

Alfalfa stands thin rapidly during the first year and more slowly in subsequent years. Remaining plants increase in both crown size and number of stems as neighboring plants die. A stand of at least 6 to 8 plants per square foot is acceptable after the first year. For older stands, a minimum of 3 to 4 plants per square foot is needed to maintain acceptable yields.

Rotation and Replanting

Alfalfa stands do not reseed naturally in most of the U.S., so stands continually thin over time. Well-managed stands should last 5 to 10 years. Alfalfa cannot be replanted immediately after an old alfalfa stand, and attempts at thickening declining or thin alfalfa stands by planting more alfalfa are seldom successful. The reason is that the old alfalfa produces autotoxic chemicals that can damage new alfalfa seedlings.



Figure 6. If planted properly, 25 to 30 alfalfa seedlings per square foot should emerge soon after planting.

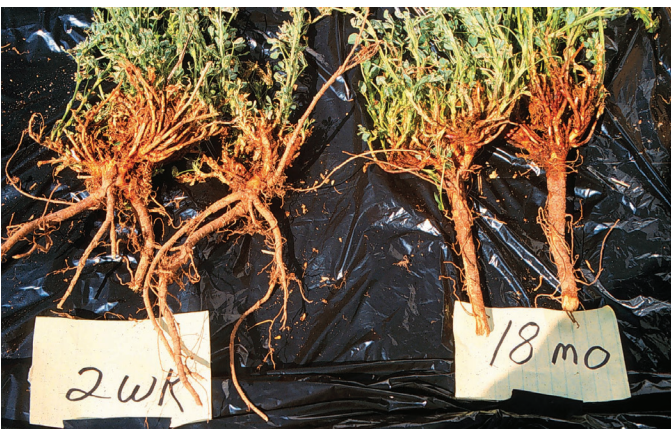


Figure 7. Effect of autotoxicity on alfalfa root system. Alfalfa planted 2 weeks after killing the old stand (left) had a shallow, branched root system compared to alfalfa planted 18 months after killing the old stand (right), which had a deep taproot.

Autotoxicity causes poor establishment of new alfalfa planted too soon after an old alfalfa stand. Some plants can survive the autotoxic effect and may appear normal, but autotoxicity reduces early root development, causing long-term yield reduction of any new plants that do become established (Figure 7). The autotoxic trait may have originated because alfalfa evolved as a desert plant around the Mediterranean region. Autotoxicity may have been a survival strategy to reduce competition from seedlings with established plants for scarce water resources.

Established alfalfa plants can severely reduce establishment and growth of new alfalfa seedlings emerging within an 8-inch radius from the old plant (Figure 8). This means that an old alfalfa stand as thin as 0.75 plants per square foot would inhibit establishment of new plants over 100 percent of the field surface. The minimum stand recommended for maintaining hay production is three plants per square foot; therefore, interseeding more alfalfa to thicken declining stands in this range is not feasible. Research has shown that a one-year rotation out of alfalfa is sufficient for successful reestablishment of alfalfa in the same field. Rotation with small grains or summer annual forages such as sudangrass or millet works well.

Summary

Alfalfa is a high-quality and high-yielding forage. Both yield and persistence depend on establishment of a thick and vigorous stand. Alfalfa can be established by a variety of methods, but regardless of the planting method used, attention must be given to site selection, soil fertility, planting date, seeding depth, weed and insect control and variety selection.



Figure 8. An old alfalfa plant (center) inhibits establishment and growth of new alfalfa seedlings within an 8-inch radius. This makes it unfeasible to plant more alfalfa seed to thicken old stands.

Table 1. Alfalfa Establishment Schedule

SUGGESTED TIMELINE	MANAGEMENT PRACTICE
6 to 12 months prior to planting	Select a deep, well-drained soil. Soil test the field and apply lime and begin major fertility adjustments based on soil test recommendations. Request crop code 101, "Alfalfa Establishment," for establishment fertilizer and lime recommendations and crop codes 102-105, "Alfalfa Maintenance," for hay production recommendations. Low fertility is a common cause of poor alfalfa stands.
6 to 12 months prior to planting	Select a variety and plan the time frame for planting. Plant in spring from March 1 to April 15. Plant in fall from September 1 to October 15.
6 to 12 months prior to planting	For no-till planting, start the spray-smother-spray program to kill old sod to prepare for planting alfalfa.
2 to 3 months prior to planting	Work with the local agricultural supplier to ensure seed of the desired variety is on hand at planting time.
1 month to 1 week prior to planting	Prepare a firm tilled seedbed. For no-till, spray stubble and weeds from preceding annual forage or grain crop.
1 month to 1 week prior to planting	Select the planter to be used, make repairs and calibrate for the proper seeding rate. If using rented planting equipment, plan time to clean it from prior users and to get it in working order.
Day of planting	Finish planter calibration and set it to plant at the proper depth. Set the drill for an average planting depth of ¼ inch deep. The most common cause of stand failure is planting too deep. For no-till stands in killed sod, apply soil insecticide at planting.
After planting	Scout frequently for insect pests and weeds.
For stand maintenance	Harvest when stand reaches early bloom, then on 30-day intervals afterward. Fertilize as recommended in soil test notes. Scout for alfalfa weevil in early spring before first cutting.

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