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MASTITIS IN WESTERN AUSTRALIAN DAIRY CATTLE

Summary of results from a mastitis survey carried out by the Department of Agriculture's Mastitis Committee.

In 1964/65, as a first step towards a State-wide mastitis control programme, the Department of Agriculture undertook a survey of mastitis in West Australian dairy herds. The survey was designed to obtain a clear picture of the incidence and severity of the disease and is the most comprehensive mastitis survey carried out in Australia.

Officers of the Department's Animal and Dairy Divisions visited 100 farms and carried out detailed examinations of 4,225 cows milked on these farms. Laboratory tests were made on milk from all cows and a "cowside" mastitis test, the Rapid Mastitis Test (RMT), was also evaluated.

Sheds, milking machines, and other facilities and equipment were examined, and dairy cow husbandry was studied on each farm.

Mastitis was detected by examining milk and udders, and by testing for the presence of bacteria and leucocytes (white blood cells) in the milk. Both laboratory tests and the RMT were used.

A detailed report on the results of this survey has been published elsewhere.* This article summarises some of the more important practical findings.

Incidence of mastitis

No herds were completely free of mastitis. Clinical mastitis was found in 44.4 per cent. of cows and 21 per cent. of all quarters examined. Subclinical mastitis was found in another 9.3 per cent. of cows (6.3 per cent. of quarters). Total incidence of the diseases in these herds was therefore more than 50 per cent. and more than one in every four quarters were infected.

Milk and udder abnormalities

Milk which was obviously abnormal was found in only 2 per cent. of quarters, the most common abnormality being discoloured or watery milk. Clots were rare, being found in only three in every 1,000 quarters examined.

Forty two per cent. of cows produced milk containing mastitis-causing bacteria and nearly 35 per cent. produced milk with a high leucocyte count.

Udder abnormalities were found in 19.8 per cent. of cows. Fourteen per cent. of quarters were classed as abnormal for texture when felt; most of these were hard or had some hard lumps while 9 per cent. were either enlarged or small. There was a high correlation between changes in udder texture and the presence of mastitis as indicated by laboratory tests.

Causative bacteria

Staphylococci were isolated from 17.2 per cent. of quarters and streptococci from 2.7 per cent. There was a high correlation between isolation of staphylococci and a high leucocyte count (a sign of inflammation), staphylococci being found in milk from 57 per cent. of the quarters which also had a high leucocyte count. Staphylococci were isolated from milk from 43 per cent. of the physically abnormal quarters.

* "Mastitis in Western Australian Dairy Cattle". Report of the Mastitis Committee, Department of Agriculture, Western Australia, November, 1967.
A survey on mastitis in West Australian dairy herds, carried out by the Department of Agriculture's Mastitis Committee, has shown that mastitis is far more widespread and severe than is realised by most dairy farmers.

Few farmers were aware of the magnitude of production losses which were due directly or indirectly to mastitis.

This situation was considered to arise from three main factors.

- Farmers tend to rely too heavily on antibiotics.
- It is hard for a farmer to accept that mastitis is present in his herd when there are no obvious signs of the disease.
- People are usually reluctant to spend time and effort on attempting to control a disease when their efforts do not produce immediate and obvious results.

Results of the survey made it clear that mastitis is an important economic problem for the West Australian dairy industry. However, the mastitis problem in Western Australia is no worse than in other States.

A national picture of mastitis has been presented by estimates of the Expert Panel on Bovine Mastitis, which was set up in 1965 by the Animal Production Committee. The panel was established following submissions to the Standing Committee on Agriculture by the Australian Society of Dairy Technology. The report from the panel reviewed mastitis research and mastitis occurrence and control throughout Australia and overseas.

For Australia as a whole, mastitis results in a loss of milk production of 130 million gallons a year, which is worth nearly $30 million. It is estimated that 30 per cent. of all cows' quarters are infected with mastitis, and each suffers a 30 per cent. drop in yield.

Change in milk composition results in an annual loss of 20,000 tons of solid-not-fat, worth at least $1,200,000.

The national culling figure for mastitis is estimated at 130,000 cows per annum. They are worth between $4.5 to 8 million.

The treatment cost is estimated at $4.00 per head for penicillin and other antibiotics.

No information is available regarding the value of discarded milk, the value of man hours spent in treatment, or the cost of veterinary advice, but the total of the four major costs is estimated to be very close to $37½ million per year.

These findings indicate that staphylococci are the main cause of mastitis, and that infection is associated with inflammation and chronic tissue damage.

**Farm tests for mastitis**

The survey gave an indication of the value of farm tests for detecting mastitis. The rapid mastitis test (RMT) was the best, detecting 70 per cent. of affected quarters. The best of the others was udder palpation for texture, which detected 44 per cent.

Farmers in the survey mainly relied on signs of milk abnormality, but these detected only 9 per cent. of mastitis-affected quarters.

**Subclinical mastitis**

Subclinical mastitis cannot be recognised by looking at the milk or examining the udder. It is diagnosed from the presence of large numbers of leucocytes (white blood cells) in the milk which can be detected by a field test, the R.M.T. or a laboratory cell count. In the survey these tests showed subclinical mastitis in 6.3 per cent. of quarters. Staphylococci could be isolated in just over half these quarters.
Many farmers are using the Rapid Mastitis Test to quickly and efficiently test the incidence of mastitis in their herds. Regular testing allows the segregation and treatment of infected animals.

Thus subclinical staphylococcal mastitis was less common than clinical staphylococcal mastitis with obvious changes in the udder.

**Incidence in herds and cows**

Mastitis was more common in herds producing butterfat than in wholemilk herds, and was more common in small herds. It was also more common in winter than in summer. The disease increased with age of the cows, so that a half of the cows in their fourth or later lactation had clinical mastitis in one or more quarters.

While all herds showed evidence of mastitis, the disease was less common where:

- Milking yards and shed approaches were concreted, there were no steps leading up to the bails and cows were milked in walk-through bails. Such facilities helped prevent soiling or injury to teats and udders.
- Udders of the cows were washed with running water. Using a cloth and bucket increased the risk of infection between cows.
- Teat cups were disinfected between cows.
- No stripping was undertaken. Stripping by hand or machine often led to overmilking and teat injury.
- Cows were dried off suddenly at end of their lactation. If the milking programme was tapered off gradually it prolonged the stress affecting high producers, and promoted tissue damage and bacterial attack.
- Cows were treated with antibiotics immediately before drying off. Untreated cows could harbour the disease until their next lactation.
- Cows were dehorned. This practice lessened the risk of udder injury and hence, udder infection.

**Farmers' awareness of mastitis**

Farmers were concerned about mastitis, but most seemed to be unaware of the degree of infection in their herds. Few farmers appreciated that cows can have mastitis without showing obvious signs, so many herds with subclinical mastitis suffered reduced yields and milk quality without the farmer realising it.

The main reason for this lack of awareness was that most farmers regarded only altered milk and acute inflammation of the udder as signs of mastitis. Only eight regularly used a strip cup with a gauze cover, and only one regularly used a RMT kit for detection of leucocytes.
Running water is a simple, cheap and hygienic method for udder washing. Massaging to stimulate milk let-down is done at the same time.

Some farmers were aware of hardening of quarters, but very few regarded such quarters as being infected.

It is obvious that farmers who relied on clinical observations alone could identify only a fraction of the total number of mastitis cases. Only a small percentage of infected quarters showed altered milk and the common method of detecting milk abnormalities by squirting milk onto the floor would have revealed only a few of these. Unidentified cases continued to spread the disease.

Control and treatment of mastitis

Very few farmers had specific mastitis control programmes.

All except three farmers treated obvious cases of mastitis with antibiotics. Treatment was regarded as successful, even if there were chronic changes in one or more quarters, if the milk returned to normal and production was not seriously affected. Cows continuing to secrete abnormal milk were usually culled.

No farmer carried out the desirable milking practice of isolating infected cows or putting heifers through before older cattle.

Either practice would reduce the spread of infection.

However it was obvious that those farmers who had adopted various forms of shed and machine hygiene had achieved some measure of success in controlling the disease.

Culling and herd wastage

Of the 1,072 cows culled during the 12 months before the survey 17.5 per cent. were culled because of mastitis; another 50 per cent. were culled for low production. However, low production was undoubtedly often the direct result of undetected mastitis.

Such culling caused loss in two ways:

- Cost of replacing cows every 3½ to 4½ years instead of at seven to eight years of age.
- Loss of production resulting from the culling of cows before they reach the age of peak production, usually at about six to 7½ years.

A third of the cows examined in the survey were in their first lactation; only a third were in fourth or later lactations. This indicates a high culling and replacement rate.

A mastitis control programme

There is no doubt that mastitis could be controlled more effectively than it now is. Most farmers seemed content to treat the disease once it had occurred. Instead, they should be trying to reduce the spread
Back flushing has proved an effective means of reducing the incidence of mastitis. About six pints of water passed through the claw removes milk and bacteria left by the previous cow.

A control programme was described in *Journal of Agriculture* during 1965.* The main points of any mastitis control programme should be:

- Understand that the disease is present, whether in an obvious form or not.
- Make cow-shed and cow-yard conditions as hygienic as possible.
- Make sure that the milking machine is in first class order, and that the milking routine prevents over-milking or udder damage.
- Use effective methods of udder washing and teat cup sanitizing.
- Learn to quickly recognise and treat affected cows. Because of subclinical mastitis, this means the regular use of a RMT kit to measure the leucocyte level of milk.
- Mark, and milk last, those cows known to be infected. Use intensified hygienic precautions.
- Dry off quarters or cull cows proved to be incurable.

* Available as Department of Agriculture Bulletin 3330

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