

Alfalfa - New Seeding

Crop Highlights

- Always inoculate seed. If in doubt of the inoculum's viability, re-apply inoculum.
- Roundup Ready™ alfalfa is now available; follow label directions carefully for success.
- Soil pH is critical for successful establishment and long term productivity as are good soil test P and K levels. Test and correct any issues prior to seeding.
- Late-summer / early fall seedings are most likely to succeed.

Yield Goal

Yield goals are not made for new seedings of perennial forages. Instead, these recommendations are designed to promote good establishment of the forage for future productivity and discourage weed competition.

Target pH: 6.8

1. If soil pH is 5.0 or less, soil is too acid for establishment of alfalfa. Apply lime at the recommended rate and incorporate thoroughly. Do not seed immediately. Instead, plant a different crop and re-test the soil in 6 to 12 months to determine if pH has been adequately corrected.
2. If soil pH is between 5.1 and 5.5, soil is too acid for good growth of alfalfa. Apply lime at the recommended rate and plow down prior to seeding.

Recommended Liming Source:

Table 1. Recommended type of lime as a function of soil test Ca and Mg concentrations.

Soil Test Levels	Recommended Lime Type
Soil Test Mg less than 50 FIVs	Dolomitic
Soil Test Mg between 50 and 100 FIVs AND LESS than Soil Test Ca	Dolomitic
Soil Test Mg greater than 100 FIVs	Calcitic
Soil Test Mg GREATER than 50 FIVs AND GREATER than Soil Test Ca	Calcitic

Nitrogen:

1. Nitrogen (N) application is not recommended for legumes, however, up to 30 lbs N/ac can be applied to encourage growth without having a negative impact on nitrogen fixation.
2. Apply the appropriate inoculant and/or use inoculated seed.
3. If nodulation failure occurs, you may need to apply N to support crop growth until nodulation takes place. Contact your county agent for further assistance.

Phosphorus

Table 2. Recommended phosphorus rate to reach optimal soil test levels to support good forage establishment and future productivity.

Fertilizer	UD FIVs										
	0	10	20	30	40	50	60	70	80	90	100
lbs P ₂ O ₅ /ac	210	190	170	150	130	100	80	60	40	20	0

1. If soil test P is “Low” or “Medium” (e.g., 50 FIVs or less), broadcast and plow down the recommended rate of phosphate prior to seeding.
2. If soil test P is “Optimum” (e.g., 51 to 100 FIVs), broadcast and incorporate phosphate prior to seeding or surface broadcast at or shortly after planting.
3. If soil test P is “Excessive” (e.g., greater than 100 FIVs), the application of phosphorus in fertilizers or manures is NOT RECOMMENDED.

Potassium

Table 3. Recommended potassium rate to reach optimal soil test levels to support good forage establishment and future productivity.

Fertilizer	UD FIVs										
	0	10	20	30	40	50	60	70	80	90	100
lbs K ₂ O/ac	320	280	240	200	160	120	100	80	60	45	0

1. For new plantings using conventional tillage where applied nutrients can be worked into the top 6 to 8 inches of the soil, apply the recommended rate of potash as a broadcast application and incorporate thoroughly into the soil at or prior to seeding.
2. An additional application of 30 to 60 lbs K₂O/ac broadcast over the new planting in late August or early September will help the new forage with winter survival.
3. For new plantings using no-till or minimum tillage techniques where the recommended application rate of potash is **greater than 120 lbs K₂O /ac**, split the recommended rate into two treatments. Apply one-half at or prior to seeding and the remainder in late August or September.

Magnesium

1. Magnesium (Mg) is recommended when soil test Mg is less than 38 FIVs to reduce the risk of grass tetany, especially in the spring.
2. If soil test Mg is less than 38 FIVs and lime is recommended, use dolomitic limestone.
3. If soil test Mg is less than 38 FIVs and lime is not needed, apply soluble Mg according to the rates in Table 4, below.

Table 4. Recommended application rates of soluble magnesium as a function of soil test Mg index value.

Soluble Mg	UD FIVs								
	0	5	10	15	20	25	30	35	40
lbs soluble Mg/ac	80	70	60	50	40	30	20	10	0

Sulfur

1. Apply 20 - 40 lbs S/ac to ensure that adequate sulfur is available to meet crop needs.
2. Broadcast S prior to seeding.

- Sulfate-S is available for crop uptake immediately after application. If a reduced form of S is applied (e.g., thiosulfate or elemental S), allow adequate time for oxidation of the applied S to the sulfate form to occur.

Manganese

Manganese (Mn) needs are predicted by an Availability Index that includes M3 soil test Mn and soil pH. Interpretation is crop specific.

$$\text{MnAI} = 101.7 - (15.2 \times \text{soil pH}) + (2.11 \times \text{M3-Mn})$$

Where:

- MnAI = Mn availability index
 Soil pH = Soil pH measured in water (1:1 V:V)
 M3-Mn = Mehlich 3 soil test Mn in lbs/ac

Table 5. Interpretation of Mn availability index.

Mn Availability Index	Interpretation
Less than 12	Mn deficiency is possible. Monitor the crop for symptoms
12 or greater	Mn deficiency is unlikely.

- If Mn deficiency is predicted or was observed in the previous growing season, broadcast 20-40 lbs actual Mn/ac.
- Broadcast applications of acid forming fertilizers may correct Mn deficiency without the actual application of Mn in some cases, but may be less effective than applications of Mn. Long term application of acid forming fertilizers will require pH correction with lime.
- If Mn deficiency symptoms appear during the growing season or after an application of lime, a foliar application of 0.5 to 2.0 lbs/ac actual Mn as Mn sulfate or chelated Mn can alleviate the symptoms and restore yield potential. **Apply only when adequate growth is present to aid absorption of foliar Mn.** Foliar application can be repeated if symptoms reappear.

Zinc

Zinc (Zn) deficiency is predicted by an Availability Index that includes not only M3 soil test Zn, but also soil pH and M3 soil test P.

Table 6. Interpretation of Zn availability index.

Soil Test Criteria	Interpretation
M3-Zn is less than 1.9 lbs/ac	Zn deficiency is predicted
M3-Zn is less than 3.1 lbs/ac AND soil pH is higher than 7.0	Zn deficiency is predicted
M3-Zn is less than 3.1 lbs/ac AND soil pH is 6.6 or higher AND M3-P is 100 FIVs or higher	Zn deficiency is predicted
M3-Zn is 3.2 lbs/ac or higher	Soil should be sufficient in Zn

If zinc deficiency is predicted by the availability index or was observed the previous year, one of the following treatments can be applied:

1. Broadcast 10-12 lbs/ac actual Zn as Zn sulfate or Zn oxide or 2-3 lbs/ac actual Zn as Zn chelate. Broadcast applications should correct Zn deficiency for several years.
2. Foliar application of 1 lb/ac actual Zn as Zn sulfate or Zn oxide or 0.5 lb/ac actual Zn as Zn chelate in 20 to 50 gallons of water. **Apply only when adequate growth is present to aid absorption of foliar Zn.** Application should be repeated if symptoms re-appear.

Boron

1. Apply 2.0 - 4.0 lbs B/ac.
2. Boron (B) can be applied in a blended, broadcast fertilizer, as a soil spray or applied in a foliar spray, generally in late May or June. **Foliar applications should only be made when adequate growth is present to aid absorption of foliar B.**
3. **Caution:** Although B is required for maximum productivity of hay fields containing legumes, even slight over-application can be toxic to the crop. When applying B as a foliar spray, be certain to apply the correct rate.