

Six Answers to the Mucosal Disease Problem

By I. A. Schipper¹

In the past two years frequent inquiries have been made of the Veterinary Science Department at North Dakota Agricultural College regarding mucosal disease. The questions most frequently asked are briefly presented.

Is Mucosal Disease a New Disease?

In 1952, Dr. Ramsey of Iowa State College described a disease in cattle which he designated under the term mucosal disease. Since 1952, this condition or similar disease conditions have been described in 30 states and Canada. Other disease conditions of a like or similar symptomatology or pathology have been described under the terminology virus diarrhea, infectious bovine rhinotracheitis, "Red nose," anterior respiratory disease and muzzle disease of cattle.

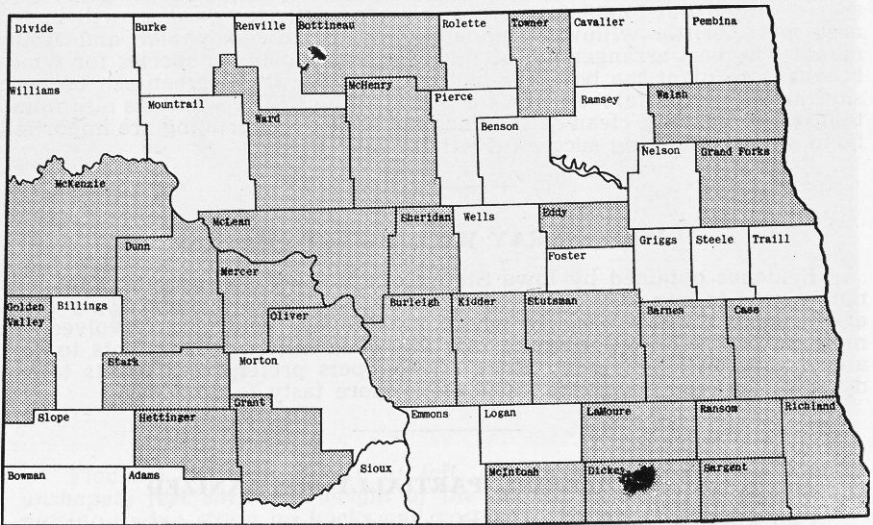


FIGURE 1.—State map showing counties having had one or more cases of mucosal disease.

Mucosal disease was first diagnosed as such in North Dakota in 1952. Similar conditions, which in all probability were mucosal disease outbreaks were observed by workers in the diagnostic laboratory of the North Dakota Agricultural College as early as 1945. At the present time, one or more cases of mucosal disease have been diagnosed in 28 counties of North Dakota. Eight of these counties are west of the Missouri River.

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What Are the Signs of Mucosal Disease?

Preliminary observations of mucosal disease cattle often have led farmers and veterinarians to believe the sick animal had shipping fever, vitamin A deficiency or coccidiosis. In several instances, a preliminary diagnosis of rabies has been made.

Cattlemen, who observe their animals closely, will probably first see one of the less vigorous animals approach the feed trough at a normal pace but when at the trough, the animal will not eat. Large quantities of water may be consumed at this time. Should the animal's temperature be taken, it is likely to be above 103° F. Within 12 to 36 hours a profuse diarrhea will likely be observed. On the basis of histories, the diarrhea is usually the first symptom noted by the owner. The feces usually are dark, contain large amounts of mucous and often blood. After passage has been completed, the animal will continue to strain and small quantities of fecal material and fluid may be passed.



FIGURE 2.—Excessive nasal secretion and lachrymation (tears) and depression in acute mucosal disease.

Infected animals exhibit lachrymation (tears) and later a dark stained area of matted hair appears below the eyes. Large quantities of thick clear secretion will pass from the nose and adhere to the nose, appearing in the form of icicles. The inner surface of the nasal cavity will become red or may be ulcerated. Later dark crusts will form on the nose.

Quantities of saliva may pass from the mouth and the animal may grind its teeth. Examination of the mouth will usually reveal ulcerations and hemorrhages on the tongue, lips and upper surfaces of the oral cavity. The mucosal diseased animal will stand in a humped position, is depressed and completely off feed. Lameness may be observed. Some sick animals will pick up hay, chew it several times and hold it in the mouth for extended periods. Cattle exhibiting the typical symptoms of mucosal disease may live from 3 to 50 days.

Frequently animals will have a deep cough. Some acute cases become chronic and often have a rough skin with loss of hair over the shoulders and neck.

Symptomatology varies with individual animals within an infected herd. In some instances, large numbers of the herd may be lost. In other cases, only a few animals die with mild cases following the acute stage and some appear to recover. In some instances, the symptomatology is so mild that the detection is very difficult.

What Animals Are Infected With Mucosal Disease?

To date, mucosal disease has been diagnosed only in cattle and wild deer. This disease usually affects cattle 9 to 18 months of age, but has been observed in all ages of cattle. The greatest incidence has been in beef cattle, but all breeds of cattle have been observed to have mucosal disease.

Recent investigations indicate that calves under two weeks of age are susceptible to mucosal disease. Numerous cases of extensive calf losses over the past year have proved to be mucosal disease. The symptoms usually detected are similar to that observed for intestinal and respiratory (pneumonia) infections in calves. Diagnosis is based on post mortem examination.

How is Mucosal Disease Spread?

No definite information is available regarding the spread of mucosal disease. However, susceptible animals have been infected by contact and injection of blood from sick animals. It is quite reasonable to believe that blood sucking insects (flies, mosquitoes, lice) may serve as the agents of spread from herd to herd. Investigations have definitely shown that mucosal disease will be spread to susceptible animals through watering tanks or ponds that have been utilized by infected animals.

How Can Mucosal Disease Be Treated?

No known treatment for mucosal disease is available at the present time. Various antibiotics and sulfonamides are of no proved value. Investigations are underway to evaluate vaccines and anti-serums to prevent and control mucosal disease.

Good sanitation and general disease preventive measures are at present the only means of control recognized.

What Can Be Done To Prevent Mucosal Disease?

Protection of the herd from insects (mosquitoes and flies) will in all probability do much to prevent infection of the herd. New additions to the herd should be isolated carefully from the rest of the herd for at least 30 days. In many instances, extended periods of isolation will be advisable.

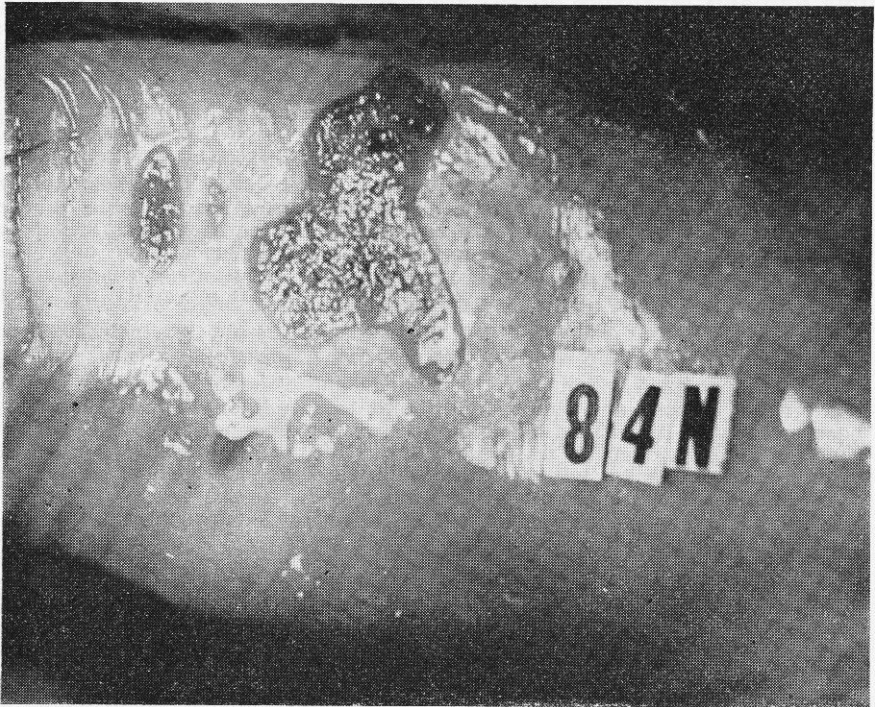


FIGURE 3.—Tongue of an acutely infected animal showing the areas of necrosis (or ulceration) that occur throughout the digestive tract.

Animals subjected to stress are most susceptible to disease. Good nutrition and housing will do much to protect animals from all disease, including mucosal disease. Animals that are on poor rations, or subjected to inclement weather with little protection, are under stress and thus are susceptible to infection. Animals that are heavily parasitized, lose weight and are often weakened. Parasites are another form of stress that may contribute to mucosal disease.

Animals within the herd that are suspected of having mucosal disease should be isolated immediately from the entire herd. Watering and feed troughs from which the infected animals have had access should be cleaned thoroughly and disinfected. It has been definitely proved that mucosal disease may spread by direct contact and through feed and water.

DOUGLAS FIR: NEW KING OF TREES

When the immortal frigate *Constitution* first put to sea in the year 1798, she carried as masts three lofty white pines felled in Maine. But when in 1925 these had to be removed, there was left no white pine in all the eastern states tall enough to replace those glorious sticks. From the northwest came, instead, three towering shafts of Douglas fir, and these "Old Ironsides" bears in her decks today where she rides in honor at the dock of Boston navy yard.

Thus has the white pine fallen from first place among the timber trees of the continent; thus has Douglas fir (which no American had ever seen or heard of when the keel of the *Constitution* was being laid) risen to the position of premier industrial tree of the world. For it was to this great western conifer that the lumber industry turned when, at the close of the last century, the end of virgin eastern white pine was in sight. Luckily for them and us the noble species which took its fallen sister's place is quite as versatile in fulfilling a hundred vital uses and manyfold as abundant.

And it is mightier in stature. Towering up to heights as great as 220 feet, with sometimes 100 feet of trunk clean of branches, arrow straight, and with almost no taper below the crown discernible to the naked eye, an ancient Douglas fir may be 17 feet in diameter. This tree is thus the tallest and most ponderous in North America, save only the two sequoias. And except in their presence it is almost everywhere in its immense range the most majestic species, as it is commercially the most important.

One-fourth of all the leading saw timber in the United States is Douglas fir! In volume it surpasses any other one species. It occurs in every western state and in parts of Canada and Mexico. Its somber shape, its serrated crowns and sharp lance point tips and long swaying boughs, become printed like a lasting eidolon on all our memories of the Pacific coast. And even deep in the desert states of the southwest we meet it again, on high peaks, with gratitude for its dim, cool groves after the glare and heat of the rocky wastes below.

To see a growth of virgin Douglas fir in all its venerable grandeur—for these trees may live 500 to 1,000 years—perhaps the most impressive of accessible spots is on Grouse mountain, which rises behind the fine seaport city of Vancouver in British Columbia. A highway takes you up in hawklike, soaring swoops, and from the excellent road's end a footpath leads you directly up into the undisturbed and solemn stand where Douglas trees of towering height mingle with hemlocks and cedars only a little less tall.

It is very dim and cool under the close canopy; seldom does a sunbeam reach to the forest floor, where mosses seem not to have been trodden since the ice age. And everywhere you look the great shafts of the fir close up the aisles with their dark, deeply furrowed bark. From time to time the mountain wind goes seething through the high canopy above you, as if the whole forest were breathing as one ancient organism. And, if you are still, you will hear a spirit voice. It seems to begin far away at the auditory horizon and to bound toward you—a "bump . . . bump . . . bump—a dump"—as if some creature were knocking on the great fir trunks. This is the call of the blue grouse, for which the mountain is named, and as each bird utters it the next one takes up the proclamation. Somehow the stentorian bird seems the very voice of this profound and aboriginal wilderness, and its cry, once heard, will be linked forever with your memory of Douglas trees.