WEED MANAGEMENT IMPROVES ALFALFA HAY QUALITY

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Alfalfa is grown on approx. 8 million acres in our four-state region (Minnesota, North Dakota, South Dakota, Wisconsin). While this acreage may be considerably less than other crops, alfalfa is still a major crop for the region. Economic return from alfalfa rivals that of corn and soybeans because of its tolerance to stress, including drought, and its perennial growth habit which allows it to provide income for many years following establishment. Alfalfa is the preferred forage for horses, dairy cattle, and other livestock because of its high palatability.

Alfalfa is well adapted to the highly fertile soils of the Midwest. A large percentage of alfalfa is planted with a small grain companion crop to reduce erosion, manage weed infestation, and produce additional forage or grain the year of seeding. Traditionally, most alfalfa is fed to livestock on the same farm where it is grown. However, in recent years the number of large livestock production facilities has grown, creating an increase in demand for high quality commercial alfalfa hay. To maximize forage quality and increase population density many commercial growers are moving to solo seeding alfalfa without the use of a companion crop.

Weeds impact alfalfa like other crops by competing for light, nutrients, and moisture. When forage is fed on the farm the impact of weeds in alfalfa often goes unnoticed due to weed contribution to the total yield. As demand for higher quality alfalfa grows, the impact of weeds and stand longevity become more important. Two measurements of alfalfa hay quality include relative feed value (RFV) and crude protein (CP) content. Some weeds impact RFV and CP more than others, but in general as the percentage of weeds increase the RFV and CP decrease.

Establishment in the seeding year is the most critical time to manage weeds. The most common annual weeds in spring-seeded alfalfa in Minnesota are foxtails, pigweeds, common lambsquarters, common ragweed, and wild mustard. While weeds can impact forage quality to various degrees, they can also reduce alfalfa stands. Once established, alfalfa will not fill in thin stands, which makes the crop vulnerable for continued weed infestation; thus, weed control in the establishment year is key for maximum forage quality and stand longevity.

In Spring 2003, BASF conducted a number of on-farm trials evaluating the hay quality of alfalfa fields treated with Raptor® herbicide for weed control compared to an untreated check. Raptor is a relatively new alfalfa herbicide (registered in 2001) for control of annual grass and broadleaf weeds (i.e. foxtail, lambsquarters, pigweeds). Raptor was applied at 5oz/ac in the spring of the year after seedling alfalfa was in third trifoliate stage. Weed infestation varied between locations, but most fields contained the typical summer annual grasses and broadleaves. Samples were taken at first cutting and analyzed for forage quality by Rock River Laboratories in Watertown, WI.

Raptor provided excellent control of annual weeds in the alfalfa plots, apparent at first cutting. Elimination of weeds consistently improved forage quality. Crude protein improved from an average of 19.0% in the untreated fields to 22.3% in the Raptor-treated fields. This demonstrates the impact weeds can have on the quality of a hay crop. Improvement in total protein content of forage is key to reducing the need for costly protein supplements.

Raptor also improved Relative Feed Value (RFV). Improvement in RFV was variable between locations averaging 159 in untreated and 169 in treated plots. Most locations showed RFV improvement, but a few locations with high common lambsquarters infestation did not have increased RFV when weeds were eliminated. RFV variability demonstrates that while some weeds like lambsquarters contain much less crude protein than alfalfa, they may still be relatively digestible to livestock, especially when harvested in an early vegetative stage. The biggest concern is the impact these weeds will have on subsequent cuttings and final alfalfa stands.

Most annual weeds, including lambsquarters, will not regrow from the root the following year. Yield and quality from later cuttings may be reduced while gaps in the alfalfa stand may result where annual weeds die out over winter. Holes in the stand may reduce alfalfa yield in subsequent years and allow for other weeds, especially perennials, to easily infest the alfalfa. 2004 studies will determine stand reduction caused by weeds during establishment.

Weed control is just one of the many factors to consider when establishing alfalfa. Weeds not only impact the quality and yield of alfalfa during the establishment year, but also continue to have their impact on subsequent years. A good, uniform stand is the best defense against weed infestation, determined during the seeding year. Raptor herbicide can help eliminate weed competition during the seeding year and help attain a good quality stand.

Impact of Raptor® Herbicide on Relative Feed Value and Crude Protein of 1st Cutting Alfalfa