



FORAGES

Planting Winter Annual Legumes

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Site Selection

Select site one year prior to planting and control all perennial broadleaf weeds prior to establishment, with either mechanical or chemical control. Use herbicides with a short residual, which do not persist in the soil for long periods (2,4-D or Weedmaster).

This is important since there are no labeled herbicides that will kill broadleaf weeds without also killing legumes. Avoid using herbicides that have a long residual in the soil (Ally, Amber, Fuego, Grazon P+D, Rave, and Tordon 22K). Use of these products will reduce legume establishment.

Take a soil sample at least six months prior to establishment to determine fertility requirements and if lime will be needed. If the soil pH is below 5.8, it should be limed according to soil test. The Rhizobia bacteria that are responsible for nitrogen fixation do not like acid soils (low soil pH) and nitrogen fixation will be reduced.

Species Selection

Select the legume species that is best adapted to your specific environment [(site, soils, climate, management, etc.) (Table 1)].

If the species is to be overseeded into perennial warm-season grass pasture, make sure you select a species with an earlier maturity (avoid arrowleaf and red clover) so that they will not compete with and reduce the permanent grass. If mixed with a small grain in a clean-tilled environment, however, late maturing species will lengthen the grazing season and increase total forage production.

Check with the seed company/retailer at least one month before planting to ensure the seed and inoculant are available.

Fertilizer Recommendations

It is important to apply traditional dry ag-lime at least 6 months prior to planting (as recommended by soil test) to allow the lime sufficient time react in the soil. Liquid and super fine limes need to be applied two to three months prior to planting, because they reacts faster in the soil. Liquid lime and other forms of liquid fertilizer cannot be mixed because they react together chemically, coagulate, and form a heavy unsprayable precipitate. Phosphorus, K, and any micronutrient need to be incorporated by tillage just prior to planting (as recommended by soil test). Legume seed should not be mixed with fertilizers that contain salts (K and N) due to toxicity to the *Rhizobia* bacteria.

If legumes are planted alone, they are generally not fertilized with N fertilizer because fertilizer N reduces the amount of N fixed by the bacteria. However, since annual grasses (ryegrass) are commonly mixed with legumes, 18-46-0 or 11-53-0 have commonly been used on mixed plantings as a starter fertilizer without any adverse affects. Since the nitrogen-fixing bacteria are actually parasitic (taking carbohydrates without giving any N in return) for the first 5 to 6 weeks, fertilizing with 18-46-0 according to soil-P recommendations may increase seedling growth and allow for earlier grazing. If legumes are mixed with grasses it is important to keep actual N rates below 18 lbs./A and to utilize grazing management to prevent the grass species from shading-out the legume (optimumally 3-4 inch stubble height).

For more information regarding soil acidity and liming see publication SCS-2001-06.

Planting Date

It is important to plant early in the growing season to allow legumes sufficient time to grow and develop. This practice lengthens the growing season and can increase total forage production. Planting too early when the temperatures are too high, however, can kill the seedlings. Therefore, plant late enough to avoid extremely high temperatures and early enough to maximize the length of the growing season.

If planting into an existing warm-season perennial grass sod, it is important to delay planting until temperatures begin to cool, nights become longer, and growth of the perennial grass sod is SLOWED. This is generally when night time temperatures are in the 50's and 60's. This strategy will REDUCE competition between seedlings and existing vegetation. It is best to delay fertilizing until after frost if fertilizing a perennial grass sod with ammonium phosphate, because the N can stimulate grass growth, which can reduce potential establishment success. Suggested planting dates are:

Prepared Seedbed – September 20 – November 15
Sod seeded – October 15 – November 15

Seeding Rate

Use high quality seed from a reputable source. Plant the recommended seeding rate based on % PLS (Table 1), which is calculated by multiplying % germination times % purity.

Inoculation

Inoculation (mixing the legume seed with a specific *Rhizobium* bacteria) no more than 24 hours prior to planting will allow the legume and bacteria to fix N:

- 1) Place seed into a large (clean) tub or bucket,
- 2) Moisten seed with a commercial sticker solution, which is an effective way to ensure seed and bacteria “stick” together for effective nodulation. Be sure to READ THE DIRECTIONS. A mixture of sugar/syrup/soda (1 cup sugar + 12 fl. oz. soda pop or “Coke” per 100 lbs. of seed) can also be used, but it is not as effective.
- 3) Add appropriate inoculant for the legume species being planted and mix thoroughly. Some Companies premix the sticker with the *Rhizobia*, so READ THE DIRECTIONS.

Note: Be careful not to add too much water, if you do add too much water, you can add more seed, dry lime, or you can spread the seed out on a canvas to allow seed to dry faster. Once the seed is inoculated it is important to plant AS SOON AS POSSIBLE (after drying).

For more information regarding biological nitrogen fixation and inoculation of forage legume see, see publication SCS-2001-13 “Biological Nitrogen Fixation”.

Planting Methods

I. Clean-tilled (prepared seedbed)

- 1) Thoroughly disk the area to remove existing vegetation. This action removes competition.
- 2) Roll to give a firm seedbed.
- 3) Drill seed (clovers/medics – ¼ - ½”; peas/vetches – ½ - ¾ “) OR broadcast seed. *Note:* If broadcasting seed, seeding rate should be increased by 20-25%.

Table 1. Recommended seeding rates, soil properties, and characteristics of various clovers, medics, peas and vetches

Species	Seeding Rate Lbs. of PLS/A	pH	Texture	Drainage Requirement	Bloat Potential	Reseeding (hard seed)	Cold Tolerance	Relative Maturity	Flowering
Clover									
Arrowleaf	8-10	5.8-7.0	Sandy loam	Good	V. Low	High	Good	Late	Early June
Ball	2-3	> 6.0	Sand, loam, clay	Fair	High	High	Good	Medium	Early May
Berseem	12-15	6.5-8.0	Loam, clay loam	Poor	V. Low	Low	Poor	Med.-Late	Mid May
Crimson	15-20	6.0-7.0	Sand, loam	Good	Medium	Low	Medium	Early	Early April
Persian	3-5	6.0-8.0	Loam, clay loam	Poor	High	Medium	Fair	Medium	Early May
Red	10-12	6.0-8.0	Loam, clay loam	Good	Low	Low	Good	Late	Early June
Rose	15-20	5.8-8.0	Sand, loam, clay	Good	Low	High	Good	Medium	Late April
Subterranean	12-15	6.0-7.3	Loam, clay loam	Fair	Medium	Medium	Fair	Medium	Mid April
White	3-4	6.0-7.5	Loam, clay	Poor	High	High	Good	Late	May
Medic									
Alfalfa	15-20	> 6.5	Loam	Good	V. high	Low	Good	Perennial	
Barrel	8-10	> 6.5	Loam, clay	Good	High	High	Poor	Early	Early April
Black	10-12	> 6.5	Loam, clay	Good	High	High	Good	Medium	Late April
Button	10-12	> 6.5	Loam, clay	Good	High	High	Fair	Early	Mid April
Burr	8-10	> 6.5	Loam, clay	Good	High	High	Fair	Early	Early April
Peas									
Austrian W.	35-40	5.8-7.0	Sand, loam	Good	Low	Low	Good	Medium	Early May
Caley	50-55	5.5-8.0	Loam, clay loam	Fair	Low	High	Good	Late	Late May
Sweetclover									
White	12-15	6.5-8.0	Loam, clay	Good	Low	Medium	Good	Late	Late May
Yellow	12-15	6.5-8.0	Loam, clay	Good	Low	Medium	Fair	Late	Late May
Vetch									
Common	30-40	5.0-8.0	Sand, loam, clay	Good	Low	Medium	Fair	Medium	Late April
Hairy	20-25	5.0-8.0	Sand, loam, clay	Fair	Low	Medium	Good	Med. -Late	Late April

- 4) Roll again to ensure good seed-soil contact and to minimize moisture loss.

II. Non-tilled (overseeding)

- 1) It is important to remove existing vegetation to 2-3 inch height or less before overseeding, because germination is dependent upon adequate moisture and sunlight reaching the soil surface. Removal of forage can be done by:
 - a) Grazing close or haying — *Note:* If these methods are used, the use of a drag to “shake down” the seed may improve the seed-soil contact and germination.
 - b) Chemical dessication with paraquat followed by burning. Broadcasting seed into ashes before it rains makes an excellent seedbed preparation. This method suppresses regrowth of forage more than grazing or haying, which reduces the competition between seedlings and existing forage.

- c) Light disking — *Note:* A light disking (soil disturbance) will enhance seedling vigor and establishment; however, disking may damage and suppress emergence of the permanent sod the following spring. (Results vary and depend on amount of rainfall).

- 2) Drill seed (clovers/medics - ¼ to ½ inch; peas/vetches - ½ to ¾ inch) OR broadcast seed. *Note:* If broadcasting seed, seeding rate should be increased by 20 to 25%.

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