

ALFALFA SEEDING & FERTILIZATION RECOMMENDATIONS

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Studies conducted by Michigan State University Extension in 1995 & 1996 revealed that it cost an average of \$80 per ton to produce alfalfa hay at 85% dry matter. This was with a good yield of 3.75 ton per acre of baled hay. These same studies showed that costs can be lowered to below \$60 per ton when high yields, over 5 ton per acre, and long stand life, over 5 years, were achieved. There is no doubt these costs are up 10 – 25% today. Fertility and proper stand establishment are the keys to high yields and long stand life more than ever before.

Soil pH & Lime High yields of alfalfa hay can be obtained in Osceola County (4 – 7 tons/acre). Proper soil pH is the foundation for productive alfalfa stands. Soil pH should be 6.8 to 7.2 for optimum growth. The MSU Soil Test lime recommendation is to raise the pH up to 6.8. This is considered to be the most economical liming point. Intensive alfalfa producers commonly increase the MSU recommendation by 1/2 to 1 ton per acre of lime to attempt to compensate for the lower-than-average spots in the field and to attempt to increase the stand's productivity and life. Be cautious of applying lime without a soil test as excessive over-application can raise soil pH above 7.5 and tie up soil nutrients just like a low soil pH. Lime should be applied well in advance of the seeding, as lime is slow to breakdown in the soil. If the pH is below 6.2, lime should be applied at least 6 months before seeding. Follow the written soil test recommendations for the proper type of lime to apply. Dolomitic lime has a higher concentration of magnesium and is recommended when magnesium is low. Calcitic lime is higher in calcium, lower in magnesium, is cheaper, and is usually more beneficial when magnesium levels are adequate.

Fertilizer Proper soil fertility increases alfalfa yield, feed quality and stand life. Fertilizer required at seeding time can either be banded with a grain drill, broadcast, or a combination of the two. Broadcast fertilizer should be applied before the last tillage and incorporated lightly into the upper 2 -4 inches of soil. Fertilizer banded with the seed at planting time can include up to: 100 lbs./acre of actual phosphate (P205) and 50 lbs./acre of actual potash (K20). Higher application rates than this should be broadcast or seed injury may occur. Research conducted in Osceola County in 1997 showed that 60% of the sampled alfalfa fields were insufficient to barely sufficient for boron and 75% were insufficient to barely sufficient for sulfur. Sandy soils were routinely low in these important micronutrients but even some clay

soils showed deficiencies. As a result of this research in Osceola County it is a standard recommendation to broadcast apply before seeding 125 lbs./acre of ammonium sulfate and 7 lbs./acre of 15% boron (these fertilizers must not be banded with the seed or seed injury may result). The small amount of nitrogen in the ammonium sulfate is also helpful to improve alfalfa seedling growth. Annual topdressing of alfalfa is very important for high yields and winter hardiness. Topdressing can be done in the spring, after 1st cutting, or in the early fall. Spring applications enhance 1st cutting yields; after 1st cutting enhances 2nd & 3rd cutting yields; and fall applications encourage better winter hardiness. Splitting topdress applications is not usually economical unless high yields (7 ton/acre or more) are anticipated. Annual topdressing of boron is always advised on sands and loams. Boron deficiency will cause a yellowing and stunting of alfalfa. It will also cause more leaves to be lost in the baling process resulting in a lower feed value. Clay soils may or may not need boron. Plant tissue testing is advised to determine if boron is deficient on clay soils.

Manure The best time to apply manure to an alfalfa field is before seeding. Tilling manure in the soil adds fertility and organic matter for nutrient and moisture holding capacity. Manure can be applied to established stands but it is generally best to apply it to older, grassy stands. The nitrogen in manure stimulates grass and weed competition. Manure should be applied to dormant alfalfa or to alfalfa stubble that was just harvested. Maximum annual manure application is 10 ton/acre or 3,000 gallons/acre. Michigan Department of Agriculture Right To Farm Guidelines mandate that if you want protection from the Right To Farm Act, manure cannot be applied to soil with over 300 lbs. (150 ppm) of phosphorus per acre. Also soils with 150 -299 lbs./acre of phosphorus can only have manure applied up to the amount of phosphorus that the intended crop can remove in one year.

Field Selection It is best to rotate crops and not follow alfalfa with alfalfa. If you must, kill the old stand of alfalfa and wait one year before re-seeding alfalfa again. Another alternative is to plant millet for one summer that can be grazed or made into baled hay, and then rotate back to alfalfa. Alfalfa grows best on soils that have good internal drainage (sands and loams) and external drainage (some slope) so standing water is avoided. Seeding Spring and late summer seedings work the best in Osceola County. Spring seedings are made in April to early May once the soil has dried enough to work. Late summer seedings are best made from July 20 -August 10 in the Osceola County area. Summer seedings made after Aug. 10 do not have enough time to produce root food storage to survive the winter, and even those that do survive do not yield as well the next summer. Spring seedings have the following advantages: normally adequate soil moisture; usually suitable temperatures; use of full growing

season that could provide for one or two cuttings; and less deer pressure in the early months of the seedlings life. Late summer seedings have the advantages of: less weed pressure than spring; less insect pressure than spring; and a chance to double-crop in some locations of the State. Plant only high yielding seed with proper disease resistance that has longevity to meet your goals. Consult the MSU Alfalfa Varieties Compared bulletin <http://web1.msue.msu.edu/fis/> to select the alfalfa variety that is best for you. Plant 16 -18 lbs./acre of properly inoculated seed. If there is any doubt about the proper storage, or length of storage, of the inoculant on the seed, re-inoculate it (its cheap insurance)! Plant in a firm, smooth seedbed. The seedbed should be firm enough that your boot heel sinks in no more than 3/4 of an inch. Cultipack before seeding on sandy fields and on any un-even seed beds. Cultipacking levels the soil so seed is not covered too deeply and it firms the seedbed so that moisture can be absorbed from the subsoil up to the seed zone more easily. Cultipacking after seeding is almost always a good idea. Alfalfa should be seeded 1/4 to 1/2 inch in depth on fine textured clay soils, and 1/2 to 3/4 inch in depth on sandy soils. Seed planted over 1 inch deep will not emerge. Beef, sheep, and horse farms should add grass seed like brome or timothy to the alfalfa for better stand life, less insect and weed pressure, more yield and faster hay dry down. Add up to 1 lb./ acre of timothy or up to 2 lbs./acre of brome grass. Higher rates will crowd out the alfalfa over time.