

Fall Fertilization Of Forage Crops

HONESDALE (Wayne Co.) — The question of fall fertilization of forage crops is most often related to concerns about winter survival of perennial forages.

While fall fertilization can have an impact on winter survival there are many other factors that influence winter survival, including the overall nutritional management of the crop, harvest practices throughout the year, weather conditions, and varieties just to name a few.

The following is a focus only on the nutritional factors.

For new seedings the key to winter survival is to have a healthy, well established plant going into the first winter. Having soil test levels at least in the optimum range for pH, phosphorus, and potassium *before establishment is critical*. While all of these fertility factors are important, it has been shown that good levels of phosphorus will promote vigorous root growth in the new seeding. A larger, more well established root system will be more resistant to heaving, which is a major cause of winter stand loss, especially in new seedings. A fall

application of fertilizer to a new seeding cannot make up for the lack of good fertility at planting and resulting small root system.

Once a forage crop is established, the fertility program should focus on maintenance of good fertility levels in the soil for the life of the forage stand. The most important part of the maintenance program is regular soil testing to determine the need for lime, phosphorus, or potassium to replace the large amount of nutrients removed in the forage. On grasses nitrogen will also be an important part of the maintenance fertility program. For legumes and grasses, potassium seems to be the most critical nutrient for winter survival. Potassium, being a salt, lowers the freezing point of cells just like applying salt to a road lowers the temperature where the water on the road will freeze. Also, potassium influences the levels of soluble sugars in the cell sap. These sugars act as an antifreeze in the plant cells enabling them to withstand lower temperatures without freezing.

The timing of phosphorus and potassium applications for forages will depend on the situation. When the

soil test levels are in the optimum range and the recommendations are low, the timing of fertilizer application is not critical. These low recommendations on an optimum testing soil are only to replace what the crop will remove so that the test level is still in the optimum range going into the following season. Fertilizer can be applied after one of the cuttings or in the fall. There will be no advantage to splitting the fertilizer application in this situation. Given a choice between applying the fertilizer during the season or in the fall, fall application may provide a very slight insurance effect, but this is not a major consideration.

Where high rates of fertilizer are recommended there may be an advantage to splitting the application some after first cutting and the balance in the fall. Many plants will take up potassium whether they need it or not. This is called luxury consumption. If all of the fertilizer is applied at one time, the next cutting may take up more than it needs leaving the crop short later on. By splitting the applications the efficiency of potassium use will be improved because there will be

less luxury consumption. Also, as noted before, if the soil test levels are low enough to result in a large recommendation, particularly for potassium, applying some of the fertilizer in the fall before the plants are dormant may improve winter survival.

On forage grasses nitrogen is another consideration. Nitrogen should be applied to grasses in the spring and after each cutting, except the last cutting in the fall. The rate should be based on the expected yield of the following cutting. Applying nitrogen in the fall for use by the crop the following spring is not recommended. Another important consideration for nitrogen fertilization of grasses is the balance between nitrogen and potassium. Nitrogen applied in the fall on soils with low potassium levels can increase winter kill of grasses over where no fertilizer is applied. Thus, soil testing and applying a balanced fertility program is important.

There are no special considerations for nutrient sources used for fall fertilization of forages. All of the standard fertilizer materials are acceptable. Manure is also a source of nutrients.

The phosphorus and potassium in manure can be considered equivalent to fertilizer phosphorus and potassium in their effect for building soil fertility. The availability of nitrogen will range from 20 to 50% depending on how soon after application it is soaked into the soil by rainfall. The sooner it gets rain the better. Manure is not generally recommended for legumes because the nitrogen in the manure is wasted and there is the potential for some adverse effects from manure application to legumes. If manure must be applied to a legume, fall is probably the best time to apply it to minimize the potential negative effects.

While having good fertility levels for a forage crop in the fall is critical for optimum production, fall fertilization is only one part of the management system to achieve this. Optimum soil test levels should be established prior to seeding and a maintenance fertilization program based on regular soil testing are the foundation of good nutrient management of forages.

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