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PREVENT MASTITIS

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Mastitis remains the predominant, most costly infectious disease of the lactating female. New, dramatic approaches to mastitis control are frequently popularized, and promises of a new era in mastitis control and treatment are not unusual. The test of time and careful appraisal under farm conditions results in failure or the conclusion that the program is effective, providing that sound dairy management and practical milking procedures are also utilized.

The practices outlined here are the sound practical dairy practices that have withstood the test of 50 years of dairying and remain as valuable today as when they were first acknowledged.

In economic loss to the dairy farmer, mastitis is the most important disease of dairy cows. Losses may be due to one or all of the following: (1) decreased production, (2) poor quality milk, (3) destruction of one or all quarters of the udder, (4) cost of treatment and, in some instances, (5) death.

WHAT IS MASTITIS

Unlike tuberculosis and brucellosis, mastitis is caused by many different types of microorganisms.

Mastitis is an inflammation of the udder brought about by the activity of these germs which are always present in the cow's surroundings. Nearly all quarters of nearly all cows contain potential mastitis-producing organisms.

Microorganisms must have favorable conditions to cause inflammation (mastitis). The stress upon the cow and her udder by improper management provides conditions under which the microorganisms may cause mastitis.

SIGNS OF MASTITIS

The main symptoms of inflammation include heat, redness, pain, swelling and abnormal secretions. Because mastitis is an inflammation of the cow's udder, any or all of these symptoms may appear in varying degrees at any time.

TESTS FOR MASTITIS

Many tests have been proposed for mastitis, though few have withstood the test of time.

BACTERIOLOGICAL EXAMINATION OF QUARTER SAMPLES: The routine use of this test on a herd of cattle provides information regarding the specific microorganisms within each quarter. This test has been used on a monthly or semi-annual basis, followed with medication to quarters containing specified types of organisms.

If the specific organism is eliminated by medication, others of equal mastitis-producing potential soon replace it. The cost of aseptic milk sampling, laboratory examination, medication and discarding of milk from medicated cows makes this a costly testing procedure. It is of doubtful contribution to the control of mastitis.

BACTERIAL COUNTS: Bacterial counts of the composite (milk from all cows) herd milk samples often are advocated to indicate how much mastitis there is within a herd. Bacterial counts indicate only dairy utensil sanitation and/or milk cooling procedures. High bacterial count of milk does not indicate mastitis.

STRIP CUP: The only mastitis test of real value to the dairy farmer is the strip cup.

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Any of the commercial types of strip cups will do. All that is needed is a container of some sort and a black-surfaced cover which shows up clots in the milk. The strip cup is an essential item of dairy equipment and should be used regularly at each milking.

CALIFORNIA MASTITIS TEST (CMT): The CMT is a recently developed, highly publicized modification of the Whiteside test. It may be of value as a herd test when used on bulk tanks or composite milk samples. Recent investigations by the USDA indicate that this test may cause confusion and that it will give positive reactions when clinical mastitis does not exist. When used on individual cows or quarter samples it gives a much greater incidence of positive tests than is evident by clinical symptoms.

The incidence of positive CMT tests in individual cows increases with increased age, the number of lactation periods or with the advancement of lactation period and with the presence of metabolic diseases such as milk fever or ketosis. There is also evidence to indicate that the incidence of positive tests increases with the increase in seasonal temperature and other environmental changes. If the CMT test is to be conducted at milking time, an additional helper must be available. The test should be conducted by someone who has had previous experience and training with the test.

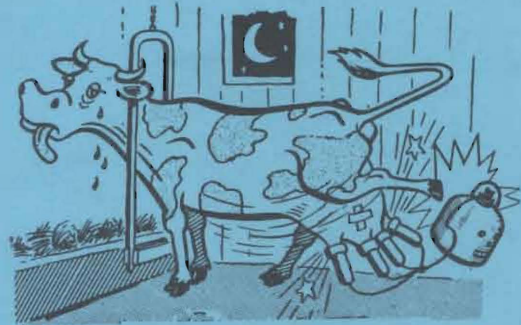
CAUSES OF MASTITIS

When the cow or her udder is subjected to stress, the always present microorganisms within the udder will cause mastitis.

MILKING: Keep milking machines in the best operating condition. Milking machine dealers can help do this. Some of the primary problems include too small a vacuum pump and pipe line to deliver sufficient vacuum to the operating units.

Many farmers use two complete sets of rubber inflations for each machine and change inflations each week. Inflations not in use should be cleaned thor-

oughly and stored in a cool, dry place. Clean rubber inflations milk faster and last longer. (See NDSU Extension Service Circular No. A-421.) Do not use rubber inflations for more than 1,500 milkings.



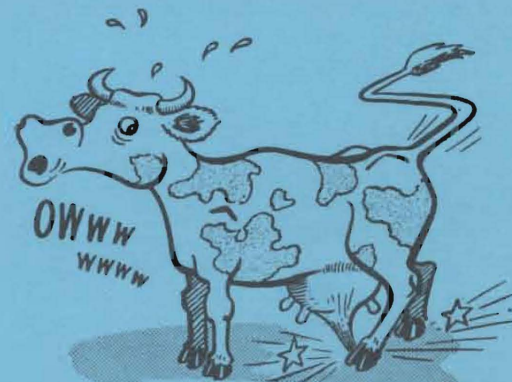
Remove the milking machine when milk stops flowing

When milk flow stops, remove the teat cups at once. Continued milking may injure the sensitive tissue lining of the teat and the lower portions of the udder. Then conditions are right for the organisms causing mastitis to start an infection.

Pay particular attention to animals that milk out rapidly or have one quarter that milks out more rapidly than others. When production is 5 pounds of milk or less per milking, stop milking with the milking machine.

The type of milking facility, degree of automation built into a facility and skill of the operator determine the number of milking units an operator can safely handle. Under optimum conditions the maximum number of units an operator can handle is three.

HOUSING AND THE HOUSING AREA: Cold concrete floors, lack of bedding, open hay or straw chutes, broken windows or doors, and improper ventilation may place stresses upon the cow's udder.



Prevent teat injury.

Injury to udder or teats usually leads to mastitis. Prevent injury by providing stalls of adequate size, and by keeping the barnyard and pasture free of

sharp rocks, barbed wire, tin cans and other rubbish. Concrete approaches to the milking parlor of the barn should be roughened enough to prevent slipping and designed to provide complete drainage.

Wet, muddy barnyards and stagnant ponds of water always contain potential mastitis-producing organisms. Cows will stand udder-deep in such stagnant pools during hot weather. Chapped and sore teats may also result from this exposure.



INHERITANCE: The most important factor of inherited mastitis resistance is udder attachment and teat placement. An extremely large udder with weak attachment becomes pendulous as the cow ages and is subject to frequent injury.

FEED: Feed is not important in causing mastitis nor in preventing it. There is no evidence that high protein rations play a direct part in producing mastitis. Also, there is no proof that high concentrations of various vitamins and minerals help to prevent or cure mastitis.

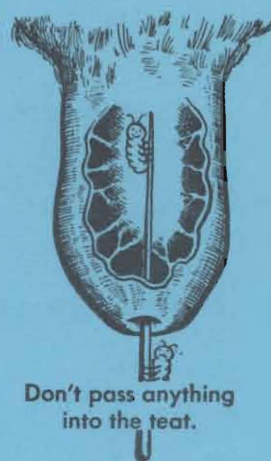
Feeding forages high in estrogens (female hormone) may bring on mastitis if the cow is late in her lactation period.

PREVENTION AND TREATMENT

Most mastitis can be prevented with good management.

VACCINATION: Vaccination with mixed bacterins and toxoids has, at various times, received much attention as a means of mastitis prevention. Because many different microorganisms may cause mastitis, it is impossible to prepare a vaccine that will always protect against mastitis.

Vaccination is of doubtful benefit and cannot replace sensible management and dairy practices. Vaccines may have failed because too many dairy farmers attempted to replace good management with vaccination.



TREATMENT: The dairyman who gives full time to mastitis prevention and depends on a competent veterinarian for treatment when it is required usually has lower veterinary costs and few problems with mastitis.

Most mastitis begins as a mild case and becomes gradually worse. Effects of these mild cases can be counteracted by removing all of the milk from the infected quarters as soon as clots or stringy milk appear on the strip cup. Follow this by removing all milk every 1 or 2 hours until the milk becomes normal. Before milking, stimulate the cow for milk let-down by washing the udder in warm water and massaging.

If frequent removal of milk from the infected quarters seems to have no effect, consult a veterinarian at once. If there is any doubt as to which procedure to follow — whether to continue this partial milking or call the veterinarian — don't gamble. Call the veterinarian.

Avoid the use of the highly advertised intramammary medicines. The antibiotic content of these preparations is seldom strong enough to counteract the infection. Most of these preparations fail to penetrate the involved mammary area and remain in the lower third of the mammary gland. Antibiotics in the preparation are not released for distribution throughout the gland but are milked out in later milkings.

All milk from treated quarters should be discarded for the period following treatment as designated on the label of the drug container or according to the veterinarian's instructions. Mixing of milk containing antibiotics with marketable milk is considered adulteration and is punishable by law. Antibiotics in milk interfere with the manufacture of dairy products, may injure people who are sensitive to the antibiotic, or produce antibiotic-resistant organisms in human or cow. (See NDSU Extension Service Circular A-356.)

TEAT DIPPING: A recent proposed mastitis preventive measure is a dipping of teats with various sanitizers. Correct use of non-irritating teat dips may help reduce mastitis because it removes the milk residue on the end of the teat. This procedure has resulted in confusion as to the benefits, some indicating decreased incidence of clinical mastitis, other indicating increased average milk production, and still others indicating the dipping prevents the occurrence of sub-clinic mastitis or new infections. The continuous use of incorrectly designed teat dips has caused teat irritation which has aggravated the mastitis problem

instead of reduced the problem. Until more basic, well-controlled investigations have been made, the question of teat dipping will remain a controversial one. One conclusion appears to be made by nearly all advocates of the teat dipping; it is beneficial and will aid in decreasing the mastitis problem, **PROVIDING THE LONG RECOGNIZED MANAGEMENT PROCEDURES OF ADEQUATE HOUSING, ADEQUATE MILKING EQUIPMENT AND COMPETENT MILKING PROCEDURES ARE ALWAYS EMPLOYED SIMULTANEOUSLY WITH THE TEAT DIPPING.**

EQUIPMENT CHECK LIST

- | | <u>Yes</u> | <u>No</u> | |
|------|--------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------|
| (1) | <input type="checkbox"/> | <input type="checkbox"/> | Is vacuum stable at teat ends and within manufacturer's tolerance on all units during milking operations? |
| (2) | <input type="checkbox"/> | <input type="checkbox"/> | Is the pulsation rate of each pulsator within the recommended range? |
| (3) | <input type="checkbox"/> | <input type="checkbox"/> | Does the pump have adequate oil supply and are belts and pulleys tight? |
| (4) | <input type="checkbox"/> | <input type="checkbox"/> | Is the vacuum line 1 1/4 to 1 1/2 inches or larger? (2 inches or larger for 4 or more units) |
| (5) | <input type="checkbox"/> | <input type="checkbox"/> | Are there leaks around fittings in vacuum line or pipeline? |
| (6) | <input type="checkbox"/> | <input type="checkbox"/> | Are vacuum lines free of obstructions (dirty, unnecessary turns, etc.)? |
| (7) | <input type="checkbox"/> | <input type="checkbox"/> | Are rubber liners, hoses and other rubber goods clean and free of cracks and holes? |
| (8) | <input type="checkbox"/> | <input type="checkbox"/> | Are two sets of rubber goods available and their use alternated weekly? |
| (9) | <input type="checkbox"/> | <input type="checkbox"/> | Is the set of rubber goods not in use properly treated? |
| (10) | <input type="checkbox"/> | <input type="checkbox"/> | Are inflations discarded after 1,000 cow milkings? |
| (11) | <input type="checkbox"/> | <input type="checkbox"/> | Are milk lines 1 1/2 inch or larger? (2 inch lines for more than 4 units or a single line) |

MILKING PROCEDURE CHECK LIST

- | | <u>Yes</u> | <u>No</u> | |
|-----|--------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | <input type="checkbox"/> | <input type="checkbox"/> | Is the udder properly cleaned and stimulated before attaching machines? (See Circular A-429) |
| (2) | <input type="checkbox"/> | <input type="checkbox"/> | Does the operator use strip cup at each milking? |
| (3) | <input type="checkbox"/> | <input type="checkbox"/> | Does one operator handle more than three milking units? |
| (4) | <input type="checkbox"/> | <input type="checkbox"/> | Are machines properly attached and adjusted to the udder? |
| (5) | <input type="checkbox"/> | <input type="checkbox"/> | Are cows machine stripped and machines gently removed <u>as soon as the cow has finished milking</u> ? (Most cows will milk out in 3-6 minutes. Machine stripping should be minimal.) |
| (6) | <input type="checkbox"/> | <input type="checkbox"/> | Are cows' teats dipped in approved teat dip after milking? |
| (7) | <input type="checkbox"/> | <input type="checkbox"/> | Are there any articles in cow yard or pastures which can bruise udders such as rocks, stumps, lumber, wires, etc.? |
| (8) | <input type="checkbox"/> | <input type="checkbox"/> | Are cows handled gently, not run or driven by cow dogs, horses, tractors, etc.? |