Animals in Extensive Production Systems

VETS30031 / VETS90123

Dairy Farms – milk quality

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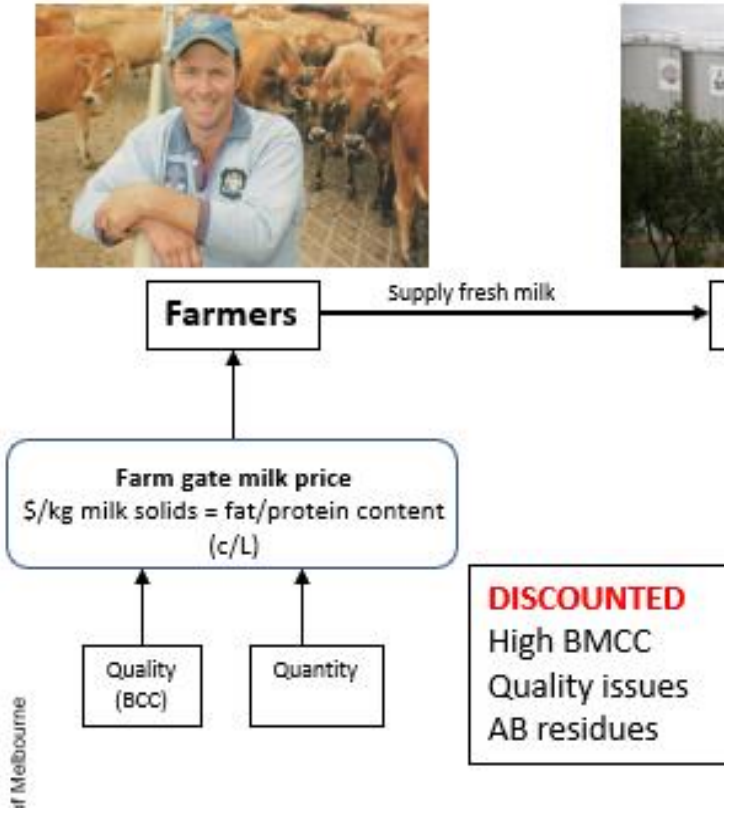
What is in milk?

Components:

- Water 87%
- Butterfat 3 - 4%
- Protein 3 – 3.5%
  - 80% casein, 20% whey proteins
- Carbohydrate 4.9%
  - Lactose
- Minerals (esp Calcium, Phosphorus)
- Vitamins (esp Vitamin A)



What determines milk quality?

Butterfat + Protein = Milk Solids

Bulk Milk Cell Count (BMCC)

Bacterial count

- Bactoscan, Thermoduric

Freezing point

Residues

Sediment

...

How does milk quality affect profitability? (Milk payments)

Base payment + *incentives* - *penalties*

($/kg MS)

Butterfat + Protein = Milk Solids

- Produce >43% in 'off season'
- Produce more than prev 2yr av
- Incentive for larger vats

- BMCC: inflammatory (and other) cells
- Bactoscan: bacteria
- Thermoduric: heat resist organisms
- Inhibitory substances: e.g. antibiotics, other chemicals
- Temp: at collection <5°C

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Bulk Milk Cell Count (BMCC) / Somatic Cell Count (SCC)	SCC measures the number of white blood cells in milk, which is essentially measuring the level of infection in the cow's udder. Mastitis is an infection of the udder, and both Individual Cow Cell Counts (ICCC) and BMCC can be used to monitor the level of mastitis infections in a herd. The first three BMCC results per month above 200,000 cells/mL will be treated as "advisory tests" and will be paid at the +3% rate. Penalties are applied to each individual consignment according to the range that the actual result falls within. Monthly Averages are used to vary the penalties as follows: Where the weighted average for the month is less than or equal to 200,000 then the 3% bonus will be paid on all milk for the month, otherwise the bonus/penalty for each collection will apply.	Every consignment of milk	≤200,000 cells/mL	+3%
			201,000 – 300,000 cells/mL	0%
			301,000 – 400,000 cells/mL	-10%
			401,000 – 600,000 cells/mL	-20%
			>600,000 cells/mL	-30%

https://lactalis.com.au/wp-content/uploads/2020/05/Victoria_Tasmania_Southern-Riverina_South-Australia_Lactalis_Supplier_Handbook_20-21.pdf

How could you maximise profitability through producing quality milk?

Get paid more for milk

Nutrition

Genetics

Good management

Mastitis and BMCC

Inflammation of the mammary gland, typically due to bacterial infection

Most economically important disease to dairy industry

- Reduced milk production
- Loss of BCS
- Poorer milk quality milk (reduced payment) due to increased BMCC
- Cull cattle
- Cost of treatment
- Antibiotic use

Clinical mastitis also impacts animal welfare

Good prevention, management and appropriate treatment of mastitis important

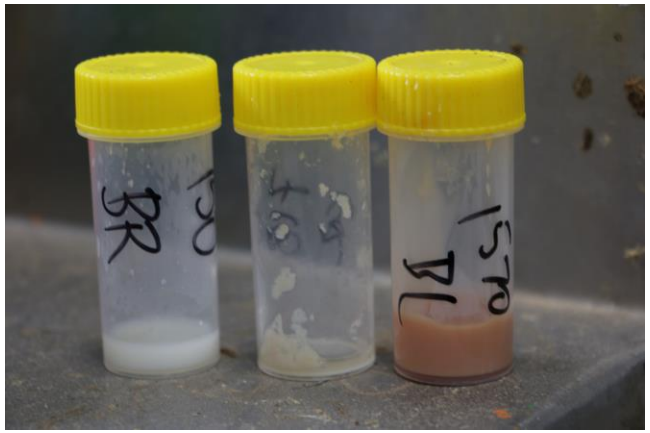
Mastitis

Sub-clinical

- No visible changes in milk, udder or cow
- Decreased milk production
- Decreased milk quality - Cell Count (>250,000/ml)
- Not treated during lactation (generally) – “Dry Cow Therapy” (Antibiotics at end of lactation)
- Cull ?

Clinical

- Obvious changes in milk +/- udder +/- cow
- Mild to severe/fatal
- Treat with antibiotics etc
- Withhold milk… “on the bucket”
  - Unfit for human consumption
- Cull ?



Mastitis and BMCC

Good management plays an important role in the prevention and management of mastitis:

- Milking/ milking machine management
- Good hygiene and other preventative measures
- Appropriate treatment of affected animals

Herd testing *(aka "herd recording")*

- Processors evaluate bulk milk quality at each collection (bulk milk testing)
- Farmers can also monitor individual cows periodically for…
  - Milk production
    - Litres
    - BF (kg and %)
    - Protein (kg and %)
  - Individual Cow Cell Count (ICCC)
    - Subclinical mastitis detection

  Also provides farmer with repro/fertility data
- ~40% of Australian herds "herd test"

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AEPS – DAIRY WEEK 2