

# Grazing Gazette



PENNSYLVANIA  
College of Agricultural Sciences  
in cooperation with USDA/ARS

## SURVEY OF INVERTEBRATES OF GRAZED DAIRY PASTURES IN PENNSYLVANIA AND THEIR ASSOCIATIONS WITH FARM MANAGEMENT PRACTICES

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Last year, we sampled the invertebrate populations over a range of grazing systems along a gradient of soil types, grazing intensity and past histories for 21 farms in several different Pennsylvania counties representative of northeastern conditions. The invertebrates we collected were earthworms, spiders, spider mites, centipedes, millipedes, slugs, snails, and many different kinds of insects.

We collected the animals in three different ways: 1) soil cores 4 inches in diameter and about 2 to 4 inches deep (depending on how dry the soil and the presence of stones); 2) pitfall traps made from cottage cheese containers sitting inside 4-inch diameter sewer pipe connectors buried to the soil level; and 3) vacuum suction of four sites about 2 square feet each with a reserved flow leaf blower.

We did all the sampling in late May and early June at the time of maximum grass and legume growth.

We are overwhelmed by the huge number of species of insects that we collected in the pitfall traps. The soil samples revealed low numbers of important pests such as white grubs and wireworms in every farm sampled. Larvae of the clover root curculio, a pest of clover and alfalfa, was found on all 21 farms but in low numbers.

Clover root curculio were correlated with sites on each farm with dense stands of white clover. We have not started sorting the vacuum samples because we discovered the insects passed through the impellor of the leaf blower and only the mites and small insects were collected intact. We have since devised an insert in the collecting tube to prevent injury to the specimens.

The pitfall traps collected many species of spiders and ants and we are still sorting them after more than one year. There were also great numbers of beetles, 63 species of ground beetles, many of which are insect predators, have been identified by Dr. Bob Davidson of the Carnegie Museum of Pittsburgh. Rove beetles, another group of ground dwelling beetles, were also represented by over 80 species and are being identified by Dr. Rich Hobeke, Cornell University.

Many of the numerous flies, dung beetles, and other insects feeding on dung patties were collected in our traps. There were lots of weevils in these traps, especially billbugs which feed on grasses, stem weevils, and occasionally specimens of the clover root curculio, alfalfa weevil, and clover leaf weevils.

What are our plans for all the

data we have collected and what does it all mean to you? We plan multivariate statistical analyses of the insects and slugs at community and species level based on systematic group (beetles, ants, wasps), feeding behavior (root feeders, stem feeders, leaf feeders, parasites, predators), and abundance (numbers per trap, per soil core), and we will associate these data with site vegetation, soil type and farm management practices. Our goal is to describe invertebrate communities by their habitat relationships in grazed pastures to determine the invertebrate species most likely to impact pasture systems and sustainability.

Our preliminary results show few species abundant enough to be pests of roots. At no time did we see damage to foliage except at the Forrest Stricker Farm in Berks County when we observed alfalfa weevil damage on grazed alfalfa on the south facing slope. Grasses and clovers showed little insect damage symptoms on any farm.

In the summer and fall of last year, and spring, summer and fall this year and next, we plan to con-

tinue our survey on five farms (Forrest Stricker Farm; Will Chamberlain Farm, Tioga County; Leonard Queitzsch Farm, Juniata County; Jerry Beary Farm, Venango County; and Herb Guyer Farm, Westmoreland County).

These farms represent different physiogeographic regions typical of northeastern U.S. conditions, and different ways of management.

Gary Barker returned this April to help arrange data for analysis and plan which insect groups to study. We are in contact by E-mail frequently and hope to be able to write some papers in the coming year on the effect of grazing management on insect diversity and abundance.

Grazing Calendar  
• July 27, Pasture Walk, Franklin County (717) 352-8676

• August 10, Pasture Walk, Franklin County (717) 352-8676.

Address questions and suggestions to Grazing Research and Education Center, 116 Agricultural Sciences and Industries Bldg., University Park, PA 16802, (814) 865-6541.

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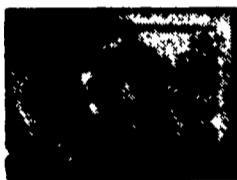


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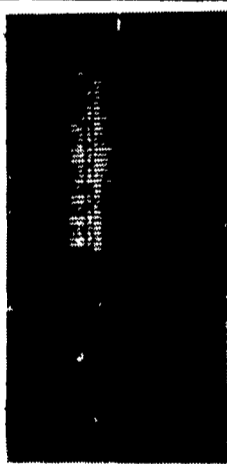
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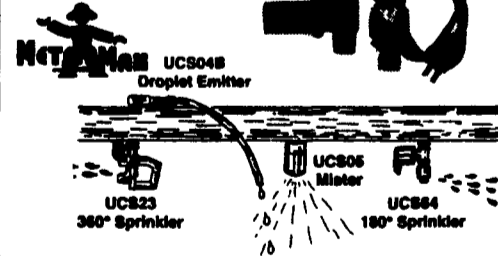
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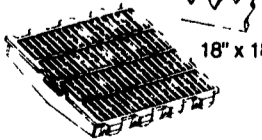
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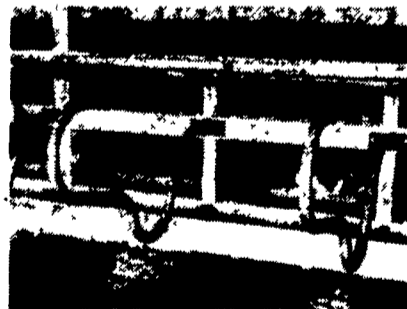
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