STORAGE & COOLING OF MILK ON FARM (Level 3)

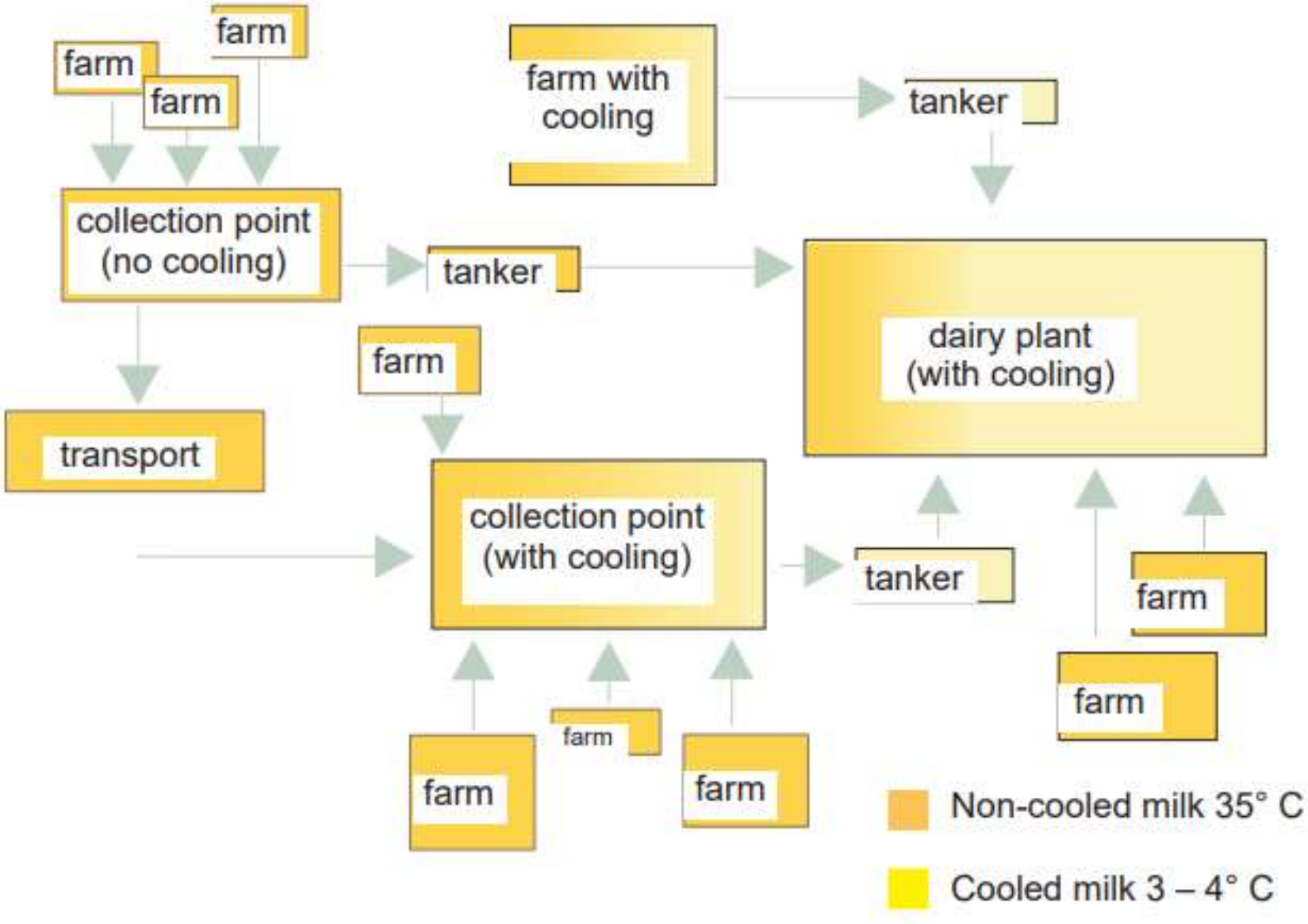
Topic	Milking& milk Hygiene
7.1	Instructions hand milking techno & hygiene
7.2	Instructions machine milking good practice
7.3	Problems during milking
7.4	Scoring of teat condition
7.5	Milk production recording
7.6	Calculation of costs hand vs machine milking
7.7	Which milking parlour to choose
7.8	Testing & maintenance of milking machines
7.9	Milking & cleaning routine in milking parlours
7.10	Storage & cooling of milk on farm

1. **You will learn about (learning objectives):**

- ❑ The importance of cooling milk.
- ❑ Some alternative techniques how to keep milk cool.
- ❑ How to avoid unnecessary bacteria growth in fresh cow milk.
- ❑ The impact of bacteria growth in milk on dairy processing, like making yoghurt, cheese and many other dairy products.

2. Milk from farm to factory

Several improvements to be done.



3. Cooling milk. Why ??

- By cooling the milk, chemical processes and microbiological growth are slowed down which also slows down the deterioration of the quality. Cooling therefore is a very good method to maintain the quality of the milk at a very high level.

- As soon as the cows have been milked, it is very important to cool down the milk as soon as possible in the storage to 4°Celsius.

- Milk is a very sensitive product and can easily be infected by all kind of bacteria via the milker either the milk equipment's.

- Milker has to do everything possible to maintain the milk quality as long as it is on the farm.

4. No either insufficient cooling of milk

- Also in healthy milk produced by a healthy cow a small number(10) of bacteria will be found.
- In case of no cooling these very few bacteria will reproduce very quickly and turn the milk into sourness.
- The pictures shows what will happen with healthy/clean milk.
- Can you imagine what happens in case of improper milking technique/hygiene and poor udder health.

Time	bacteria
0h00	10
0h30	20
1h00	40
1h30	80
2h00	160
2h30	320
3h00	640
3h30	1.280
4h00	2.560
4h30	5.120
5h00	10.240
5h30	20.480
6h00	40.960
6h30	81.920
7h00	163.840
7h30	327.680
8h00	655.360
8h30	1.310.720
9h00	2.621.440
9h30	5.242.880
10h00	10.485.760
10h30	20.971.520
11h00	41.943.040
11h30	83.886.080
12h00	167.772.160

And after 24 hours there are

1.407.374.883.553.280

bacteria!

Wow! that many

5. Immediate cooling of the milk is a MUST !!!

- The body temperature of the cow usually is 38-39°C, also the milk in the cow's udder has about the same temperature.
- As long as the milk is in the udder the quality is assured.
- Once the milk has left the udder it is perishable.

6. Bacteria growth, because of…..

- Poor cooling facilities..
- Worn out equipment’s.
- Cow hygiene at milking.
- Personal hygiene.

!!!!! Cooling has hardly any influence on milk quality, errors that have arisen can no longer be corrected.

	Very clean milk	Clean milk	Dirty milk
Storing Temp.	very good machine milking	very good hand milking	poor milking attitudes
4°Celcius	good quality	good quality	poor quality
10°Celsius	good quality	bad quality	verry bad quality
20°Celsius	poor quality	turned bad	turned bad
35°Celcius	bad quality	turned bad	turned bad

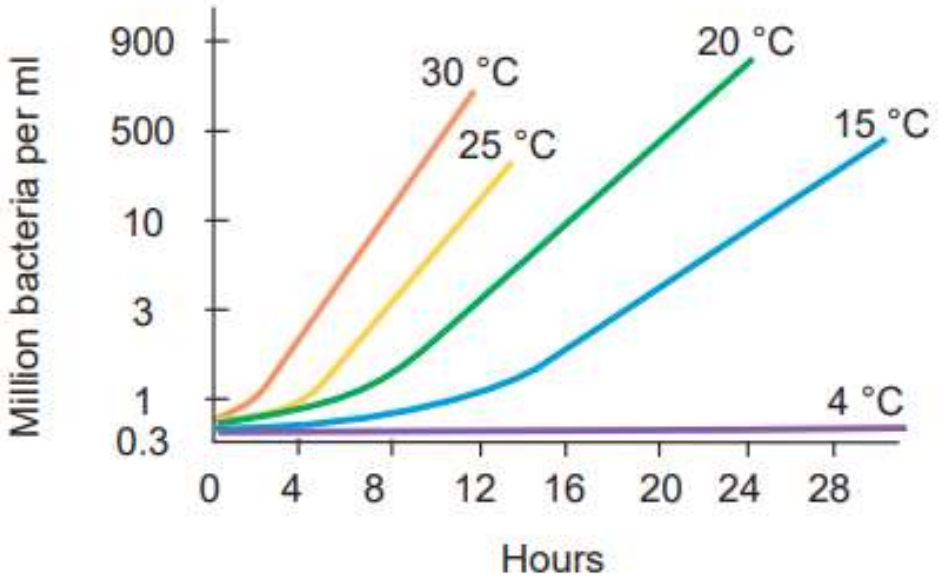
7. Cooling ……. Results !!

Time is quality.

- No cooling (30°C) versus intensive cooling(4°C).

- *Doing nothing.*
- Good quality milk will change into poor quality within12 hours.

- High bacteria count makes milk less or even no longer suitable anymore for dairy processing.



8. Cooling ……. How ?

- Immediately after milking bring/lead the milk to a dark and cool environment.
- Put the milk can into a streaming water bath.
- Put the fresh milk in a refrigerator.
- Lead the milk into the cooling tank.

Small amounts of milk for overnight storage

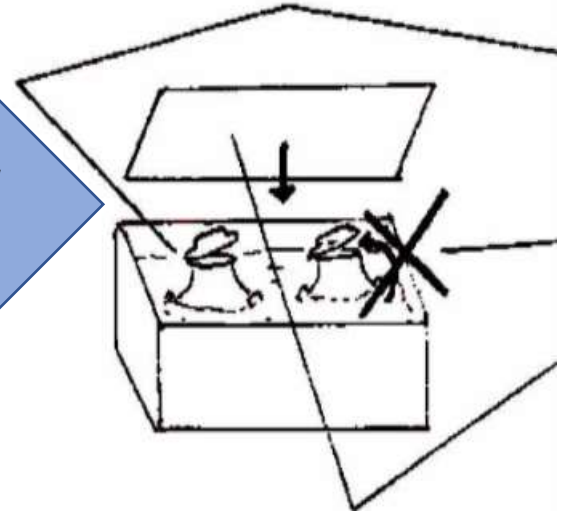
Max 72 hours store 4° C

8.1. Cooling ……. How ? Cont'd…

- Immediately after milking bring/lead the milk to a dark and cool place.
- Put the milk can into a streaming water bath.
- Put the fresh milk in a refrigerator.
- Lead the milk into the cooling tank.
- Use Ice cones (small amounts)
- (Insulated)Water tanks.

(Insulated) water tanks.

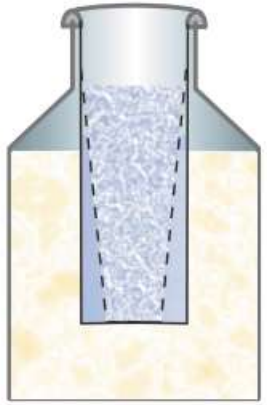
Loosen the lids to allow the air to escape..



8.2. Cooling ……. How ? Cont'd…

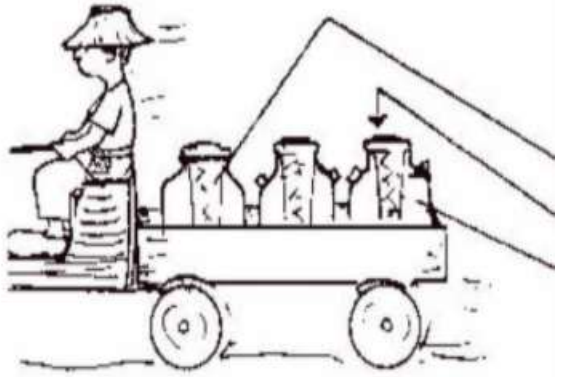
- Immediately after milking bring/lead the milk to a dark and cool place.
- Put the milk can into a streaming water bath.
- Put the fresh milk in a refrigerator.
- Lead the milk into the cooling tank.
- Use Ice cones (small amounts)
- (Insulated)Water tanks

Small amounts …long way.
USE



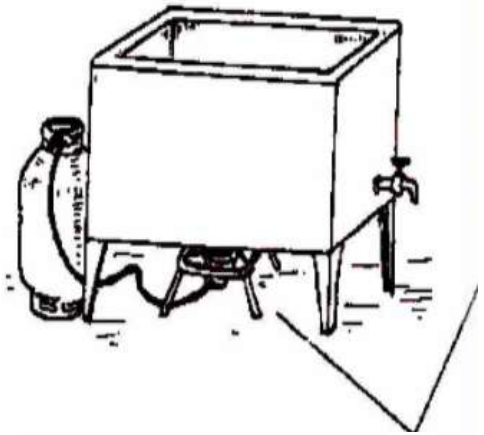
Ice cones.

Fill the cones with crushed ice and place it the milk.

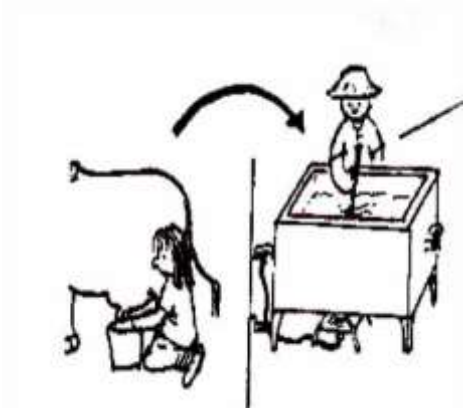


9. An alternative; Thermatisation

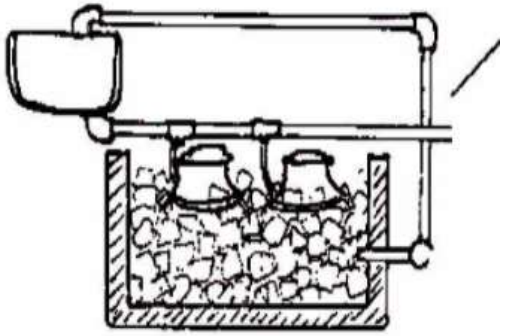
Heating before cooling will kill a many bacteria.



As soon as possible after milking heat your milk to 65°.C



Now cool down the milk as fast as possible to under 10°C.



10. Summary

1. Although in many “farm” situations its not easy to get the milk cooled immediately after milking.

2. Every farmer should do their very best to deliver good quality milk to the consumer.

3. Besides good quality milk gives you a higher price.

4. High quality milk comes from healthy cows.

5. Quality can only remain by proper cooling systems.

6. When the milk temperature stays at a level of body temperature the milk quality will turn into bad rather quickly.

- END -