Sheep Tackle Hay, Grain Insects

Western SARE

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Introduction

Wheat stem sawfly is the most damaging insect pest to Montana's wheat industry. Current methods of management are costly, ineffective or both.

Alfalfa weevil is, economically, the most damaging insect pest of alfalfa production. Current methods of management are thought to have a negative impact on yield.

Sheep grazing grain stubble have been shown to reduce populations of wheat stem sawfly, shown at right.

Objectives

1. Wheat stem sawfly – compare the impact of sheep grazing, fall tillage and no-input control in a multi-farm study, on over-wintering larval populations
2. Alfalfa weevil – determine alfalfa yield and quality and alfalfa weevil densities in non-grazed and winter through spring grazed plots

Research & Education Grant

Title: An Alternative to Traditional Wheat Stubble Management Using Sheep to Control Pests and Improve Nutrient Cycling

Project Number: SW00-015

Principal Investigator:
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Amount Funded: $170,335

Materials and Methods

Wheat stem sawfly

The trials were conducted at eight commercial grain operations. The treatments included:

- Fall grazed, spring grazed, fall and spring grazed, fall tilled and no-input control
- Five white-faced ewes (30 x 40 ft plot)
- Fall and spring only grazed = 1 aum/acre
- Fall and spring combined = 2 aum/acre

Three (18 inch of row) samples were taken from each plot, and the percent mortality of over-wintering wheat stem sawfly mortality was calculated.

Alfalfa weevil

The trials were conducted at a commercial sheep/alfalfa operation with these treatments:

- Twelve (30 x 40 ft) plots, 6 grazed, 6 non-grazed
- Ewe lambs (n=1,600) grazed January through May 2002 and 2003

Biomass samples were taken at the beginning and end of the study.

Forage samples were analyzed for CP, ADF and NDF.

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Adult and larval densities consisted of 20 sweeps with a 15-inch-diameter sweep net.

Results

Wheat stem sawfly (Figure 1)

- Larval mortality greater ($P < 0.10$) in grazed than tilled or control treatments
- No differences ($P > 0.55$) between tilled and control treatments
- Larval mortality was greater ($P < 0.03$) in combination fall and spring grazed

Alfalfa weevil

- Yield and forage quality did not differ ($P > 0.15$)
- Weevil larval numbers greater ($P < 0.05$) in non-grazed than grazed during all but the 5th and 12th sampling periods of 2002 (Figure 2)

Implications

These data reflect the potential of integrating sheep into production systems for the management of insect pests.

Additionally, these data indicate that mutually beneficial partnerships between sheep and crop producers could reduce production costs for both enterprises.

Figure 1. Percent wheat stem sawfly mortality

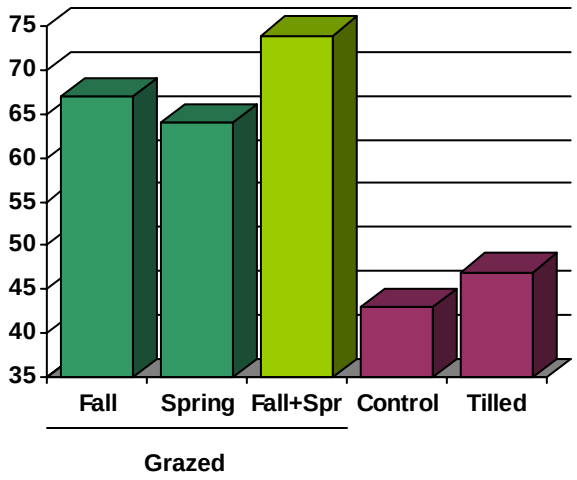
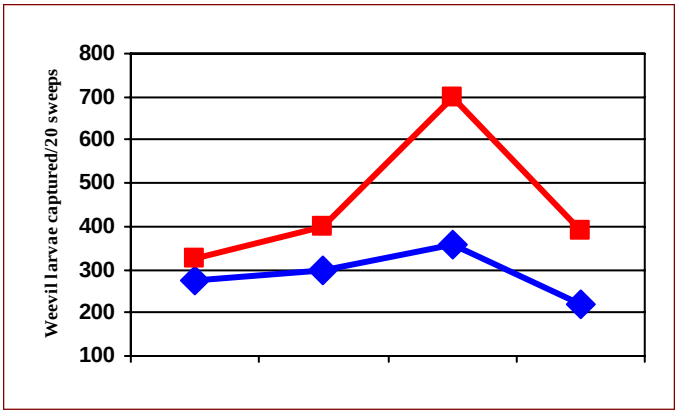
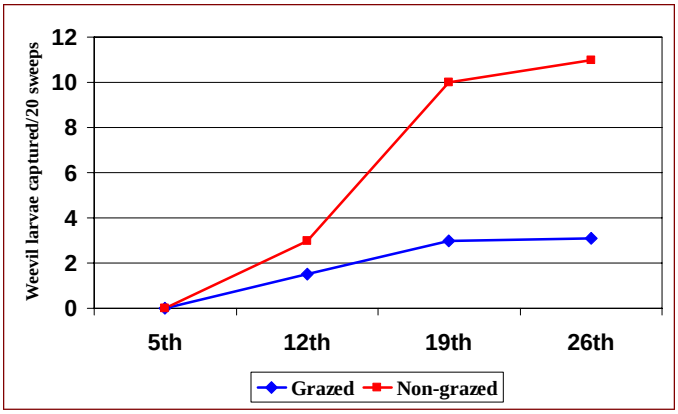


Figure 2. Alfalfa weevil larval count, June 2002 & 2003





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- *profitable farms and ranches*
- *a healthy environment*
- *strong families and communities.*

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