Alfalfa Yield and Persistence under Alfalfa Weevil Pressure

Vance N. Owens and Michael A. Catangui
Plant Science Department, South Dakota State University
Brookings, SD 57007

The alfalfa weevil is a consistent pest of alfalfa in parts of South Dakota. A field study was initiated in 1999 in south-central South Dakota to determine the long-term effects of alfalfa weevil on yield and persistence of 12 alfalfa cultivars and experimental entries. Alfalfa entries included four with grazing tolerance, two with resistance to the potato leafhopper, two with claims of alfalfa weevil tolerance, one with a purported high incidence of yellow flowers, and three typical varieties. The yellow-flowered variety expressed 0% yellow flowers. Experimental design consisted of a strip-plot arrangement of a randomized complete block design with four replications. Alfalfa was planted with a Truax drill in the spring of 1999 into a tilled seedbed. Plots were 7.6-m wide and 18.2-m long. Each plot was divided in half, with one-half being sprayed with Baythroid® as needed to control the alfalfa weevil and the other half of the plot remaining unsprayed throughout the experiment. Plants were excavated from a 0.93-m^2 area from two locations in each plot at the time of the first harvest and in the fall of each year. Stem density and stems $plant^{-1}$ were also measured during the first harvest cycle. Alfalfa weevil pressure was greater in 2000 (3.27 to 6.70 alfalfa weevils $stem^{-1}$ on 16 May) than 2001 and resulted in an average yield decrease of 0.9 Mg ha^{-1} in the unsprayed plots. However, two of the twelve entries had slightly higher yields in 2000 when left unsprayed resulting in an alfalfa entry X insecticide use interaction. Neither of these two entries was promoted as alfalfa weevil tolerant, and the effect on yield in these two entries was not detected in 2001 under reduced alfalfa weevil pressure. The leaf-to-stem ratio (LSR) tended to be higher in sprayed plots in 2000, although the effect was not significant. There was no effect of alfalfa weevil on the LSR of harvested alfalfa in 2001. Persistence data is currently being evaluated. This research will be carried out for several more years to try to better understand the long-term impact of alfalfa weevil on yield and persistence of alfalfa in areas where stands are retained for 5 to 10 years.