



MASTITIS AND MILK QUALITY

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- Overview

1. What is the mastitis
2. Mastitis causing bacteria
3. Transmission, prevention and control
4. effects in milk composition
5. Milk test
6. Treatment

■ Mastitis

- inflammatory reaction of the udder tissue. It is also the most costly to the dairy industry, Milk from cows suffering from mastitis has an increased somatic cell count.

- Types of mastitis according to clinical symptoms



- 1. Clinical mastitis


- 2. Sub-Clinical mastitis

according to transmission

- 1. Contagious mastitis

- 2. environmental mastitis


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- Mastitis occurs when white blood cells (leukocytes), are released into the mammary gland, usually in response to an invasion of bacteria of the teat canal. Milk-secreting tissue, and various ducts throughout the mammary gland are damaged due to toxins by the bacteria. Mastitis can also occur as a result of chemical, mechanical, or thermal injury. The udder sac is hard, tight, and firm.


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- This disease can be identified by abnormalities in the udder such as swelling, heat, redness, hardness or pain if it is clinical. Other indications of mastitis may be abnormalities in milk such as a watery appearance, flakes, or clots. When infected with subclinical mastitis, a cow does not show any visible signs of infection.





■ Common bacterial causes



1. *Pseudomonas aeruginosa*
2. *Staphylococcus aureus*
3. *Staphylococcus epidermidis*
4. *Streptococcus agalactiae*^[2]
5. *Corynebacterium bovis*
6. *Mycoplasma*
7. *Escherichia coli*
8. *Enterobacter aerogenes*[[]
9. *Pasteurella spp*
10. *Listeria*



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- Transmission, prevention and control
 - Mastitis is most often transmitted by contact with the milking machine, and through contaminated hands or materials.
 - A good milking routine is vital. This usually consists of applying a pre-milking teat dip or spray, such as an iodine spray, and wiping teats dry prior to milking. The milking machine is then applied. After milking, the teats can be cleaned again to remove any growth medium for bacteria.

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- Practices such as good nutrition, proper milking hygiene, and the culling of chronically infected cows can help. Ensuring that cows have clean, dry bedding decreases the risk of infection and transmission. Dairy workers should wear gloves while milking, and machines should be cleaned regularly to decrease the incidence of transmission.

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- Mastitis can cause a decline in potassium and lactoferrin. It also results in decreased casein, the major protein in milk. As most calcium in milk is associated with casein, the disruption of casein synthesis contributes to lowered calcium in milk. The milk protein continues to undergo further deterioration during processing and storage.^[7] Milk from cows with mastitis also has a higher somatic cell count.^[8] Generally speaking, the higher the somatic cell count, the lower the milk quality.

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- On the other hand some bacterial infection (which cause food toxication or disease) can transmitted to human .
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- Milk tests
 - We can easily find or detect clinical mastitis by observation of the milk quality, but how could we detect it if the mastitis is subclinical .
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- Culturing to know the count and type of organisms is the first test



- Somatic cell count or California mastitis test
- is a simple cow-side indicator of the somatic cell count of milk. It operates by disrupting the cell membrane of any cells present in the milk sample, allowing the DNA in those cells to react with the test reagent, forming a gel.^[1] It provides a useful technique for detecting subclinical mastitis.

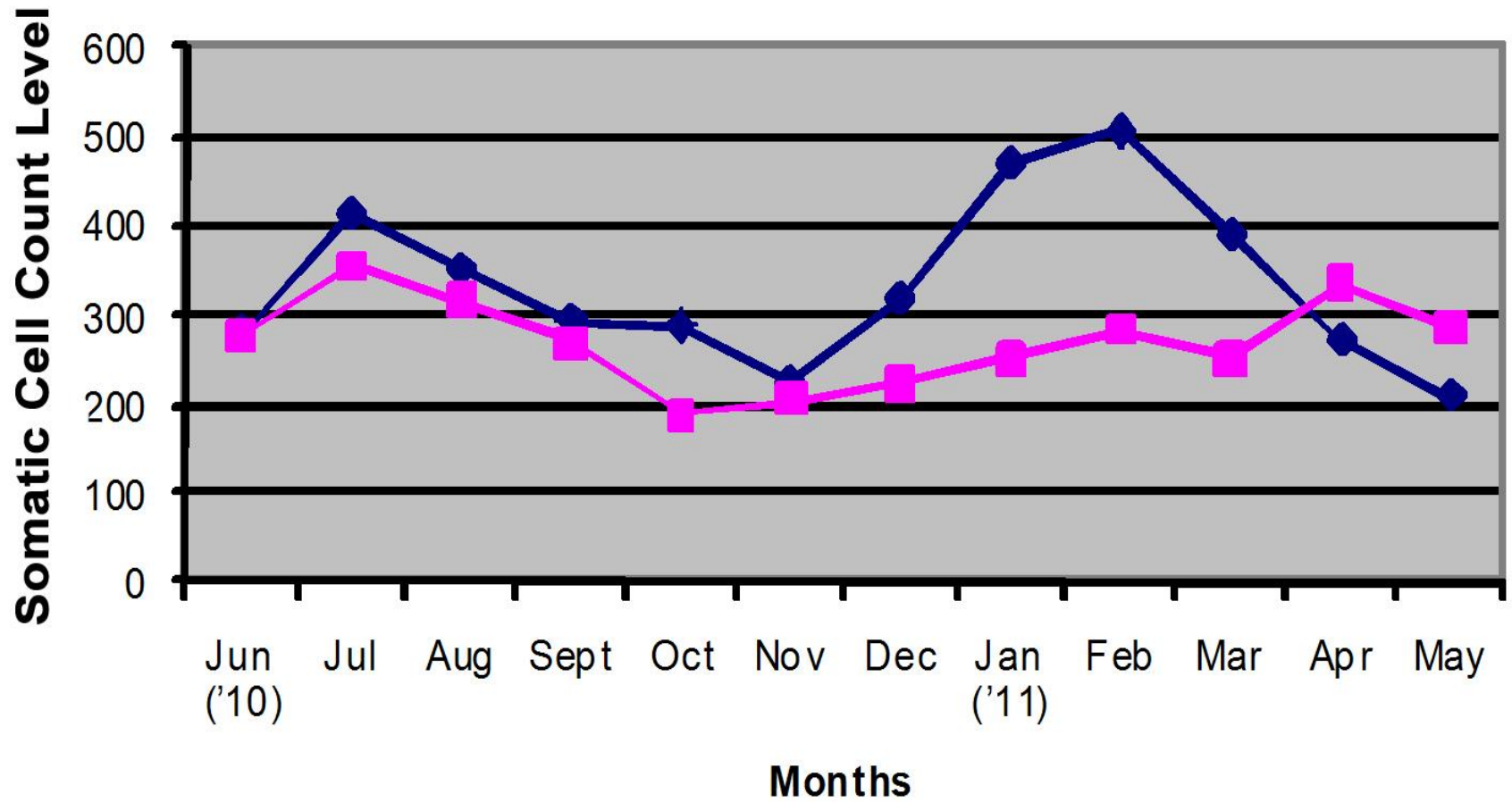
SCC

	<u>Herd</u>	<u>Cow</u>
<u>Excellent</u>	<150,000	<150,000
Problem	?	> 200 – 283,000
Illegal	> 750,000	



Average Bulk Tank SCC

Organic Herd Conventional Herd





■ Treatment

- Treatment is possible with long-acting antibiotics, but milk from such cows is not marketable until drug residues have left the cow's system. Antibiotics may be systemic (injected into the body), or they may be forced upwards into the teat through the teat canal (intramammary infusion). Cows being treated may be marked with tape to alert dairy workers, and their milk is syphoned off and discarded. Vaccinations for mastitis do exist, but as they only reduce the severity of the condition, and do not prevent new infection they should be used in conjunction with a mastitis prevention program.