FROST SEEDING GUIDELINES

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Frost seeding has proven to be an effective way to improve pasture quality and yield. It is the simple process of broadcasting seed of desired plants early in the spring to allow snow and frost the opportunity to work the seed into the soil. Certain legumes and grasses can be successfully frost seeded. The cost of establishment is typically one third the cost of a nitrogen fertilizer application when pro-rated over the useful life of the stand. Since the seeded legumes can provide nitrogen to the other pasture plants, the forage production can then be improved very much like a nitrogen application. Research in Michigan has shown that frost seeding can increase yields by 1.5 - 2.0 tons of dry matter per acre (Leep, 1989). When this increased forage yield can be attained for less than $5.00 per ton it becomes a very viable option!

Frost seeding can especially benefit someone just starting in grazing with less than ideal pasture species make-up. It can also help farms that have over-grazed pastures in the previous year (possibly because of dry weather) by providing new plants that will boost productivity.

Frost seeding is not without risks. Successful establishment hinges upon good management and adequate first year spring and early summer rainfall. Being too successful can also be risky as clover that establishes too well increases the chance of bloat for the next two years for ruminant animals. The following guidelines are provided to help make more frost seedings successful for Michigan graziers.

Site Selection - Frost seedings work best on loams and clay soils or other soils that have natural soil moisture through the early summer. Sandy soils are not conducive for frost seedings and should be avoided.

Site Preparation - Preparation should begin in the fall. Graze tightly the pastures to be frost seeded with the final graze of the fall. This will reduce thatch on the soil surface, exposing more soil, allowing the spring applied seed to make better soil contact. This grazing will also deplete the vigor of the existing forages reducing their spring competition with the new seedlings.

Seed Selection - Red and white clover work very well in frost seedings. Birdsfoot trefoil can also work, as can many grasses. Use improved varieties for better establishment i.e. clovers like Arlington, Cimmeron, or Marathon; or trefoils like Carroll or Norcen. These clovers are more vigorous and hardier than the average red clover and seem to establish better and last three years instead of two. Good stands of red clover have been established with frost seeding using some of these varieties. The birdsfoot trefoils mentioned have high seedling vigor and high winter hardiness making them more conducive for good

stand establishment. Another advantage of Trefoil is that it does not cause bloat like the clovers do.

Seeding Practice - Broadcast inoculated seed (consider double inoculating trefoil) approximately 45 days before grass growth begins. It is best to broadcast on a shallow snow base. Snow allows you to easily determine where you have spread to avoid gaps in the spreading pattern. Snow, along with the later frosts, helps to settle the seed into the soil better. Avoid spreading on a snow base over eight inches deep as a sudden thaw can and run-off can wash seed away. Do not apply trefoil in the same year as red clover. Studies in Osceola County by the author in 1989 -90 found that red clover significantly reduced trefoil seedling establishment. If both are desired seed trefoil first and wait two years before seeding clover. Based on all of the above recommendations, if conditions are perfect, seed 6 pounds of red clover per acre, if they are average seed 8, and if conditions are below average seed 10 pounds per acre. White clover should be seeded at only 2 -3 pounds per acre because of the large number of seeds per pound. For trefoil the range is 8 -12 pounds per acre based again on pasture conditions. The 12 pound rate of trefoil is higher than most recommendations but with no threat of bloat, and the lower seedling vigor of trefoil, many producers have found it better to apply a few extra pounds per acre rather than to wait for the stand to thicken naturally over the years.

Fertilization Practice - It is best to soil test and follow the test recommendations with one exception. Most soil test will recommend nitrogen application on pasture. Nitrogen will stimulate existing forage competition, and since the clovers and trefoils can produce their own nitrogen, the addition of fertilizer with nitrogen should be avoided. If a soil test is not taken a last resort should be to apply 40 pounds per acre of actual phosphorus (90# per acre of 0-46-0) to stimulate early seedling growth. This can be applied in late April to early May.

Grazing Management - In the spring let the pasture grow up to 8 inches tall and graze it down moderately tight the first time, remove animals and let it grow up to 8 - 10 inches and graze it to a average level of 4 inches of stubble. Repeat this process throughout the summer and fall using grazing to reduce the competition to the new seedlings. For trefoil try to provide a rest period in the early fall if possible.

When managed properly frost seeding can be used as another tool in intensive managed grazing to increase productivity and to help stretch the grazing season!

REFERENCES

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