

# Legume Inoculation and Fungicide Treatment of Legumes Or Forage Grass Seeds

By J. F. Carter<sup>1</sup>

The acreage of alfalfa seeded in North Dakota has increased approximately 300,000 acres annually in the past four years. Seedings of soybeans, birdsfoot trefoil and red clover also are increasing.

Many thousand acres of small-seeded forage grasses and legumes probably will be seeded in North Dakota under the "Acreage Reserve" and "Conservation Reserve" programs. Many farmers will be seeding legumes on soil that has not grown that specific legume for many years, if ever. Therefore, recommendations from the experiment station to the farmer regarding legume inoculation and whether to use fungicides on forage seeds appear desirable.

(1) Inoculation of all legume seed is recommended. Proper specified nitrogen fixing bacteria should be obtained from your seed dealer.

Inoculation every year (a) assures presence of bacteria on seed and in soil as legume bacteria die after 2 to 3 years in light or sandy soils even if the legume has been grown on the field previously, (b) provides best bacterial strains to fix nitrogen in association with the legume seeded, and (c) assures bacteria present to produce nodules on young seedlings immediately without waiting for

chance encounter of the tiny root with bacteria still in soil from previous legume crop. Item (c) is particularly important with such annual legumes as soybeans having a short growing period.

(2) Bacterial inoculation is recommended especially for such new crops as soybeans, birdsfoot trefoil and vetch, where the seed has a germination of 80 percent or more. Use of good quality seed having high germination and purity is recommended.

(3) Legume seed lots having very low germination, 65 percent or lower, may be treated with a fungicide preferably at least two weeks before seeding followed by **bacterial inoculation** immediately before seeding. Doubling the rate of bacterial inoculation, using two packages of bacteria per bushel of seed instead of one, is recommended if fungicide treatment is used.

(4) Forage grass seeds may benefit from fungicide treatment especially if they have low germination. Such grass seeds may be treated with Arasan as recommended on container or by seedhouse at time of purchase. The treated grass seed should not be mixed with inoculated legume but seeded from the main drill box if possible. Seeding leg-

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umes from the small-seed box, and grass alone or with flax from the main drill box works well.

(5) The bacterial inoculum should be applied **wet**. Follow directions on container, or mix seed and bacteria in dry state, then carefully sprinkle on skim milk while mixing until bacteria are sticking to each seed but not so wet that "balls" of seed form. The skim milk acts as a "sticker" as it dries, gluing the bac-

teria to the seed so the bacteria do not "sift out" in the drill box. The mixing is done very easily on a tarpaulin or square of canvas so that seed can be rolled about by movement of the canvas.

(6) Follow directions on bacterial inoculum and fungicide containers carefully. See Extension Service Circular A-209 for further details on seeding techniques for small-seeded grasses and legumes.

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# *CANE MOLASSES*

## *For Dairy Cows*

By C. G. M. Edgerly<sup>1</sup>

Cane molasses has been used extensively as a feed for dairy cows. Just what is its value and what part should it play in dairy cattle feeding? When can molasses be used profitably by the dairy cattle feeder? These and other similar questions are some that constantly face the dairyman.

Molasses has been used in most mixed formula grains which the dairyman purchases. In such feeds the molasses content usually has been no more than 5 to 10 percent of the mixture. Adding molasses to such feeds usually is done to add to the palatability and to reduce the dust content.

In evaluating molasses in such mixed feeds, or in the use of farm mixed feeds, a few of the characteristics of cane molasses should be

kept in mind. Cane molasses is a by-product of the sugar industry and as such has a high degree of palatability to dairy cattle. Cattle relish molasses and there is no difficulty in getting them to consume fairly large amounts. Molasses is mildly laxative, which is beneficial when fed with feeds that tend to be constipating. The protein content of molasses is low, usually 3 percent or less. This protein is not usually of a digestible nature, so molasses is

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