Update on Recent Furrow-Irrigated Alfalfa Research
Leonard Lauriault, Forage Agronomist, NMSU Agricultural Sci. Center at Tucumcari

A considerable amount of alfalfa management research is ongoing throughout New Mexico. Because alfalfa varieties are being developed specifically to break the winter survival – fall dormancy connection to improve yield, alfalfa variety tests at most of New Mexico State University’s research facilities throughout the state evaluate which fall dormancy categories are best adapted to a specific region. The 2007 New Mexico Alfalfa Variety Test Report is available at your County Cooperative Extension Service office or Online at http://cahe.nmsu.edu/pubs/variety_trials/avt07.pdf. This article highlights some research that is being conducted at NMSU’s Agricultural Science Center at Tucumcari.

Several studies have shown that there is no benefit to increasing seeding rates above 20 lb/acre (up to 40 lb/acre) when good management practices are used for establishment. In fact, seeding rates as low as 5 lb/acre have established stands that produced equally well to 20 lb/acre seeding rates. Another study evaluates the effects of irrigation termination for selected harvests on performance of furrow-irrigated alfalfa. Within a given harvest, irrigated alfalfa generally outyielded unirrigated alfalfa (duh!). Withholding irrigation for more than one harvest
reduced total annual yields compared to the fully irrigated treatment. When using flood or sprinkler irrigation, which are more efficient than furrow irrigation, the reduction in irrigation should probably be spread across the growing season rather than applied to a single cutting. Still, alfalfa is more water-use-efficient in spring than summer and if water is limited, yield can be maximized by concentrating irrigation at that time. Additionally, if a warm spring is forecast, yields will likely be significantly increased (by 1 ton/acre or more) by beginning to irrigate earlier (2 to 2½ months prior to the typical first harvest date).

More studies compared methods of terminating alfalfa (glyphosate and/or tillage) to maximize nitrogen recovery by the next crop. Either tillage or glyphosate application increased wheat forage yield measured at boot stage; however, use of both techniques was not necessary to maximize yield. Similar results were observed for fiber components of nutritive value. Haygrazer forage yield tended to be maximized by either tillage or glyphosate with glyphosate being more favorable; but, for crude protein (CP), tillage was more favorable. For one study, the glyphosate application was ineffective to reduce alfalfa stands, even after two applications. Consequently, tillage would be the choice of the options tested in this study. Perhaps other herbicides would be more effective to eradicate alfalfa but none others were tested.

Another set of studies evaluated selected rotation systems (one or two years of haygrazer, wheat followed by haygrazer, and continuous alfalfa) for renovation of alfalfa fields. Alfalfa stands are poorest in the wheat/haygrazer rotation making it apparent that including wheat in alfalfa rotation was detrimental to establishment and yield of replanted alfalfa. First cutting haygrazer yields were 1.42, 1.30, and 1.01 tons/acre for 1st year haygrazer, 2nd year haygrazer, and haygrazer following wheat, respectively, suggesting a detrimental effect of wheat on the subsequent haygrazer crop in addition to the already mentioned effect on replanted alfalfa. Consequently, current recommendations are to avoid using wheat when rotating out of alfalfa when plans are to replant alfalfa. At this time, this recommendation does not include using wheat as a companion crop for re-establishment of alfalfa. Figures 1 & 2 show the effect of including wheat in renovation studies.

Research on the management of alfalfa in New Mexico is important and needs to continue and even be expanded because alfalfa is New Mexico’s #1 cash crop. If you have any questions about alfalfa in New Mexico, call your local County Cooperative Extension Service Agent for Agriculture.

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