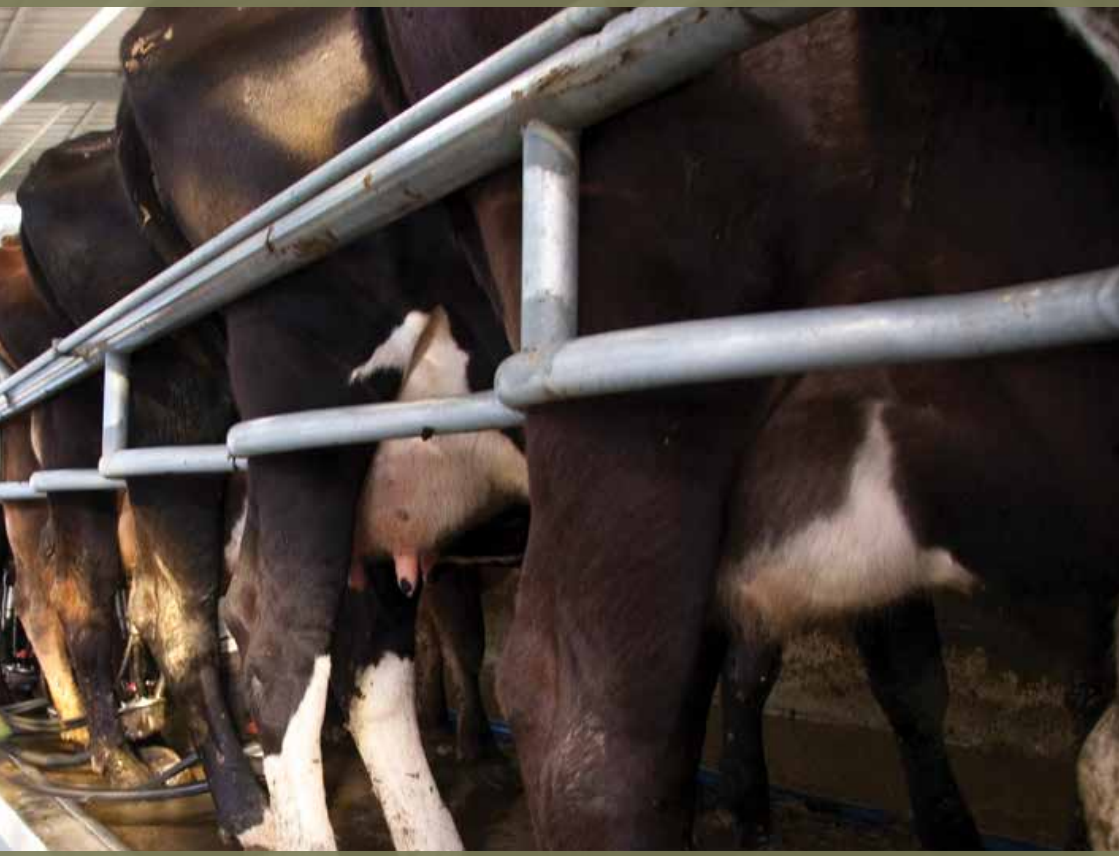
8. MILK



Udder health and milk quality is important to farm productivity and profitability. Every farm stands to gain from less mastitis.

8. MILK

Milk composition

Average milk composition (2020/2021 lactation)

	Holstein Friesian	Holstein Friesian/Jersey Crossbred	Jersey	Ayrshire
Milk fat (%)	4.5	5.0	5.6	4.4
Protein (%)	3.8	4.0	4.2	3.6
Milksolids (%)	8.3	8.9	9.8	7.9

Milk quality tests

These are the types of tests conducted on bulk tank milk, and the minimum standard required.

Each dairy company operates a milk quality assurance scheme to relate payment for the milk to the quality supplied. Refer to a dairy company's supply agreement for more detail.

Test	Description	Minimum Freq	Minimum Standard
Bactoscan (BScan)	Test number of bacteria. Gradings due to poor hygiene and plant washing.	3 per month	less than 100,000 cfu/ml
Thermoduric Plate Count (Therm)	Test the number of bacteria that survive pasteurisation at 72°C for 15 mins. Grading indicates hygiene problem.	As required	less than 1,500 cfu/ml
Coliform Plate Count (Coli)	Measure of coliform bacteria in milk. Associated with dung and contaminated water.	As required	less than 500 cfu/ml
Organoleptic Assessment (Senses)	Milk is smelled and looked at to identify contaminants such as blood, chemical and feed taints.	As required	See company terms of supply.
Sediment (Sed)	Amount of sediment in milk from soli, dung, hair and skin.	As required	See company terms of supply

Test	Description	Minimum Freq	Standards
Colostrum	To ensure milk does not contain milk from cows that have recently calved.	As required	1.35 g IgG/l or less
Inhibitory Substance (IS or Inhibs)	Test ability of milk to prevent growth of standard bacteria i.e., presence of antibiotics	3 per month	less than 0.003 IU/ml
Freezing Point (Fr. Pt)	Indicates if water has been added to milk to increase volume.	Per consignment	-0.513°C or lower
Somatic Cell Count (SCC)	Measure of white blood cells in the milk. High levels indicate inflammation (i.e. mastitis) in the udder.	Per consignment	less than 400,000 cells/ml
Collection Temperature (Temp)	Measure of the milk temperature upon collection	Per consignment	Milk must be at or below 10°C within 4 hours of commencement of milking, or at or below 6°C within 6 hours of commencement of milking, or 2 hours from completion of milking, whichever is soonest.

Milking plant

Milkings before rubberware changed

Material	Estimated lifespan
Nitrile rubber or natural/nitrile blends	2,500 cow-milkings
Silicone rubber	3,000-5,000 cow-milkings or 4-6 months, whichever comes first

Note: See manufacturer's recommendations for liner products.

Recommended vacuum levels

Vacuum level versus milkline height based on recommendations by the NZ Milking and Pumping Trade Association

Milkline height in metres above cow platform	Vacuum in kilopascals
1.8	48
1.6	46-48
1.4	44-46
1.2	42-44
Lowline	40-42

Notes:

Use the lower vacuum levels listed with large bore long milk tubes or in wet, windy weather e.g. at the start of spring calving. With automatic cluster removers, depending on their internal head loss, the higher level is acceptable after spring. (In practice, it is wise to start the season off with the vacuum level low rather than high, i.e. never start spring calving with a vacuum higher than 46 kPa regardless of the milkline height). Increase to around 48 kPa for herd testing to compensate for the head losses in current milk meters.

Pulsation ratio: 60:40 to 70:30 is the typical range.

Pulsation rates: 50-65 pulsations per minute are typical.

Mastitis

Udder health targets

Industry benchmarks are linked to the performance achieved by herds in the top 10% and 50% (median) of herds.

Key measure of performance (2013/14 BMSCC data)	Top performing herds	
	10%	50%
Average BMSCC (x1,000 cells/ml)	<100	<165
Number of consignments >400,000	0	0
Case rate of clinical mastitis	8%	15%
Culls/deaths due to mastitis	1-2%	3%
Benefit of "closing the gap" from 50% (median) to top 10% performance (for a 400 cow herd, at $6.00/kg MS)	$19,900	

BMSCC and cost of mastitis

Estimated BMSCC (bulk milk SCC calculated from herd test data) is associated with different levels of subclinical mastitis in the herd:

- At 100,000 cells/ml, approximately 20% of cows have subclinical mastitis
- At 200,000 cells/ml, approximately 30% of cows have subclinical mastitis
- At 300,000 cells/ml, approximately 36% of cows have subclinical mastitis
- At 400,000 cells/ml, approximately 40% of cows have subclinical mastitis.

Milk yield losses are associated with mastitis

Subclinical mastitis:	• 2.1% reduction in milk yield per doubling of individual cow SCC above 100,000 cells/ml. • 6.0 kg solids reduction per doubling of individual cow SCC above 100,000 cells/ml.
Clinical mastitis:	• 3.3% milksolids loss associated with clinical mastitis.

- Each case of mastitis costs approximately $150 per case due to costs of drugs and discarded milk, labour and short term production losses.
- Use SmartSAMM Gap Calculator **(dairynz.co.nz/mastitis-gap)** to calculate the benefit of closing the gap between current and target performance for your herd's udder health.

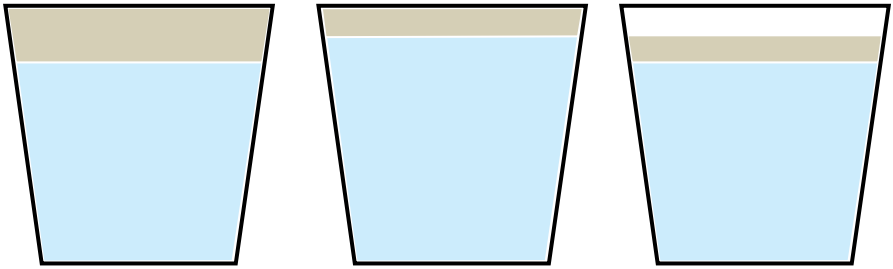
Teat spray

Make up teat spray correctly

1. Use a registered product – check registration with New Zealand Food Safety Authority (ACVM Act) at **https://eatsafe.nzfsa.govt.nz/web/public/acvm-register**
2. Mix a fresh batch regularly – every 2-3 days is recommended
3. Use potable (drinking quality) water – cooled water from hot water tank is an option.
4. Mix according to label – dilution rates may change as mastitis risk changes.
5. Use extra emollient if required – emollient (glycerine or sorbitol) are skin conditioners. Use when teat condition is likely to be poor (e.g. in spring or wet muddy conditions). Replace some of the water volume with emollient.

Check your mix

Not all products are the same. Some are registered for different dilutions. Incorrect mixing can lead to problems with residues or outbreaks of mastitis. Check with supplier for appropriate mix before changing mix.



1:4	**1:9**	**1:9**
20 l teat spray	20 l teat spray	20 l teat spray
= 4 l concentrate +	= 2 l concentrate +	= 2 l concentrate +
16 l water	18 l water	2 l emollient +
		16 l water

1:4 means:

- 1 part to 4 parts (1 to 4)
- 1 in 5
- 20% by volume

1:9 means:

- 1 part to 9 parts (1 to 9)
- 1 in 10
- 10% by volume

See DairyNZ Healthy Udder and **dairynz.co.nz/mastitis** for more on making up teat sprays.