IV
HACCP based plans – primary production

Teacheesy

Farmhouse and Artisan Cheese & Dairy Producers European Network

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HACCP-based plans in the Food Safety Management System

HACCP-based procedure = Risk analysis + **HACCP-based plans**

HACCP-based plans = For each process flow:

- Identification of the hazards at each step
- Preventive measures for these hazards/steps
- Recommendations / checking procedures
- Corrective actions

Structure and use of the HACCP-based plans

- Separate tables > use of the relevant ones only (for the producer concerned)

Process steps to monitor	Why do we have to be careful?	Preventive actions	Checking /monitoring	Corrective actions
List of the process steps or operations. *Some rows may be optional and some steps may not apply to a specific product.* **The producer must:** **. keep only the steps corresponding to their practice** **. delete steps which are not applicable.**	*Detail on the nature and cause of the hazards (M: microbiological contamination or growth, C: chemical, P: physical).*	*Actions to prevent or control the risk* *= good hygiene practices* or other technical advices*	*Means to check that the preventive actions were carried out efficiently.* *= measurements or* ***more subjective actions, based on the producer's experience*** ***(eg. "visual or organoleptic inspection"…)*** **Producers must select at least one of the means proposed** **Except: legal requirements that must be followed**	*Actions in case of failure of the preventive measures in order to restore a satisfactory situation.*

*About the preventive actions ….

- **Most** preventive actions are **GHP and GMP**
- The HACCP-based plans **make the essential role of some GHP/GMP** for the safety of some **specific process steps visible**
- Eg.

section V- HACCP-based Plans

LACTIC COAGULATION CHEESES

Process step to monitor	Why do we have to be careful?	Preventive actions	Checking/Monitoring procedure	Corrective actions
Curd Treatments: Forming, Salting (8) Mixing, Additives, (9) Draining	M, C : Microbiological, chemical or physical contamination of the curd by cheese cloths, draining bags and moulds	Ensure that cloths, bags and moulds are always clean. Never put small items of equipment directly on the floor. (1) (6)	Visual inspection.	Repeat cleaning and/or disinfection. Rinse with potable water of acceptable quality. Amend cleaning procedure. If it is a recurrent issue review training of cheesemaker. Repair dirty or worn cheesecloth or equipment.
	M, C, P: Contamination of the curd by tools, handling and ingredients.	Clean and/or disinfect regularly tools and equipment. Wear clean work-clothes. Use only food-grade ingredients (additives, salt, herbs, fruits, flavourings etc.) within their expiration date.	Visual inspection.	Change suppliers of additives if they do not fit to required standards
Rind Treatment	M: Contamination and cross-contamination may occur as a result of specific processes during ripening such as rind-washing.	Ensure equipment is always clean and maintained in good condition. (1) Ensure food handlers have clean hands. Where necessary use protective gloves to cover skin lesions.	Visual inspection.	Repeat cleaning and/or disinfection. Rinse with potable water of acceptable quality. Amend cleaning procedure. If it is a recurrent issue review training of cheesemaker.

GHP staff, GHP cleaning

10 HACCP-based plans in the guide (section IV and V)

- risk analysis for **primary production**
- **milk collection**, storage in the dairy and treatment
- **lactic** coagulation cheeses
- **enzymatic and mixed** coagulation cheeses
- cheeses and milk products made by **evaporation and precipitation**
- **pasteurized milk** for consumption
- **raw milk** for consumption
- **butter and cream**
- **fermented milk products**
- **non fermented dairy products**

milk

3 families of cheeses

5 families of milk products

Primary production (milk production)

7 key steps / 8 Steps

- Animal husbandry
- Feeding
- Calving, kidding, lambing
- Milking
- Water
- Transfer of milk to processing area
- Filtration
- Cold storage

Primary production (milk production)

7 key steps / 8 Steps

1- Animal husbandry

- Prevention of zoonoses (Brucelosis, Tuberculosis,…) by the respect of the prophylaxis **(*legal requirement* > see hazards analysis)**
- Farm register up to date **(*recommendation*)**

2- Feeding

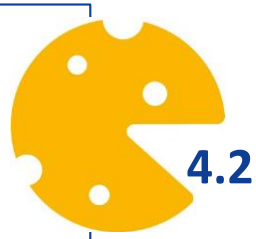
***Recommendations* / Silage and baled silage**

- **To be avoided:**

soil incorporated during forage harvesting or pit compacting
molehills (grass)

- **Good practices:**

silage pit completed in less than two days
pits sufficiently compacted and closed hermetically
forage harvested at prescribed dry matter content levels
forage harvested at sufficient sugar content, at sufficient stage and time
wait 3 weeks before opening the pit
silage maintained in a good condition



Primary production (milk production)

7 key steps / 8 Steps

3- Calving

Recommendations / When abortion:
foetuses and placentas removed (foetuses analysed)
veterinary advice
Declaration, depending on MS regulation
If possible, quarantine of the animal

4- Milking

General good practices (GHP)
Milking machine cleaned after each milking (robot > 3 times/day)
Cloths used to clean udders: cleaned after each milking, or disposable cloths
Hygiene of staff (hands…)
Good condition in the milking parlour (light…) and milking platform (clean…)

- Specific recommendations for outdoor milking:

Teats as clean as possible, areas next to the milking zone clear of mud as possible…

- Specific recommendations for robotic milking (cows):

Efficacy of the teat cleaning system…

Primary production (milk production)

7 key steps / 8 Steps

4- Milking

Recommendations / Mammary infections

Maintain teats in good condition: testing and maintenance of the milking machine

Milking hygiene and cleanliness of the milking machine

Avoid cross contamination between animals

Checkings

California Mastitis Test (CMT)

Or individual cell count

Or take into account clinical indicators, condition of the udder-conformation, teats and the level of inflammation

Primary production (milk production)

7 key steps / 8 Steps

4- Milking

Recommendations / residues of disinfection products or medicines

Observe conditions of use of the products

Follow the veterinary prescriptions

Segregation of the milk of the treated animals during the relevant period

Records of the treatments

Checkings

Visual inspections

Sanitary register

Primary production (milk production)

7 key steps / 8 Steps

5- Water

- Quality of the water used to clean > refers to GHP Water Quality

6- Transfer of milk to processing area

- Hygiene of the equipment (GHP cleaning, disinfection, premises & equipment …)

7- Filtration

Primary production (milk production)

7 key steps / 8 Steps

8- Cold storage (not maturation)

Equipment in good condition and clean (GHP)

- **Legal Requirement (LR)**

Unless the milk is processed within 2 hours,
- 8°C maximum in the case of daily collection
- OR 6°C maximum if collection is not daily

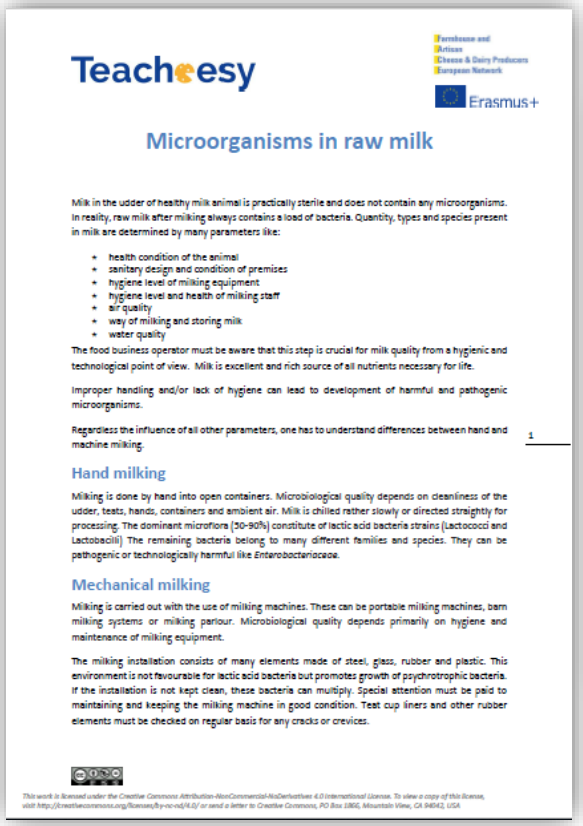
The milk must be cooled to this temperature within 2 hours.

- **Good practices**

Eg. Remove dust regularly from the condenser of the refrigerated tank (when relevant) ; Observe conditions of use of cleaning and/or disinfection products (GHP)

Tools available for HACCP based plans

4.1 Factsheet on Micro organisms in raw milk
4.2 Power Point on Good and Bad practices in primary production



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Microorganisms in raw milk

Milk in the udder of healthy milk animal is practically sterile and does not contain any microorganisms. In reality, raw milk after milking always contains a load of bacteria. Quantity, types and species present in milk are determined by many parameters like:

- health condition of the animal
- sanitary design and condition of premises
- hygiene level of milking equipment
- hygiene level and health of milking staff
- air quality
- way of milking and storing milk
- water quality

The food business operator must be aware that this step is crucial for milk quality from a hygienic and technological point of view. Milk is excellent and rich source of all nutrients necessary for life.

Improper handling and/or lack of hygiene can lead to development of harmful and pathogenic microorganisms.

Regardless the influence of all other parameters, one has to understand differences between hand and machine milking.

1

Hand milking

Milking is done by hand into open containers. Microbiological quality depends on cleanliness of the udder, teats, hands, containers and ambient air. Milk is chilled rather slowly or directed straightly for processing. The dominant microflora (50-90%) constitute of lactic acid bacteria strains (Lactococci and Lactobacilli) The remaining bacteria belong to many different families and species. They can be pathogenic or technologically harmful like *Enterobacteriaceae*.

Mechanical milking

Milking is carried out with the use of milking machines. These can be portable milking machines, barn milking systems or milking parlour. Microbiological quality depends primarily on hygiene and maintenance of milking equipment.

The milking installation consists of many elements made of steel, glass, rubber and plastic. This environment is not favourable for lactic acid bacteria but promotes growth of psychrotrophic bacteria. If the installation is not kept clean, these bacteria can multiply. Special attention must be paid to maintaining and keeping the milking machine in good condition. Teat cup liners and other rubber elements must be checked on regular basis for any cracks or crevices.

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Milking machines - hygiene issues

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