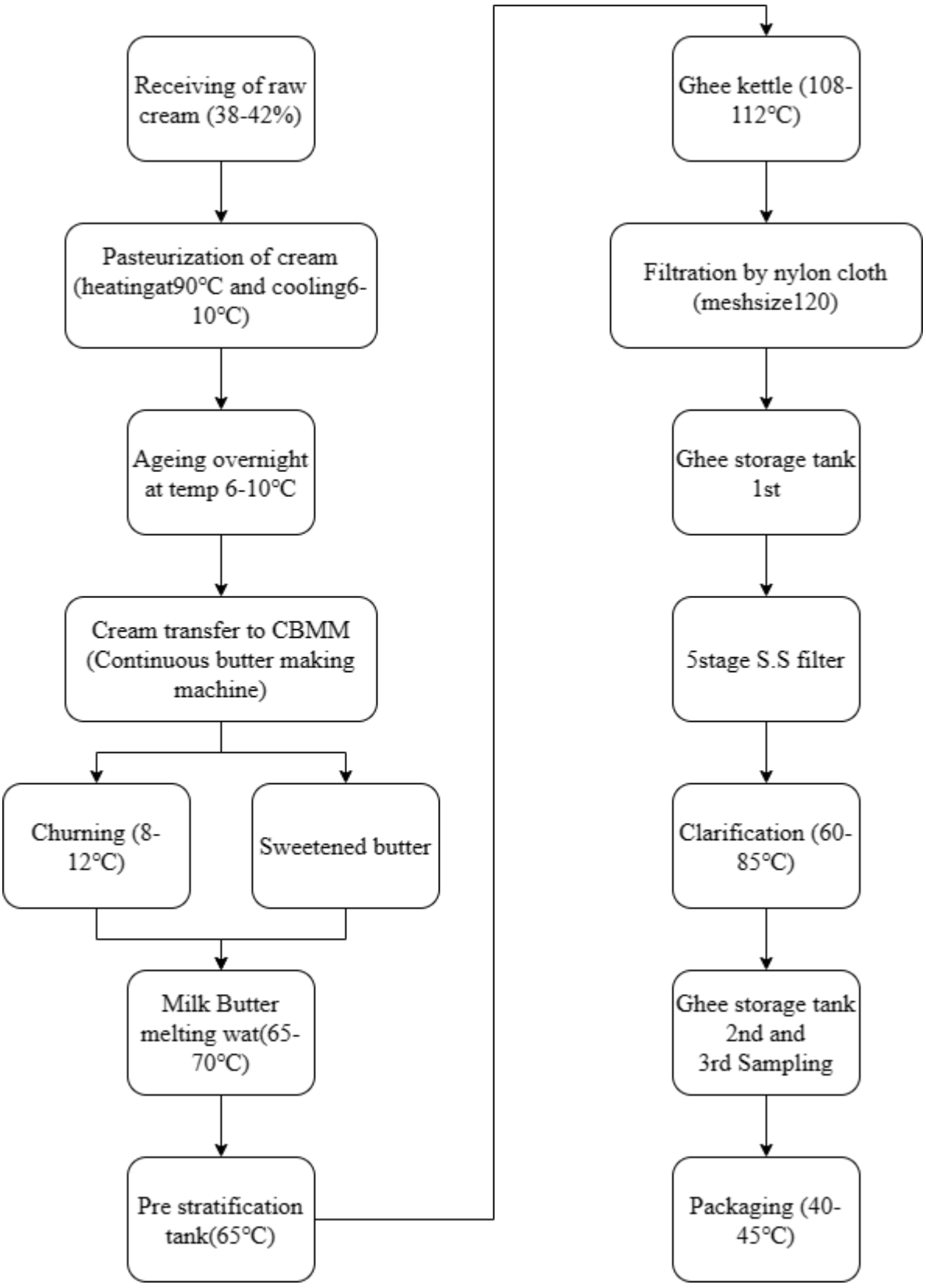
Yield:

The yield of ghee from cream or butter is influenced by fat content of raw material.



Packaged ghee

Flow chart:


Receiving of raw cream (38-42%)
Pasteurization of cream (heatingat90°C and cooling6-10°C)
Ageing overnight at temp 6-10°C
Cream transfer to CBMM (Continuous butter making machine)
Churning (8-12°C)
Sweetened butter
Milk Butter melting wat(65-70°C)
Pre stratification tank(65°C)
Ghee kettle (108-112°C)
Filtration by nylon cloth (meshsize120)
Ghee storage tank 1st
5stage S.S filter
Clarification (60-85°C)
Ghee storage tank 2nd and 3rd Sampling
Packaging (40-45°C)

Chapter 6

Preparation and packaging of Shrikhand

Shrikhand is a popular fermented, sweetened, indigenous dairy product having semi solid consistency with typical sweetish-sour taste. It is very popular in the state of Gujarat, Maharashtra and part of Karnataka. It is prepared by mixing chakka with sugar, colour, flavour, spices and other ingredients like fruit pulp, nuts etc. to form soft homogenous mass.

Packaging of Shrikhand

As shrikhand is a semi solid product, heat sealable polystyrene cups of 100gto1000g capacity are commonly used for packing shrikhand. However, small manufacturer sells the product in wax coated paperboard boxes.

Packaged Shree Khand



Chapter 7

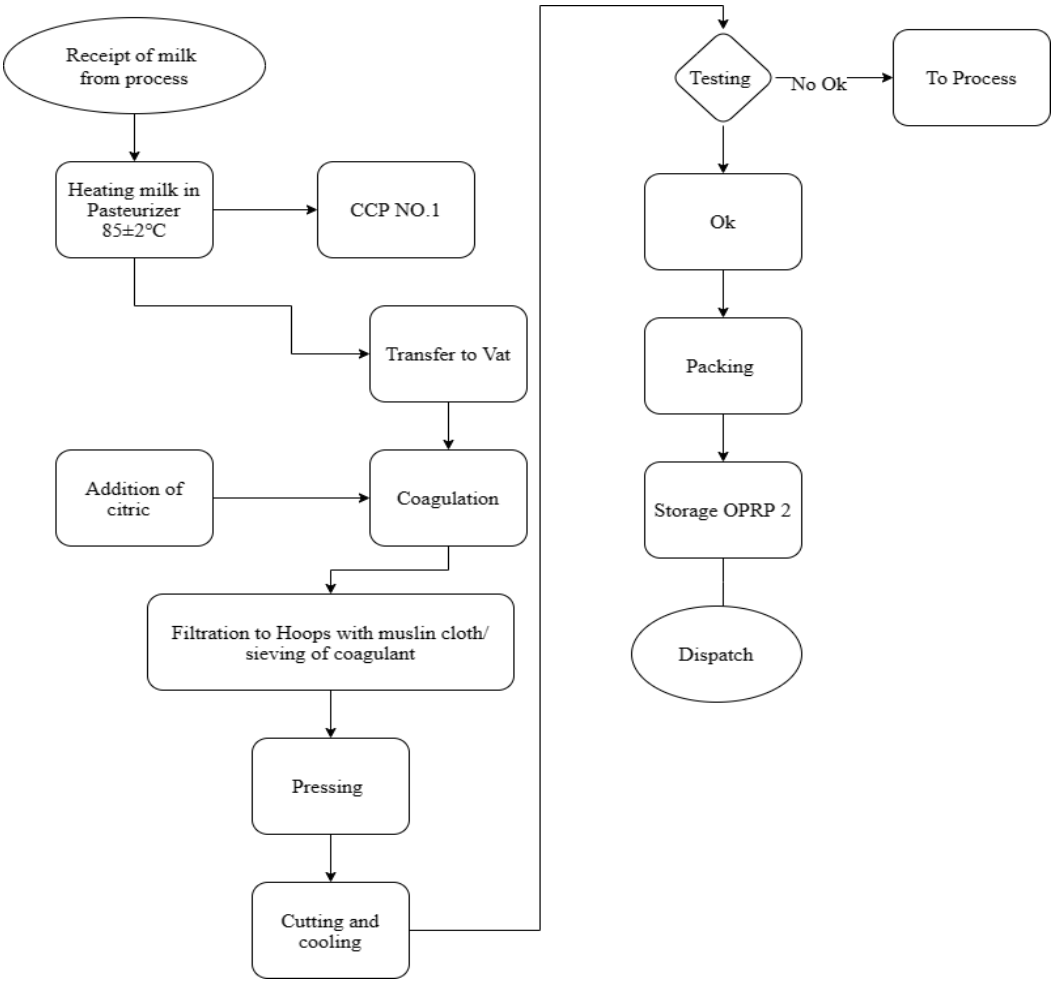
Preparation and packaging of Paneer

Introduction: Is obtained by the acid and heat coagulation of milk at high temperature. The phenomenon of coagulation involves the formation of large structure aggregates of protein in which milk fat and other colloidal and soluble milk solids are entrained with whey. Good quality paneer is characterized by white color, sweetish, mildly acidic, nutty flavors porgy body and closely-knit texture.

Composition:

Fat 13-14% Moisture 70% Shelf life 15 days from date of packaging

Paneer flow chart:

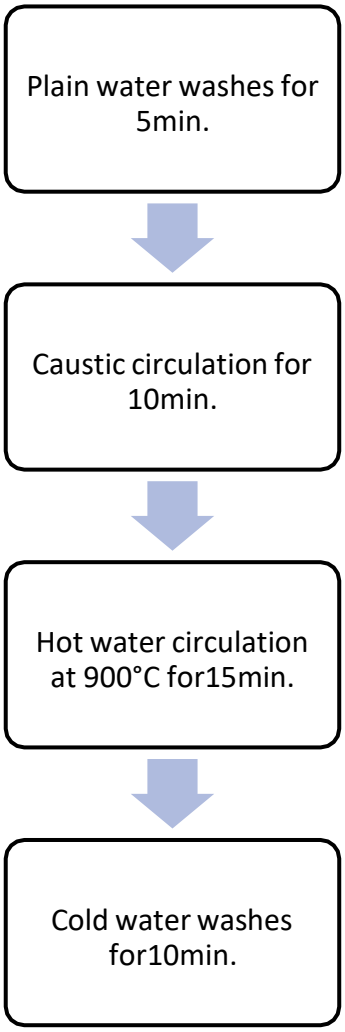


Chapter 8

CIP of processing section

CIP stands for clean in place. This refers to the system of cleaning and sanitizing which does not require the daily dismantling of dairy equipment. To maintain the hygienic condition of plant cleaning ventilation and CIP of milk processing equipment is necessary. For CIP caustic soda and nitric acid is used in require proportion. The strength of caustic solution of CIP is kept between 1-2%. The strength of acid solution of CIP is kept between 0.5-1%.

Flow chart for CIP:



Chapter 9

Standard protocol in Quality Assurance Laboratory

Introduction:

Quality assurance/control refers to a program for the systematic monitoring and evaluation of the various aspects of a project, or facility to ensure that standards of quality are being met. Two key principles characterize quality assurance:

- "Fit for the purpose" (the product should be suitable for the intended purpose).
- "Right at the first time" (mistakes should be eliminated).

It is more than just testing the quality aspects of a product, service or facility, it analyses the quality to make sure it conforms to specific requirements and comply with established plans. For efficient operation of a plant, employing correct techniques of operation following of proper cleaning and maintenance program is vital.

Milk is a complete food having almost all nutrient, provide an excellent culture medium for bacteria. It can & does serve as a vehicle for harmless and disease producing microorganism for both economic and health reasons, therefore it is essential that animal giving milk should be protected from disease; that milk and milk products should be handled, transport, process, package and deliver in the most hygienic condition.

To achieve and maintain high efficiency high productivity requires a persistent and systematic procedure for the care of all production, control and auxiliary machinery.

Equipment use for different tests are as follow:

- **Milko scan:** it is used to measure fat, protein, lactose, minerals Gerber centrifuge: centrifuge the butyrometer in this instrument for fat testing of milk. Centrifuge at1200 RPM.
- **Acidometer:** use to measure acidity.
- **Water bath:** device for regulating temperature of anything subjects to heat, by surrounding the vessel containing it with another water which can be at a desired temperature.
- **Hot air oven:** device used to sterilize articles such as glass flask, beakers, pipette, burette, glass roads etc. at the temperature of about 50- 300°C. There is a thermostat controlling the temperature.



Hot Air Oven



Water Bath

Experiment no.1

Determination of Fat test by Gerber method

Introduction:

The traditional standard reference method for fat analysis is base d on either weight or volumetric determination of the fat content of milk, the Gerber test is widely used all over the world

Principle:

The test is a volumetric method in which fat is separated from milk by centrifugal force. Sulphuric acid is used to dissolve the protein that form membrane around the fat and amyl alcohol is added to improve the separation of fat from other solids.

Equipment and materials:

Sulphuric acid, amyl alcohol, butyrometer, stoppers and shaker stand for butyrometer made from a suitable grade of rubber or plastics, pipette, water bath, centrifuge.

Procedure:

- Add10ml Sulphuric acid into the butyrometer.
- Fill10.75ml pipette with milk and deliver the sample into butyrometer
- Add 1ml of amyl alcohol using1ml pipette and close
- Shake the butyrometer in the shake stand until no white particles are seen and invert it a few times.
- Put the butyrometer in the water bath for 5min.
- Take it out and dry with a cloth, put it in the centrifuge, placing two butyrometer diametrically opposite, centrifuge at maximum speed of 4min.
- Transfer the butyrometer, stoppers downward into water bath for 3- 10 min.
- Bring lower end of fat column on to a main graduation mark by slightly withdrawing stopper.

Setup for fat test:



Result appeared as:



Experiment 2

SNF Test by Zeal lactometer

Apparatus:

Lactometer 0-40 graduation, thermometer, lactometer jar, petri plate.

Procedure:

- Mix the sample and cool the sample up to calibration temperature of lactometer (20℃)
- Pour the enough milk in to lactometer jar than immerse the lactometer gently and lactometer should float freely into cylinder.
- Allow the lactometer to remain steady in the milk
- Take the reading within 30 sec.

Calculation:

SNF= CLR/4+FAT%*0.21 + 0.36

- **Lactometer:**





- **This is how it is dipped in Milk.**



- **Left it there without disturbing.**

Experiment 3

Titratable acidity

Apparatus:

Conical flask, burette, pipette 10ml

Reagent:

Sodium hydroxide solution N/10 Phenolphthalein indicator0.5%in sprit

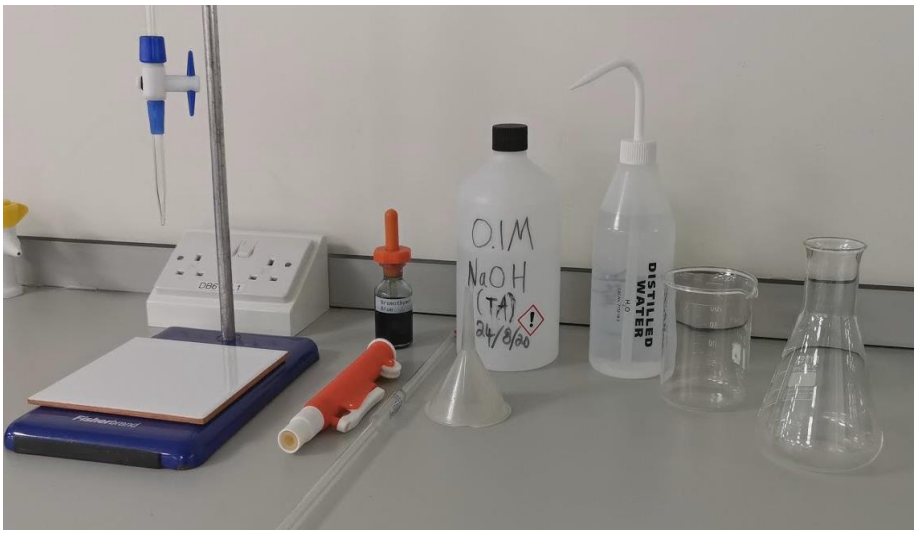
Procedure:

- Take 10ml sample in100ml conical flask.
- Add1 ml phenolphthalein indicator.
- Titrate with N/1O NaOH solution up to pink colour appear.
- Note down reading.

Calculation:

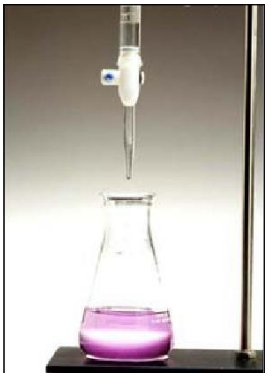
Titrable acidity = reading × 0.09 (%as lactic acid) =1.38 ×0.09 = 0.125% LA

- **Setup for Titration:**



-End result is obtained as light pink colouration, due to presence of

Phenolphthalein indicator .



Experiment 4

Organoleptic Test

1) **COB test:** milk with high acidity and high salt content clots on the boiling due to precipitation of protein.

   Procedure:

- Take 5ml of milk in a test tube and place the tubes in a boiling water bath for 5min.
- Remove the tubes from the boiling water bath and observe the tube if the clotting appear on side and bottom of the test tube is an indication of poor keeping quality.

2) **MBRT Test:**

   This test is carried out for assessing the bacterial load of raw and pasteurize milk, in this test dye reduction time gives an indication of bacterial number and activity in milk.

   Apparatus:

   water bath maintained at 37°CSterile test tube Sterile pipette Sterile rubber cork.

   Reagent for MBRT solution:

   dissolve one good quality MBRT tablet in 800 ml of sterile cooled distilled water.

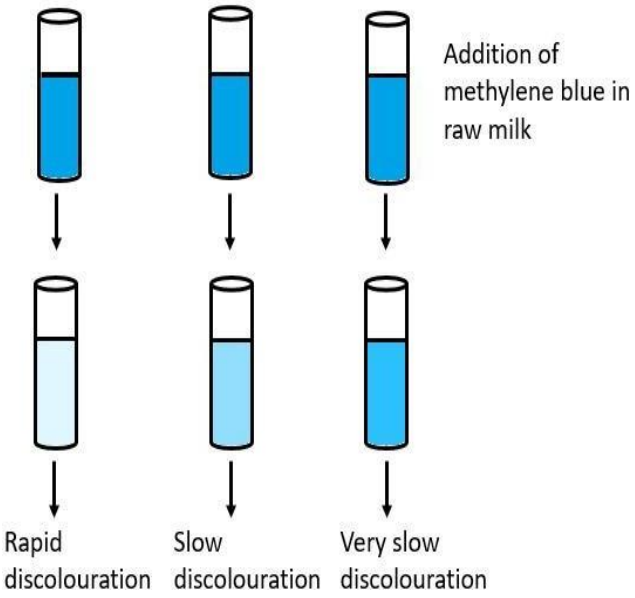
   Procedure:

- Add1ml of methylene blue solution aseptically in tube.
- Add 10ml sample in the test tube and close the test tube with rubber cork.
- Mix well and put test tube in water bath at 37°C
- Observe the colour of test tube at every 30min interval and note the reduction time when it is decolorized.

- Different samples of milk placed in separate testube mixed with MBRT reagent.



- A positive result occurs when the viable bacteria present in the milk decolorizes the milk within certain time and when the milk is not decolorized then it is negative result. **If the reduction occurs within 30 min then very poor-quality milk**.



Internship Values

❖ The values I understood included:

- Practical knowledge of field.
- How to do quality test.
- Importance of time punctuality.
- Importance of Dress Code.
- Good communication skills.
- How to build team work skills.
- How to build confidence.

Conclusion

During two weeks of Internship, I have accumulated various experience and wide new knowledge through the work had been assigned to me. From my internship at Urmul Dairy, I was able to get a better understanding of practical knowledge of field while performing testing and other lab experiment. I enjoyed working with the lab in charge and other associates to devise and implement different strategies. I had also got the opportunity to see the working of large machinery, how a plant works, packaging and manufacturing. Overall, I found the internship experience to be positive, and I'm sure I will be able to use the skills I learned in my career later.

Weekly Reports: -

Weekly Progress Report

Name of Student	**Saraswati Bishnoi**
Enrolment no.	**RNBGU2019001038**
Program	**B.Sc. (Hons.) Agriculture**
Report Date	
Week	**2**
Name of the organisation	**Urmul Dairy, Bikaner**
Report	**Processing and Management in Urmul Dairy**
Tuesday (26/10/21)	**Introduction to the working of the dairy**
Wednesday (27/10/21)	**Introduction with other employees in dairy unit and understanding the work**
Thursday (28/10/21)	**Introduction the basics of Dairy work**
Friday (29/10/21)	**The main work of the firm how they pasteurize milk and processing other material**
Saturday (30/10/21)	**Introduction with vendors with whom the firm purchases milk**
Monday (1/11/21)	**Understanding the process of making complete milk process and meeting with other process like ghee making, butter making**
Tuesday (2/11/21)	**Detailed information about milk product handling**
Wednesday (3/11/21)	**Detailed information about grievance handling which includes types of grievances**
Thursday (4/11/21)	**Introduction about recording every aspect of completion of milk processing in Books**
Friday (5/11/21)	**Started working on the final project topic for summer internship programme, studied about the dairy and its process**

Saturday (6/11/21)	**Learnt about various kind of process**
Monday (7/11/21)	**Learnt about how workers get the work complete on time**
Tuesday (8/11/21)	**Understanding the relation one department to another department**
Wednesday (9/11/21)	**Understanding all about dairy work**

SUMMER INTERNSHIP PROJECT REPORT

ON

Haryali Khad Beej Agency New Anaj Mandi Bikaner

Submitted to RNBGU for partial fulfilment for the degree of

B.sc (Hons.) Agriculture

BY

Sunil

Enrolment No. -

RNBGU201900115

Under the Guidance of

Mr. Avinash Sharma



RNB GLOBAL UNIVERSITY

DECEMBER 2021

ACKNOWLEDGEMENT

The internship opportunity I had with haryali khad beej ajency was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of it.

Bearing in mind previous, using this opportunity to express my deepest gratitude and special thanks to the Mr. Avinash Sharma who in spite of being extraordinarily busy with her duties, took time out to hear , guide and keep me on the correct path and allowing me to carry out my project at their esteemed organization and extending and extending organization and extending during the training .

I am also very thankful to internship guide Mr. Ashok kameriya who helped me to learn all the experiments and processes performed at agrochemicals

I perceive this opportunity as big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement, to attain desired career objectives. Hope to continue cooperation with all of you in the future.

Sunil [B.sc Agriculture 5^{th} sem.]

DECLARATION

I Sunil , Hereby declare that the project report entitled “ Licence availability of agriculture input in plant clinic ”submitted by me to RNB Global University in partial fulfilment of the requirement for the award of the degree of B.sc in Agriculture is a record of confide project work carried out by me under the guidance of Mr. Avinash Sharma .

I further declare that this is the record of the authentic work carried out by me during summer internship program for the academic Year 2019 – 23 and has not be submitted to any other University or institute towards the award of any degree .

Signature of the student

GST No. 08APXPK2768P1ZP JAI SHREE GANESH MOB. 8890188884
Email : ashokkumarkameriya@gmail.com

हरियाली खाद–बीज एजेन्सी

नई अनाज मण्डी, मुख्य गेट के पास, बीकानेर (राज.)

Ref. 11551 Date 30-12-21

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Sunil** B.Sc. Agriculture (Vth Semester) Student of RNB Global University, Ganganagar Road, Bikaner has successfully completed her one weeks internship at this organization w.e.f. 21th December to 28th December 2021.

He has shown keen interest in learning and knowing the practical aspects of the subject. During the tenure of her training period, her conduct/performance was found satisfactory.

We wish her a bright and excellent future.

हरियाली ...द ब ज एजेन्सी बीकानेर

(Ashok Kameriya)
Director

CERTIFICATE OF EXTERNAL COMPANY (GUIDE)

CERTIFICATE OF INTERNAL
(UNIVERSITY) FACULTY GUIDE

Enrolment No. – RNBGU201900115

This is to certify that Sunil of B.sc (Agriculture) has completed this summer internship / Research project under my supervision in partial fulfilment for the award of the B.sc agriculture from RNB Global University , Bikaner .

Course Name : Summer internship

Course code : 20018500

SIGNATURE OF INTERNAL FACULTY GUIDE

SIGNATURE OF STUDENT

PLACE : RNB GLOBAL UNIVERSITY , BIKANER

DATE :

ABSTRACT

Seed,fertilisers,pesticides and other agrochemical sarecategoriesedasessentialcommoditiesandareexemptedfromanyrestrictions.However,themovementoftrucksandothermodesoftransportstillisn;tnormaldespitethefactthatboth,theCentreandstateshaveallowedtransportationofessentialcommoditiesduringthelockdownperiod.

We are trying our best to reach out to all farmers to supply seeds this kharif season . But we may not be able to reach out to more than 80 percent of our customers.

Here I have studies that all the products are made using selected raw materials procured from best in their category , processed in an isolated and hygienic environment and are untouched by human hand and are packed in a state-of-the-art automated packaging plant

EXECUTIVE SUMMERY

Haryali khad beej agencyhold a key role in society's life. People turn to establishments like Hariyali beej company to get condiments, fruits and vegetables.

The Department of Agriculture and Co-operation is implementing a Central Sector Scheme as ‘Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality Seeds’ since 2005-06 for the whole country. The objective of the ongoing scheme is to ensure production and multiplication of high yielding certified/quality seeds of all crops in sufficient quantities and make the seeds available to farmers, including those in remote areas, not easily accessible by rail/road on time and at affordable price.

Seed, fertilisers, pesticides and other agrochemicals are categoriesed as essential commodities and are exempted from any restrictions. However, the movement of trucks and other modes of transport still isn;t normal despite the fact that both, the Centre and states have allowed transportation of essential commodities during the lockdown period.

We are trying our best to reach out to all farmers to supply seeds this kharif season. But we may not be able to reach out to more than 80 per cent of our customers.

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INTRODUCTION

INTRODUCTION TO THE COMPANY: Hariyali Khad Beej Agency Main Gate,Bikaner is known to satisfactorily cater to the demand so fitscustomer base.It stands locatedat104,Main Gate-334002.The business trives to makefora positive experience throughit so fferings.

Haryali khad beej agency hold akeyroleinsociety'slife.People turn to establishment slike Hariyali beej company to get condiments,fruits and vegetables.

The production takes place on a large scale. To provide its customers with the best quality of masala the agency has a well-established quality

control lab. Every day the first lot is checked and then other lots are made, if the first one is fine.

Packaging :

There is no expiry date of chemical fertilizers. However, in case of imported Fertilizers, the container (bag) has. indication regarding month and year of Manufacture/import.

The procedural requirements are detailed in Clause 8 of FCO. Application has to be made in Form A/ Al to Controller of Fertilizers of the concerned State/UT for obtaining registration/license as Industrial Dealer in fertilizers or dealer in fertilizers for agricultural sales, respectively, along with fee prescribed under Clause 36 and certificate of source in Form O.

Pricing scheme :-

Group Concession Scheme under NPS introduced from 1.402003 Under NPS, all units were classified into six groups based on vintage and the feedstock. For each group, weighted average group price was worked out excluding the outlier (RPS more than +/- 20% of group average). Each unit will get the concession rate based on the group average or the retention price, whichever is lower. Outlier units to get advantage of 50%n of the difference between the RPS and the group average for a period of three years.

1.1 PRODUCTION :

Fertilizer Powders

Fertilizers can be applied to crops as either solids or liquids, with granulated or powdered solids being the most common form. The physical properties of the powder, including its particle size distribution and particle shape are determined by its chemical composition and processing and are important for optimizing spreading properties and minimizing

segregation, especially in bulk blends. Particle size can also affect dilution behaviour and activity rate of the fertilizer.

Colloidal Dispersions

For agrochemicals which are in the form of colloidal suspensions, Zeta potential is a critical metric for optimizing the stability of colloidal dispersions.

Pesticide Sprays

Pesticides are most commonly applied using spray devices and along with soil particle size, the droplet size of a spray determines the run-off speed of the liquid from the soil as well as properties such as spray drift and evaporation.

Polymers in Agrochemicals

The use of polymers in agriculture is becoming more widespread with superabsorbent hydrogels being used to optimize soil properties and functional polymers used to increase the efficiency and stability of pesticides and herbicides. Polymers are also used to control the atomization behavior of agrochemical sprays.

Physical and chemical analysis of agrochemicals

Malvern Panalytical's range of analytical products and expertise can assist the agrochemical sector by helping to:

Optimize spray formulations and spray apparatus to ensure optimum droplet size for a given application or environment

Control particle size and shape of powder formulations to ensure optimum and consistent flow, spreading and packing characteristics

Improve dissolution behaviour and activity rate of fertilizers and pesticides

Classify soil types in terms of their composition and physical characteristics

Characterize and synthesize functional polymers for use in agrochemical formulations

(1). Selection Criterion for Location:-

Since Masala industry are considered to be complementary to each other therefore choice for location of this high tech. Plant in Nagaur is obvious. companies have tried to open this Masala industry in other parts of India but are not successful reason may be due to climatic condition. The factors, which influenced to open it in Nagaur, are: -

Chapter 1

Licensing

The owner of an agriculture shop, with license, is authorized to sell the following products:

Insecticides.

Herbicides or weedicides.

Hybrid seeds.

Farming equipments.

Other farming components.

(1). How to Apply for an Agricultural Shop License?To get license:

1. B. Sc. Agriculture Degree is required. Or,

2. B. Sc., Horticulture Degree is required. Or,

3. B. Sc. from Biology (Science) is required. Or,

4. A diploma programme in particular field is required.

(2). Steps

Collect the necessary records.

Contact an agriculture officer.

Or contact a horticulture officer.

Go to the department of agriculture.

Or go to the department of horticulture.

Get application form.

Fill the application form.

Submit the application form.

(3). Getting License

After verification, if found eligible, you will get a license to open an agricultural shop.

Chapter 2:-

Fertilizer

Checklist: Fertilizer Storage

Store fertilizers separate from other chemicals in dry conditions.

Extra care needs to be given to concentrate stock solutions. Secondary containment should be used.

Provide pallets to keep large drums or bags off the floor. Shelves for smaller containers should have a lip to keep the containers from sliding off easily. Steel shelves are easier to clean than wood if a spill occurs.

If you plan to store large bulk tanks, provide a containment area large enough to confine 125 percent of the contents of the largest bulk container.

Keep the storage area locked and clearly labeled as a fertilizer storage area. Preventing unauthorized use of fertilizers reduces the chance of accidental spills or theft. Labels on the windows and doors of the building give firefighters information about fertilizers and other products present during an emergency response to a fire or a spill.

Provide adequate road access for deliveries and use, and in making the storage area secure, also make it accessible, to allow getting fertilizers and other chemicals out in a hurry.

Never store fertilizers inside a wellhouse or a facility containing an abandoned well.

Fertilizer Storage and Handling

Greenhouse fertilizer storage areas contain concentrated nutrients that must be stored and managed properly. Fertilizers can cause harm if they reach surface or ground water. Excessive nitrate concentrations in drinking water can cause health risks, especially in young children. Phosphorus can be transported to surface waters and cause algae blooms and eutrophication; resulting in poor water quality. Storing fertilizers separate from other chemicals in dry conditions can minimize these risks. Extra care needs to be given to concentrate stock solutions. Secondary containment should always be used.

Untimely application of fertilizer leads to excessive release from the production system to surface and/or ground water. Potential problems can be minimized through adequate environmental awareness, employee training, and emergency preparedness. Below are guidelines for properly storing and handling greenhouse fertilizers.

Storage Location

Greenhouse fertilizer storage areas contain relatively large quantities of concentrated chemicals. Risks in storage areas include release through broken, damaged, or leaking containers; loss of security leading to irresponsible use; accumulation of outdated materials leading to excessive quantity of fertilizer thus unnecessarily raising risk level; and combustion of oxidizing compounds in fertilizer (e.g., nitrates) caused by fire or another disaster event.

The least amount of risk involves having a building or area dedicated to fertilizer storage; separated from offices, surface water, neighboring dwellings and bodies of water; separate from pesticides and protected from extreme heat and flooding. The storage area should have an impermeable floor with secondary containment, away from plant material and high traffic areas. Clean-up equipment should be readily available.

Storage areas should not contain pesticides, or other greenhouse chemicals; storage areas may contain general greenhouse supplies; there should be no food, drink, tobacco products, or livestock feed present.

Provide pallets to keep large drums or bags off the floor. Shelves for smaller containers should have a lip to keep the containers from sliding off easily. Steel shelves are easier to clean than wood if a spill occurs.

If you plan to store large bulk tanks, provide a containment area large enough to confine 125 percent of the contents of the largest bulk container.

Keep the building or storage area locked and clearly labeled as a fertilizer storage area. Preventing unauthorized use of fertilizers reduces the chance of accidental spills or theft. Labels on the windows and doors of the building give firefighters information about

fertilizers and other products present during an emergency response to a fire or a spill. It is a good idea to keep a separate list of the chemicals and amounts stored. If a fire should occur, consider where the water used to fight the fire will go and where it might collect. For example, a curb around the floor can help confine contaminated water.

Provide adequate road access for deliveries and use, and in making the storage area secure, also make it accessible, to allow getting fertilizers and other chemicals out in a hurry.

Never store fertilizers inside a wellhouse or a facility containing an abandoned well.

Sound containers are your first line of defense against a spill or leak. If a container is accidentally ripped open or knocked off a shelf, the spill should be confined to the immediate area and promptly cleaned up. The building should have a solid floor and, for liquid fertilizers, a curb. The containment volume should be large enough to hold the contents of the largest full container.

Containers

Fertilizer should be stored in their original containers unless damaged; labels should be visible and readable; food or beverage containers should never used for storage. Labels should be in plain sight; no containers should come in contact with floor; all containers should be stored up-right; aisles should be wide enough to comfortably accommodate workers; containers should not be crowded on shelves or pallets.

Partially-used Containers

Paper bags and boxes should be opened with a box cutter or scissors; open containers should be resealed and returned to storage; all open paper bags should be sealed inside another, larger container, sealed and labeled.

Damaged Containers

Containers should be checked often for damage; when damaged containers are noticed, contents should be repackaged and labeled or placed in suitable secondary containment which can be sealed and labeled.

Containment

There should be no floor drain; the floor should provide containment in the event of a spill; there should be secondary containment routinely used for most open containers; damaged or leaking containers should be repaired and/or replaced as soon as possible; all spilled material should be cleaned up upon discovery; and cleanup materials should be discarded promptly and properly.

Fire Prevention and Suppression

Fire detection and alarm system should be present; oxidizers and flammable materials should be stored separately; fire extinguisher should be immediately available; the fire department should be notified at least annually of current inventory.

Inventory and Recordkeeping

Inventory should be actively maintained as chemicals are added or removed from storage; containers should be dated when purchased; outdated materials should be removed on a regular basis; inventory should be controlled to prevent the accumulation of excess material that may become difficult to use

Lighting

Electrical lighting should allow view into all areas and cabinets within the storage area.

Monitoring

There should be monthly inspection of storage for 1) signs of container corrosion or other damage - leaking or damaged containers should be repackaged as appropriate, 2) faulty

ventilation, electrical, and fire suppression systems – problems should be reported and corrected.

Security

The storage room should be locked and access restricted to trained personnel.

Signage

There should be signs posted; warning signs should be used as needed; emergency contact information should be posted.

Temperature Control

There should be active mechanical temperature control and no direct sources of heat (sunny windows, steam pipes, furnaces, etc.).

Ventilation

Mechanical ventilation should be working and used.

Containment of Concentrated Stock

Concentrated stock should be stored near the injector in high density polyethylene or polypropylene containers with extra heavy duty walls; secondary containment should be provided.

Disposal

Sufficient planning should be made to eliminate the need for disposal; empty fertilizer containers should be discarded based on latest advice from environmental protection authorities.

Precipitate and Residue Disposal

Fertilizer systems should be cleaned. Solids and rinse solution should be composted.

Spill Prevention and Preparedness

Opening fertilizer product containers, measuring amounts, and transferring fertilizer to the delivery system involves some level of risk from spills. Secondary containment should be used for fertilizer stock tanks routinely; spill clean-up materials should be used for liquids (e.g., absorbent materials) and solids (e.g., shovel, dust pan, broom and empty and/or buckets) should be available within the general area.

Delivery System

The fertigation equipment should be checked monthly for accuracy; containment tanks, back flow preventors and any equipment that holds fertilizer in the dry or liquid form should be inspected; stock tanks should be inspected weekly for deterioration and cracks; the manufacturer recommendations should be followed when calibrating or working on fertilizer injector equipment; stock solution tanks and the areas surrounding fertilizer injectors and concentrated solutions should be kept clean and free of debris.

Chapter :-3

Storage of pesticide :-

The Container Matters

Pesticides should be stored in their original containers. The original container is designed to protect the product and it's made of materials that will withstand the chemicals in the product.

Store containers with their original labeling which includes application and disposal directions, ingredient names and emergency information.

The original container also has the appropriate lid/cap to protect kids and pets.

Temperature Matters

Extremes in temperature can change the chemistry of some pesticides inside the container.

Extremes in temperature can also damage containers.

Always read the label for storage instructions. As a general rule, pesticides are best stored between 40-90 °F.

Location Matters

Designate a place that is only used for pesticide storage.

Pick a well-ventilated location that children and pets cannot access, preferably with a latch or lock.

Keep pesticides away from food, feed and flames.

Choose a location away from ponds, streams and drinking water wells.

Safety Matters

Try to keep your pesticide inventory as low as possible. Buy only what you need this season; mix only what you need today.

Dispose of unwanted pesticides properly rather than storing them.

Never store pesticides in food or drink containers.

Consider storing bottles inside a larger container that could contain liquids in the event of a leak or spill.





Fig :- some available seed in agency



Fig :- some pesticide available in agency

Chapter :-4

Types of fertilizer in available in Agency :-

Plants need nutrients to grow which they absorb from the soil via the plant's root system. Fertilizers provide the major nutrients (nitrogen, phosphorus and potassium and important secondary elements) that plants need. Unless the nutrients are replenished, the soil's productive capacity declines with every harvest.

Fertilizer is any material of natural or synthetic origin added to the soil to supply one or more plant nutrients.

CLASSIFICATION OF FERTILISERS

Fertilisers

1. Straight fertilizers: Straight fertilizers are those which supply only one primary plant nutrient, namely nitrogen or phosphorus or potassium.

eg. Urea, ammonium sulphate, potassium chloride and potassium sulphate.

2. Complex fertilizers: Complex fertilizers contain two or three primary plant nutrients of which two primary nutrients are in chemical combination. These fertilisers are usually produced in granular form.

eg. Diammonium phosphate, nitrophosphates and ammonium phosphate.

3. Mixed fertilizers: are physical mixtures of straight fertilisers. They contain two or three primary plant nutrients. Mixed fertilisers are made by thoroughly mixing the ingredients either mechanically or manually.

Fertilisers can also be classified based on physical form:

Solid

Liquid fertilizers

Fertilizer

Solid fertilizers are in several forms viz.

Powder (single superphosphate),

Crystals (ammonium sulphate),

Prills (urea, diammonium phosphate, superphosphate),

Granules (Holland granules),

Supergranules (urea supergranules) and

Briquettes (urea briquettes).

Urea prills

Granulated urea

Ammonium sulphate

Liquid fertilizers:

Liquid form fertilizers are applied with irrigation water or for direct application.

Ease of handling, less labour requirement and possibility of mixing with herbicides have made the liquid fertilisers more acceptable to farmers.

A. Nitrogenous fertilizers

Nitrogenous fertilizers take the foremost place among fertilizers since the deficiency of nitrogen in the soil is the foremost and crops respond to nitrogen better than to other nutrients.

More than 80 per cent of the fertilizers used in this country are made up of nitrogenous fertilizers, particularly urea.

It is extremely efficient in increasing the production of crops and the possibilities of its economic production are unlimited.

The nitrogenous fertilizers can be further classified as given below:

1. Ammoniacal fertilizers

Ammoniacal fertilizers contain the nutrient nitrogen in the form of ammonium or ammonia.

Ammoniacal fertilizers are readily soluble in water and therefore readily available to crops.

Except rice, all crops absorb nitrogen in nitrate form. These fertilizers are resistant to leaching loss, as the ammonium ions get readily absorbed on the colloidal complex of the soil.

2. Nitrate Fertilizers

Nitrate fertilizers contain the nitrogen in the form of NO_3

These ions are easily lost by leaching because of the greater mobility of nitrate ions in the soil.

Continuous use of these fertilizers may reduce the soil acidity as these nitrogenous fertilizers are basic in their residual effect on soils.

a) Sodium nitrate ($NaNO_3$)

Sodium nitrate is a white salt containing about 15.6 per cent of nitrogen.

It is completely soluble in water and readily available for the use of plants as such, without any chemical change in the soil.

It is easily lost by leaching and denitrification.

When large quantities of sodium nitrate are added year after year, the nitrate ions are absorbed by crops and sodium ions accumulate and affect the structure of the soil. Sodium nitrate is also known as chile salt peter or chilean nitrate.

Sodium nitrate is particularly useful for acidic soils

b) Calcium nitrate [$Ca(NO_3)_2$]

It is a white crystalline hygroscopic solid soluble in water containing 15.5 per cent nitrogen and 19.5 per cent calcium.

The calcium is useful for maintaining a desirable soil pH.



Fig :- nitrate fertilizer

Conclusion

The Department of Agriculture and Co-operation is implementing a Central Sector Scheme as 'Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality Seeds' since 2005-06 for the whole country. The objective of the ongoing scheme is to ensure production and multiplication of high yielding certified/quality seeds of all crops in sufficient quantities and make the seeds available to farmers, including those in remote areas, not easily accessible by rail/road on time and at affordable price.

Seed, fertilisers, pesticides and other agrochemicals are categoriesed as essential commodities and are exempted from any restrictions. However, the movement of trucks and other modes of transport still isn;t normal despite the fact that both, the Centre and states have allowed transportation of essential commodities during the lockdown period.

We are trying our best to reach out to all farmers to supply seeds this kharif season. But we may not be able to reach out to more than 80 per cent of our customers.

Greenhouse fertilizer storage areas contain concentrated nutrients that must be stored and managed properly. Fertilizers can cause harm if they reach surface or ground water. Excessive nitrate concentrations in drinking water can cause health risks, especially in young children. Phosphorus can be transported to surface waters and cause algae blooms and eutrophication; resulting in poor water quality.

Storing fertilizers separate from other chemicals in dry conditions can minimize these risks. Extra care needs to be given to concentrate stock solutions. Secondary containment should always be used.

Name of Student	**Sunil**
Enrolment No.	**RNBGU201900115**
Program	**B.sc (Hons.) Agriculture**
Report Date	
Week	**1**
Name of Organisation	**Haryali Khad Beej Agency**
Report	**Processing and Management in Agency**
Tuesday (21/12/21)	**Introduction of Agency**

Wednesday (22/12/21)	**Study on Licensing**
Thursday (23/12/21)	**Registration and Licensing of Seed and Agrochemicals**
Friday (24/12/21)	**About fertilizer**
Saturday (25/12/21)	**Storage of Pesticides**

Sunday (26/12/21)	**Fertilizer Storage**
Monday (27/12/21)	**Pacakging ang Pricing**