



Alfalfa Stand Replacement

Michael J. Ottman
University of Arizona

The decision to replace alfalfa stands is based on stand establishment costs, hay price, and yield of the alfalfa stand in question and other factors. As an example, replacing an alfalfa stand with yields 2 ton/acre less than a healthy stand will pay for itself in 3 years if the cost of alfalfa establishment is \$900/acre, hay price is \$150/acre, and harvesting costs are assigned on a per acre basis. If harvesting costs are assigned on a per ton basis, then a 3 ton/acre rather than a 2 ton/acre stand decline is required in the scenario described above. The economic benefit of replacing an alfalfa stand increases as the cost of establishment decreases, the hay price increases, and the yield reduction due to the poor stand increases.

Replace an alfalfa stand if plant density is less than 4-6 plants per square foot. The plants or crowns should be counted soon after cutting to be able to distinguish individual crowns. Actually, the density of stems rather than plants is a better indicator of the adequacy of a stand because some plants may have few stems and not contribute much to yield. The stems should be counted when about 6 to 10 inches tall. An alfalfa stand should be replaced if the stem density is less than 40 stems per square foot where yield is 75% of maximum according to University of Wisconsin data. Yield is maximized at 55 plants per square foot. Stands may need replacement regardless of average plant or stem density if plants are not uniformly distributed or if many bare spots exist. Weeds may become a problem in a thinning alfalfa stand and may be difficult to control. Reduction in forage quality may occur in sparse stands due to thicker stems.

Alfalfa plants contain compounds that are toxic to germinating seedlings of alfalfa. These compounds be in a class of chemicals called medicarpins. The leaves and flowers contain higher concentrations of medicarpins than the stems and roots. A newer alfalfa stand has less medicarpins than an older stand. The injury to germinating alfalfa seedlings can range from slight stunting to death of the plant. To avoid autotoxicity, delay seeding alfalfa into a field previously in alfalfa by at least 2 weeks after tillage or 3 weeks after herbicide-kill of the old stand. Killing the alfalfa stand with an herbicide and then harvesting the crop may result in hay of poor quality.

Renovating an alfalfa stand involves some light form of tillage and seeding into the existing crop. This practice is rarely successful. The seeds may germinate and seedlings become established for a few weeks or months. Eventually, however, the seedlings may succumb to autotoxicity or to competition from established plants. Seedlings may become established in areas more than 8-16 inches away from other plants, outside of their zone of influence for autotoxic compounds and competition for light, nutrients, and water. So, large areas at the tail

end of the field that have been killed by scald (high temperature flooding injury) are often successfully renovated.

Additional reading

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