National Agricultural Youth Show

Dairy Products Manual

2024

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1. MILK: A BASIC BACKGROUND

Milk is one of nature's most complete foods, containing many of the vital vitamins, proteins, sugar and minerals which help us to grow, give us energy and good health. Milk is a liquid that is formed by the cow, of the grass, hay and water that she intakes. Milk is produced naturally by all female mammals when they give birth. Animals that suckle their young are called mammals.

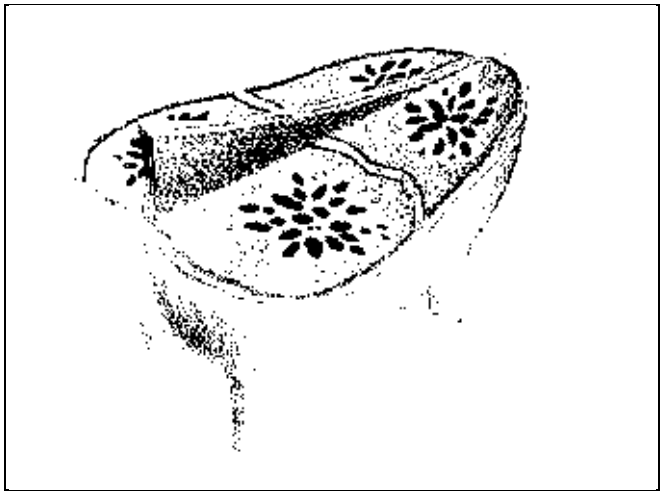
Just as our mothers fed us their milk, so do cows feed the calves, nanny goats their kids and ewes their lambs.

A cow will not give milk unless she has a calf. When the calf is born, the cow will be in milk for about ten months, as long as she is milked regularly. Healthy cows can give up to 18 litres of milk a day, some can give up to 45 litres per day. Milk obtained the first seven days after calving is called colostrum or beestings. Beestings is important to young calves because it protects them against diseases. The milk is also rich in nutrients that make them grow strong. Beestings is not suitable for the making of dairy products.

MILK ON THE FARM

On many farms all over the world milking is still done by hand, in the same way as it has been done for thousands of years. Cows are milked by the same people every day and are quickly stimulated to let down just by hearing the familiar sounds of preparations for milking. Milking by hand takes a long time. On medium-to-Iarge farms with large herds, the usual practice is to milk cows by machine. T he milking machine sucks the milk out of the teat by vacuum.

Milk leaves the udder at a temperature of about 37°C. Fresh milk from a healthy cow is practically free from bacteria, but is must be protected against infections as soon as it leaves the udder. Micro-organisms capable of spoiling the milk are everywhere – the udder, the milker’s hands, in the air and water, on the cow's hair and in the soil.



Cross-section of a cow’s udder. There are four quarters, each with a corresponding teat.

Despite all precautions, it is impossible to keep bacteria completely from milk. Milk is an excellent growth medium for bacteria - it contains the nutrients they need to grow. As soon as the bacteria get into the milk they start to multiply.

Unless the milk is chilled, it will quickly be destroyed by micro-organism, which multiplies most vigorously at temperatures around 37°C. If milk is chilled, bacteria start growing slower. Milk is therefore quickly to about 4°C after it leaves the cow's udder. At this temperature the level of bacterial activity is very low.

Different cheeses can be made from milk: Cottage cheese, Gouda, Camembert, Blue cheese and Brie.

CLASSIFICATION

Classification	Examples	Description
Very hard cheese	Parmesan and Pecorino	The cheese has a acrid, pungent taste and its colour varies from a light to a darker straw-colour. The cheese needs a long period to mature and has a low water content. It is difficult to grate, but can be purchased grated.
Hard cheese	Marure Cheddar, Cheddar, Provolone, Emmenthal, Edam and Mature Gouda	Fairly sharply flavoured cheese with a strong taste and firm texture. Matured cheddar is coated with a layer of black wax. This cheese can be successfully used in a variety of dishes.
Semi-soft cheese	Gouda and Drakensberg	The cheese has a soft, creamy texture and a soft, pleasant aroma and flavor. These cheeses are not often used for cooking. Drakensberg has a darker yellow colour than Gouda cheese.
Semi-soft cheese: veined	Blaauwkrantz and Roquefort	Penicillin trace elements are added to bacterial cultures and the cheese develops a blue vein from the inside. It has a sharp, pungent, salty taste.
Soft ripened cheese	Camembert ad Brie	These cheeses have a high fluid content which creates their soft, creamy texture. The cheese is coated in a white, edible, moldy layer.
Soft, fresh cheese	Cottage cheese, Cream cheese and Mozzarella cheese	These cheeses have a whiter colour and a softer texture than other cheeses. Cream cheese is softer than cottage cheese which may be smooth or chunky.
Special cheese	Feta and Ricotta	Feta is eaten while immature. It has a soft, white, crumbly texture. It is packaged in a salt solution. Ricotta has a low fat content and very little taste. It is packed in a small amount of fluid. The cheese is usually covered in a thin layer of paper.
Processed cheese	Soft cheese – Gouda or Cheddar used as the basis for processed cheeses	Ordinary cheese is ground and flavoured. An emulsifier is added and the cheese is stirred to a smooth, plastic mass. Salt, pepper, colourants and flavouring may be added.

2. GENERAL MILK TREATMENT

2.1 PASTEURISATION

Pasteurisation is the heat treatment of a milk product. It involves heating and cooling at a specific temperature.

Pasteurisation of milk is a very important process. Before it was introduced, milk was dangerous source of infection because it makes a perfect growth medium for micro-organisms. The selling of raw milk is not allowed in certain towns in South Africa, primarily due to the possible presence of Brucella and Mycobacterium.

About 100 years ago a man with the name Louis Pasteur discovered that milk had harmful bacteria in it. It was these bacteria which turned milk sour so quickly. Pasteur found that heating the milk to a certain temperature killed the harmful bacteria. This is called pasteurisation, after Pasteur's name.

LOUIS PASTEUR

Louis Pasteur made important contributions to the field of organic chemistry during the mid-19th century. He is considered the founder of the field of microbiology, working with the germ theory of disease to establish and explain the causes of many diseases.

2.2 STERILISATION

Sterilisation is a heat treatment which will destroy all organisms in the milk, give the milk a brownish colour and make it taste like boiled milk. Flavoured milk is processed from the sterilised milk. The reason that processors use sterilisation instead of pasteurisation is to prolong the shelf life by killing all organisms in the milk. Sterilisation takes place at 104°C to 113°C for 15-40 minutes.

2.3 HOMOGENIZATION

Homogenization breaks up the milk fat globules that are more or less the same size. The distribution of the fat globules is of such a nature that no cream layer forms on top of the milk, as is the case with un-homogenized milk. This milk has a rich cream taste.

2.4 UHT PROCESS

During this process of ultra heat-treatment (UHT), milk is exposed to a temperature of 132-140°C for 2-4 seconds, it's quickly cooled down and packed in a certain way. These products have a long shelf life because UHT destroys all bacteria that aren't usually destroyed during the pasteurisation process. No preservatives are added. UHT-milk is also packed in boxes and has a shelf life for over one year even if it is not refrigerated.
This milk is generally known as long-life milk.

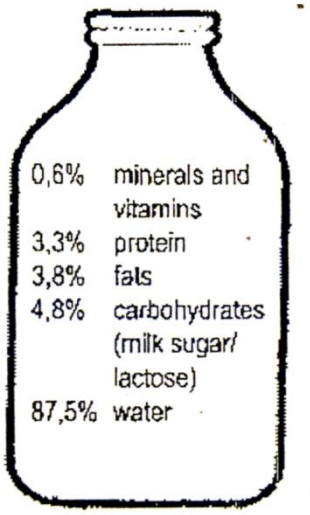
2.5 STANDARDISATION

This is the deliberate modification of milk composition by removing milk fats to reduce the fat content to the required 3,3% or to control the composition of milk products. This process is done by the use of a milk standardiser. Standardisation can also be done by adding cream to the milk to increase the fat content
or decrease the fat by adding skim milk.

3. COMPOSITION OF MILK

Milk is a liquid that is secreted by the milk gland of mammals to enable them to feed their young. It is a balanced food containing high nutritional value and easily-digested proteins, including the essential amino acids as well as fat, lactose, vitamins and mineral salts.

The main components of milk are:



The milk of various mammals differs vastly regarding its composition.

COMPOSITION OF MILK (PERCENTAGE AVERAGE)

TYPE	FAT	PROTEIN	LACTOSE	MINERALS	SOLIDS
Goat	3,5	3,1	4,6	0,/9	12,0
Buffalo	7,6	3,8	4,9	0,78	17,0
Donkey	1,2	1,7	6,9	0,45	10,2
Camel	4,9	3,7	5,1	0,70	14,4
Cow	4,5	3,8	4,9	0,72	13,9
Human	4,5	1,1	6,8	0,20	12,6
Elephant	15,1	4,9	3,6	0,76	26,9
Sheep	5,3	5,5	4,6	0;90	16,3
Whale	34,8	13,6	1,8	1,60	51,2

COMPOSITION OF MILK OF DIFFERENT COW RACES (PERCENTAGE AVERAGE)

TYPE	PRODUCTION LITRE	FAT	PROTEIN	LACTOSE	SOLIDS
Fresian	4220	3,5	3,3	4,86	12,3
Ayrshire	3120	3,8	3,5	4,69	12,9
Guernsey	2910	4,2	3,9	4,91	14,6
Jersey	2653	4,9	3,9	4,94	14,9

WATER (TASTELESS)

± 87% of milk we drink is water. The high percentage of water makes milk a liquid.

3.1 FAT

Milk fat gives milk a pleasant rich creamy taste. The milk fat shows the greatest variation of all the components of milk. Fat appears in the form of small (globules) floating around in milk. Each drop is covered with a membrane. The membrane prevents the fat from combining. If milk is left to stand for a while, the fat will raise tot the top. Therefore milk is homogenized to break the fat into very small pieces and distribute it evenly throughout the milk.

3.2 LACTOSE

Lactose (milk sugar) gives milk a slightly sweet taste. Lactose is used by lactic acid bacteria to provide energy for their growth. In this process lactic aid is formed which causes milk to go sour and later to curdle. This process is used during the manufacturing of maas, cheese and yoghurt.

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3.3 MILK PROTEIN (TASTELESS)

Milk's white colour is caused *by* the reflection of light by the colloidal dispersed particles of fat and casein. We find protein in lean meat, fish, milk, cheese and eggs. Protein consists of casein and whey protein.

CASEIN:

Casein sets (coagulated) in the presence of an acid or an enzyme, Rennet. This is of importance when cheese is manufactured.

WHEY PROTEIN:

Whey protein is found in the whey (the liquid left when milk forms curd) during cheese making. Heat causes whey protein to coagulate.

3.5 MINERALS (SLIGHTLY SALTY)

Minerals are important because of their nutritional value. The most important mineral found in milk is CALCIUM. Calcium is used by our bodies to make healthy bones and teeth. Other examples of minerals in milks are: sodium, potassium and magnesium.

4. VARIATIONS IN COMPOSISION (ONLY FOR SENIOR ENTRANTS)

Milk can easily be adulterated, without the consumer noticing. Therefore the law determines the minimum composition of milk. The following factors are of importance with regards to variations in the composition of milk:

4.1 GENERIC FACTORS

Different breeds give milk different percentages of fat. Milk from a Jersey cow is richer than milk from a Friesian (Holstein) cow.

4.2 MANGAGEMENT FACTORS

Periods between milking

The length between milking has the most influence on the fat content of the milk. Evening milk is usually richer the morning milk.

Number of milking per day

If milking takes place three times a day instead of twice a day, more milk is obtained.

Treatment of the cow

If a cow is treated abnormally, e.g. being frightened during milking, she will give less milk with a lower fat content.

4.3 LACTATION

The lactation period i the time during which a cow gives milk. The quantity of milk produces gradually increase and reaches a maximum 60 days after calving. After about 300 days the cow is no longer milked. The period that follows is known as the "dry period".

The lactation period lasts from the birth of a calf until the dry period begins. A normal healthy cow will have about 8 lactation periods in her lifetime. A resting period of 2-3 months is allowed before calving.

4.4 FEEDING

The composition of the feed can affect the composition of the milk. Over feeding as well as udder feeding are undesirable.

4.5 SEASON AND TEMPERATURE

All the component of milk are influenced by season and temperature. Very hot or cold weather lowers milk production and increases the fat content of the milk.

4.6 AGE OF COW

The composition of the milk changes as the cow gets older.

4.7 UDDER INFECTION

Mastitis has a large influence on the composition of milk. There is a decrease in fat, lactose and casein content. There is an increase in whey protein.

When a cow has got mastitis, it is treated with antibiotics. These antibiotics land up in the milk. When this milk is used to make cheese or fermented products it will inactivate the bacteria used. Mastitis milk is not suitable for human consumption.

Udder infection or mastitis is an infection of the udder which is caused by pathogenic micro-organisms. The micro-organisms penetrate the udder through the teat opening.

4.8 DISEASES TRANSMITTED BY MILK

Milk is infected (via the cow, the milkman or milking equipment) with infections organisms such as:

- Brucella abortus
- Staphylococcus aureus
- Eberthella typhil

Boiling, pasteurising of sterilising milk destroys these organisms. Cows are regularly tested for diseases. Such test revealed that milk of cows undergoing treatment for a disease contained spores of antibiotics. The medicine is absorbed into the cow's bloodstream and from there into the milk. Milk containing antibiotics is dangerous for human consumption because the medicine may have a negative effect on the consumer.

5. PHYSICAL CHARACTERISTICS OF MILK

5.1 THE TASTE OF MILK

5.2 THE APPEARANCE OF MILK

See above 3.2 to 3.5

5.3 ACIDITY AND pH

Even if milk is tested immediately after milking, an acid reaction is obtained. This is known as the "natural acidity" of milk. The % titratable acidity of normal Friesian milk varies from 0,14 to 0,17. Cows with a higher fat and protein content like Jersey cows have a % titratable acidity of 0,15 to 0,18.

pH is a measure of acid or alkali in a product.

The pH scale:

When a product has a pH of 7, the product is neutral
When a product has a pH below 7, the product is acid for ex fruit juice
When a product has a pH above 7 the product is alkaline for ex soap

5.4 THE FREEZING POINT OF MILK

The freezing point of water is 0^{o}C. If anything (for e.g. salt or sugar) is added to water, the freezing point will drop.

The freezing point of milk normally varies between -0,520°C and -0,550°C. This depends on the lactose, protein and mineral content of the milk.

The. presence of these substances in water lowers the freezing point. The minimum specification point of milk is -0,512^{o}C or lower.

Adding water to milk causes the freezing point to rise. In other words, move closer to $0^{o}C$.

5.5 THE DENSITY OF MILK

Milk is slightly heavier than water. The density of milk varies between 1,028 and 1,034. The density of water is 1. The density is of importance because adulteration of milk with water can be noticed.

5.6 BOILING POINT OF MILK

Milk boils at a temperature slightly higher than 100°C. at sea level and 98°C above sea level.

5.7 PURCHASING OF MILK

Milk purchases are based on:

- Fat content
- Protein content
- Amount of milk delivered (litres)
- Bacteriological quality

6. EFFICIENT CLEANING

Cleaning is the removal of milk deposits from all the milk contact points in a milking plant. If this process does not occur, the milk quality will enervate and cause negative effect on all subsequent milk passing through the milking system. To ensure top quality milk this must be avoided.

WHAT IS CLEANING

Clean equipment is free from visible impurities.

Microbiologically clean refers to equipment that harbors so few micro-organisms that the quantity and quality of a possible contamination of milk is of no practical importance to the quality of milk in relation to health or product quality.

Chemically clean equipment contains so little foreign matter that chemical contamination of the milk is below the relevant standard.

Generally, milk contact surfaces will look and feel clean when properly cleaned. The amount of micro organisms, usually bacteria, will hopefully be so limited that the demand for microbiological cleanliness is met.

WHICH CONTAMINANTS HAVE TO BE REMOVED?

After milking the milking equipment is soiled with residues of liquid milk and air dried films of milk. The main part of this old milk (often called soil) removed by rinsing with water. However the last part is often harder to get rid of. Therefore, the most difficult task of cleaning system is to remove this last soil.

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The milk residues consist of, among other things, fats and proteins, which are a delicate substrate and protection for bacteria. Of course, the milk also contains bacteria, which will multiply at a high rate if not removed. For the battle against: bacteria, the removal of the milk residues is a good start, since these residues are the main locations for bacteria.

Although most of the residues are removed, bacteria can still attach to visibly clean surfaces. Under favourable conditions they can also form a bio-film, which can be very hard to remove. Therefore, it is of utmost importance to prevent the formation of this bio-film.

Another contamination, which originates from both milk and hard water, is milks tone, a layer of scale mainly formed by captions like calcium and magnesium. Besides giving the equipment an unclean appearance, milk stone could harbor and protect micro-organisms.

WHICH PARTS OF THE MILKING PLANT HAVE TO BE CLEANED?

Basically, all parts of the milking machine which come in contact with milk have to be cleaned.

These parts could be divided into 3 groups:

- The first group consists of parts which hold milk as well as vacuum during milking. These are the milking units, milk meters, the milk line and the receiver.
- The second group consists of the delivery line between the receiver and the milk cooling tank including the milk pump and sometimes also a plate cooler. It is common for the milk to be transported without the help of vacuum, in the delivery line.
- The third and last group is the milking tank. All different parts have to be cleaned differently.

WHAT FACTORS ARE INVOLVED IN CLEANING?

Cleaning is basically the progress that removes soil from the equipment which is to be cleaned. In order to make this process as efficient as possible, 4 important factors are combined.

These factors are:

- Mechanical force
- Heat
- Cleaning agents
- Contact time

Water is of course the key to get these factors to work towards a satisfying cleaning result.

MECHANICAL FORCE

Soil that has firmly adhered to surfaces in the milking plan needs to be exposed to a mechanical force in order to be loosened. This force is usually exerted by circulating water in the plant, but could also take place through scrubbing or spraying. Both the milking plant and the cooling tank can be cleaned with one or both of these methods.

CLEANING AGENTS

Cleaning agents could be divided into detergents and disinfectants. Often, however the cleaning agents consist of both. Detergents assist in removing the soil by helping to loosen it and to hold it in suspension so that it can be removed during rinsing. Another important task for detergents is to prevent captions like calcium and magnesium forming milk stone.

Detergents can be either alkaline or acid. Often an alkaline detergent is used as the main detergent. Acid detergents are then used e.g. once a week, in order to remove milk stone.

Disinfectants are used to kill microbes. Often disinfectants consist of chlorine or chlorine compounds. In some alternative cleaning systems disinfectants are replaced by the use of heat.

HEAT

The role of heat is to improve the ability of dissolving and emulsifying different materials. Detergents are more easily dissolved when the water is warm. It is important that warm water is used in the removal of fatty materials.

CONTACT TIME

Contact time means that the water, heat and cleaning agents must have sufficient time to perform the cleaning. The time needed varies depending on the cleaning method.

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Contact time means that the water, heat and cleaning agents must have sufficient time to perform the cleaning. The time needed varies depending on the cleaning method.

WATER

As mentioned before, water is important for the cleaning result for several reasons. It carries cleaning agents and heat, and exerts mechanical action on the surfaces to be cleaned.

The transportation of soil is another important task for water, since the soil is the main hiding place of micro-organisms. With the help of cleaning agents, heat and turbulent water, the soil is suspended or dissolved which makes it easy to remove. T his removal is an important step towards the successful cleaning of the milking plant.

At the same time as being a key took in the cleaning process, water can contain a wide variety of impurities which could jeopardize the cleaning result. Important types of elements, which may be regarded as impurities, are calcium, magnesium and other ions which make the water hard.

ASSESSMENT OF SURFACE

If the cleaning is unsuccessful, soil could be visible at different points in the milking plant. A manual inspection is therefore always an appropriate way of discovering a possible malfunction.

KIND OF DEPOSIT	DESCRIPTION
Fat	Greasy oily appearance of surface
Protein	Blue rainbow hue varnish like
Milk stone	White to yellow deposits
Iron	Red to brown or black
Bacteria	Red to pink/ purple colouring of staining
Rubber fragments	Black or blackening residues

7. SMALL SCALE PRODUCTION OF DAIRY PRODUCTS

ABSTRACT

The manufacturing of dairy products was from the earliest time a home industry and the preparation techniques were given down from generation to generation to the present day. Some of the techniques are still used today; the only difference is that more modern equipment is used today to handle manufacturing in a large scale.
Dairy product manufacturing can be highly rewarding and very satisfying. There are however single aspects that have to be taken into consideration before it can be attempted.

NB. Quality milk ensures a quality product

The lower the bacterial count of the milk, the better the product that can be manufacturing from there. The composition of the milk is also of great importance, since it determines the yield of the end product, e.g. Jersey milk gives a 13% yield in cheese whilst Friesian gives a 10% yield.

All equipment must be washed and disinfected thoroughly beforehand. Most of the defects in the manufacturing process can be avoided by paying special attention to this aspect. Dairy product manufacturing is a biological process and is directly dependent on the temperature, time and activity of the starter culture.

Allowance should be made for possible time variations. Strive at all times for the highest quality cells. Experience comes with repetition. The manufacturing procedures in this book have already been published in various magazines, and have been testes with good results by many entrepreneurs.

MAKE YOUR OWN YOGHURT

INTRODUCTION

Yoghurt is one of the best known fermented milk products. It has a refreshing, pleasant taste and not only has the nutritional value of milk but is more easily digested. These days fermented milk products are said to have therapeutic properties. Yoghurt can be used to restore the natural micro flora in the intestinal canal after a patient has been treated with antibiotics. Specific lactic acid bacteria, which are inoculated into milk, have the ability to change the milk to a fermented milk product with a unique texture, taste and flavour. The traditional organisms used in the manufacturing of yoghurt are Streptococus thermophilus and Lactobacillus bulgaricus.

Other organisms are now commercially available which also have beneficial properties. These include organisms such as Lactobacillus acidophilus and Bifidobacterium species.

TIPS

Always use fresh yoghurt culture. When an old culture is used the milk will not thicken or will take much longer to thicken. The culture cannot be used indefinitely and therefore a new culture must be started from time to time.

Sufficient (proper), heating of the milk is of utmost importance to destroy all harmful bacteria present in the milk. If this is not done the yoghurt will develop an unpleasant aroma and taste after the incubation period.

All equipment such as containers, spoons, etc. must be thoroughly washed with soap and rinsed boiling water. Do not dry equipment after rinsing.

Keep the milk, preferably in the container in which it was heated. If milk is poured into other containers after the heating and cooling process, these containers should first be cleaned and rinsed as described above. Work as clean and sterile as possible, all time.

A cool bag may also be used to keep the temperature constant after the milk has been cooled to 42°C. The sealed container with milk is wrapped in newspaper before placing it into the cool bag.

8. EQUIPMENT NEEDED FOR YOGHURT

Easy Yoghurt production by using a hot plate and double pot system.

EQUIPMENT

- Double jacket stainless steel pots. (one must fit into another so that one can create a
- water jacket)
- Hot plate, lead, double plug
- Kettle for making hot water for sterilization
- Ice for cooling the product
- Plastic dish for cooling the product
- Stainless steel ladle and mixers for stir + mix
- Thermometer
- Containers for fermentation, glass jars are perfect for this
- Fermentation box (cooler box)
- Cleaning and sanitizing chemicals
- Scale, measuring utensils

EQUIPMENT NEEDED FOR DRINK YOGHURT

Easy drink yoghurt production by using a hot plate and double pot system.

EQUIPMENT

- Double jacket stainless steel pots. (one must fit into another so that one can create a
- water jacket)
- Hot plate, lead, double plug
- Kettle for making hot water for sterilization
- Ice for cooling the product
- Plastic dish for cooling the product
- Stainless steel ladle and mixers for stir + mix
- Thermometer
- Containers for fermentation, glass jars are perfect for this
- Fermentation box (cooler box)
- Cleaning and sanitizing chemicals
- Scale, measuring utensils
- Handheld eggbeater
- Paper towel
- Kitchen sieve

EQUIPMENT NEEDED FOR MAAS

Easy Maas production by using a hot plate and double pot system.

EQUIPMENT

- Double jacket stainless steel pots. (one must fit into another so that one can create a
- water jacket)
- Hot plate, lead, double plug
- Kettle for making hot water for sterilization
- Ice for cooling the product
- Plastic dish for cooling the product
- Stainless steel ladle and mixers for stir + mix
- Thermometer
- Containers for fermentation, glass jars are perfect for this
- Fermentation box (cooler box)
- Cleaning and sanitizing chemicals
- Scale, measuring utensils
- Handheld eggbeater
- Paper towel
- Kitchen sieve

9. ADDENDUM A

1. PREPARATION

Make sure that you bring the equipment that is required. Utensils and apparatus cannot be shared. Each contestant is responsible for their own equipment.

2. HIGIENE

Wooden spoons are unacceptable, as they are very unhygienic. Rather use stainless steel or plastic ladles as they are m ore hygienic, wooden spoons are a breeding place for bacteria

Use two dilutions for utensils that are being used frequently. The first dilution is Jik or Milton dilution, and is used to let the utensils sand in when not in use. Once your want to use a utensil, rinse it in hot water (boiled water) dilution and then place it in the product. When you are finished with the product, rinse it under running water and place it directly into the Jik/Milton dilution.

CLOTHING MUST CONSIST OF THE FOLLOWING

- **NO PARTICIPANT WITH WATCHES, EARPHONES, JEWELERY, GUM, CELL PHONES OR PARTICIPANTS WEARING MAKE-UP WILL BE ALLOWED INTO THE VENUE.**
- Long denim pants and T-shirt (sponsored)
- Closed white takkies
- Headdress (sponsored or cap of hairnet)
- Apron white (laboratory/chef jacket is also acceptable)

3. APPARATUS/UTENSILS

It is advisable to use a double cooker. You use a small stainless-steel pot inside a big aluminum pot filled with water. This will reduce the risk of burning the milk, and will give better control over keeping the temperature at 85-87°C.

Plastic dishes can be used for the washing of apparatus but glass bottles are preferred for the sterilization and the continued cleaning of utensils in the production process.

Thermometers must not be kept in the pot whilst heating. It's detrimental for the thermometer to be exposed to heat all the time.

Rather use paper towels than material dish cloth after each use, this makes it a safer working condition and make sure that you known how all your equipment works.

4. PROCESS

Dry ingredients must not be weighed out before the time; this forms part of the examination.

All dry ingredients must be mixed dry and then mixed into the milk, except the culture, whilst the milk is still cold. If your premix the dry ingredients it makes the dissolving of the dry ingredients into the milk so much easier. If there are lumps after you mixed in the dry ingredients, you can use a strainer to dissolve the lumps.

Make sure what the requirement is for pasteurisation. When using a stabilizer, make sure from the supplier what the preferred temperature and times are for the correct usage of the stabilizer.

Keep your recipes constant. Make sure that the correct dry ingredients go into the correct recipe.

Handwritten/Printed recipes must be used in the preparation room.

5. PRESENTATION

Is the presentation linked to the theme?

Did the entrant try to make the product look appealing in the display?

6. EXAMINATION

The test will be written on the same day and time as other show entrants.

GENERAL

Bring along your lunch ticket and cutlery for the 2 days. Lunch will be served at the working place. Bring along something to drink. The kitchen is hot and the preparation takes time. The judge will provide the culture and fruit. A second taste of fruit may be provided by the participants.

BASIC CHEESE MAKING KIT

Protective Shoes
White Chef Jacket
Latex Gloves
Hat or Cap
Curd Cutting Knife
Stirring Spoons
Thermometer
Cheese Cloth
Measuring Spoon and Jugs
Cheese Pot
Mixing Bowls and portion Cups
Dish Cloths
Note Book and pen
Detergents
Bucket
Plastic Basin