

Establishing Uniform Stand is the Goal

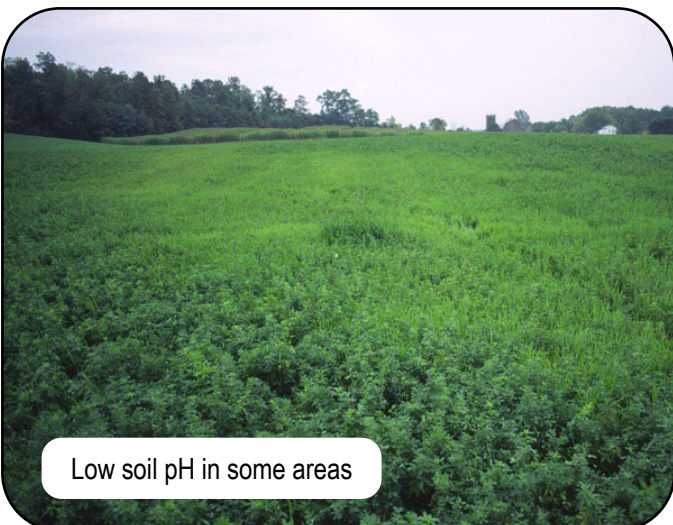
- 20 to 25 plants per square foot surviving after first winter is ideal
- 55 stems per square foot are needed to maintain full yield potential



Ideal first-year alfalfa stand

Soil Fertility

- Soil test should determine fertility needs before ground preparation
- Phosphorus is critical for healthy root development
- Potassium is needed for high yields
- Soil pH levels of 6.2 to 7.0 provide best environment for nodule bacteria to fix nitrogen



Low soil pH in some areas

Field Preparation

- A firm seedbed is critical for successful alfalfa establishment
 - Improves seed-to-soil contact
 - Keeps seed from being planted too deep
- No-till seeding can be a viable option
 - Seedbed is already firm
 - Top soil moisture is generally good
- Clods can cause uneven seeding depth, impede emerging seedlings and cause soil surface to dry rapidly

Planting Depth

- Depth of planting is critical for stand establishment
 - $\frac{1}{4}$ " to $\frac{1}{2}$ " deep on clay or loam soils
 - $\frac{1}{2}$ " to $\frac{3}{4}$ " deep on sandy soils
- Topsoil moisture may be inadequate to sustain young seedlings with shallow planting
- Seedlings may not be able to push to the surface with deep planting

Seeding Rate

- Plant 12 to 18 lbs. of pure live seed (PLS) per acre
 - $PLS = \% \text{ germination} \times \% \text{ pure seed}$
- Seeding 15 to 18 pounds per acre of product is often a good starting point for pure stands (clear seeding)
 - 250,000 seeds per pound = about 80 to 90 seeds per square foot
 - Compensates for cloddy soil conditions in non-optimal seed beds
 - Thick seedling stands compete better with weeds
- 12 pounds per acre may be adequate in optimal soil conditions or sandy soils, however:
 - Minimal rates increase risk of non-uniform or spotty stands, which hurt production over the entire stand life



Planting Dates

- April 1 to May 15 for spring seeding
 - Alfalfa seed will begin to germinate when soil temperatures are above 37 degrees F
 - Less moisture stress and crusting problems in the spring
- August 1 to August 15 for late summer seeding
 - Less weed competition in late summer
 - Less concern about diseases (Pythium, Phytophthora and Aphanomyces) on heavy, poorly drained soils
 - Seed alfalfa after small grain or vegetable crop if harvest occurs by early August, field conditions are suitable and previously used herbicide will not harm new seedlings
 - Limited soil moisture is a concern, so irrigated fields provide the best choice
 - Alfalfa seedlings need at least six weeks of growth prior to killing frost
- Don't plant alfalfa for 18 months after older established alfalfa because of autotoxicity concerns



Winterkill may occur in new alfalfa seeding if young plants do not have time to establish root system and crown prior to frost

Weed Control

- Weed competition can kill out new alfalfa stand or compromise quality of the stand
- Pre- or post-emergence weed control program can be successful for most annuals and perennials
- Existing vegetation can also be controlled before new seeding with an application of glyphosate

Clear Seeding (seeding alfalfa with no nurse crop)

- Clear seeding in the spring will usually allow at least two cuttings during seeding year
- Clear seeding is best on level fields where soil erosion is minimal
- Pre-plant weed control is essential

Using a Nurse Crop

- Oats are the primary nurse crop, but spring wheat or barley can also be used
- 30 pounds per acre of oats is adequate
- Advantages include erosion and weed control
- Disadvantages include increased competition for moisture and nutrients
- Remove nurse crop in the boot stage to prevent competition
- Nurse crop not recommended for late summer seeding



New alfalfa out-competed by nurse crop residue in some field areas



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