

NEW JERSEY GRAIN AND FORAGE JOURNAL

*A COMPILATION OF RESEARCH AND
EXTENSION PROJECTS IN CORN, SOYBEAN, SMALL
GRAIN AND FORAGE*

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PREFACE

This is the sixth edition of the New Jersey Grain and Forage Journal, an annual journal highlighting research and extension projects in field crops. Traditionally the publication has presented work conducted in New Jersey. This year articles from Delaware and Pennsylvania are included as a result of collaborative efforts by field and forage crop agents, specialists and researchers from the Mid-Atlantic region.

Grain and forage production represents the largest agricultural acreage in the Mid-Atlantic States, adding significantly to and supporting related industries. Not only does this support the local and regional economy, but also provides the benefits of open space to the residents of the region.

We would like to acknowledge and thank the New Jersey Soybean Board and Grain and Forage Producers' Association for their financial support. The Soybean Board allocates soybean checkoff funds for research and promotional activities that benefit the soybean industry. The Grain and Forage Producers' Association promotes research, marketing, legislation and education related to the grain and forage industry.

We hope that these results will be helpful to you as you plant and produce crops in the 2000 growing season and beyond. Your suggestions for research and educational projects are always welcome, as it is our desire to develop programs that serve you most important needs.

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Comparison of Fall and Spring Bait Trapping of Wireworms in New Jersey Corn Fields

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- Research Question** Wireworms, especially *Melanotus communis*, are significant pests of field corn and potatoes in the Salem and Cumberland County area of southern New Jersey. Soil insecticide use is common, since wireworm damage is also relatively common. Heavily infested fields will result in reduced yields. Bait trapping for wireworms has become a reliable means of estimating field populations prior to planting. However, because of adverse weather conditions and the eagerness of some farmers to plant as early as possible, spring bait trapping is sometimes difficult to accomplish. Baiting fields was initiated in late summer and fall (September, October) in corn silage fields after the corn had been removed.
- Literature Review** Between 1994 and 1998, four species of wireworms have been collected from bait traps in cornfields in New Jersey: *Melanotus communis*, *Limonius dubitans*, *Aeolus millellus*, and *Hemicrepidius memnonius*. Of these *M. communis* is the most abundant. The *Melanotus* species are well documented as being crop pests in the United States, especially in field corn.
- Study Description** Thirteen fields in Salem County ranging from 3 to 100 acres were chosen for the project. All fields were on dairy farms, had been in corn for several years, and received varying amounts of dairy manure. All fields had 5 bait traps except for a 50-acre field, which had 10 and a 100-acre field, which had 13. In long, narrow fields, the traps were placed in a single row down the field center. Otherwise all other fields had traps placed near each corner and one in the middle of the field. In the two larger fields, traps were arranged in a grid-like pattern with at least 100 paces between traps. All trap locations were flagged.
- Bait traps consisted of 2 oz. of grain (60cc of corn and wheat seed in a 1:1 ratio) contained in a cheesecloth bag. Each trap was buried 2 inches deep and covered with soil. Traps

were removed after the seed had sprouted, approximately 12 days, and examined for wireworms. Wireworms were collected and identified and appropriate recommendations were made to the farmers.

In 1997, all 13 fields had traps set, between September 2 and 29, and collected between September 14 and October 10. Only 10 fields were baited in 1998, between April 2 and May 4 and collected between April 16 and May 14. Spring baits were placed in approximately the same places as the previous fall.

Fields replanted to corn in 1998 were surveyed to determine the degree of wireworm damage. One hundred plants in a row were examined for wireworm damage in the same area where traps were placed.

Applied Questions

Did any of the fall baited fields reach threshold?

Three fields were identified as reaching or exceeding the general threshold of 1 wireworm per bait trap. Two fields averaged 1 wireworm per bait trap and the third one averaged 3.3 per trap. Two of these fields were baited a second time in the fall with similar results.

Did these same fields or any other field reach threshold in the spring?

In the following spring, 2 of the 3 threshold fields reached threshold again. The third field was seeded to alfalfa and not trapped. None of the other fields reached threshold, which was consistent with the fall results. Because of time constraints, 3 of the 13 fields were not baited in the spring.

What did the follow-up surveys show?

In 1998, 4 of the fields were planted to other crops (2 alfalfa and 1 soybean; sixty acres of the 100-acre field was planted to soybeans). Of the remaining 9 fields, one field which had been over threshold both times was treated with a soil insecticide, and 2 others had insecticide-treated seed planted. The follow-up surveys of corn seedlings did not reveal any damaged corn plants due to wireworms. One of the fields reaching threshold (3-acres) was entirely surveyed. Seventy-five plants appeared to be injured by wireworms out of approximately 75,000. The low incidence of plant injury in this field may be due to the treated seed, but also suggests that the threshold for wireworms may be too conservative.

Recommendations

These results suggest that fall bait trapping of wireworms is as reliable as spring bait trapping. Fall baiting also has the advantage of allowing more time for the baits to be in the ground without disturbance. Initially all cornfields should be surveyed. Yearly monitoring of the crop (post-emergent stand counts) will determine the need for additional sampling.

For more information on wireworms in New Jersey and their management refer to either the 1997 edition of *the New Jersey Grain and Forage Journal*, or the Rutgers Cooperative Extension Fact Sheet 880, *Managing Wireworms in New Jersey's Field Crops*.

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