Project Type: Livestock IPM

Title: Development of Veterinary Entomology IPM Extension Materials

Project leaders: D. A. Rutz[1] and J. K. Waldron[2]
[1]Department of Entomology, Cornell University, Ithaca, NY
[2]New York State IPM, Cornell University, Geneva, NY

Abstract
Arthropod pests can significantly impact animal health and net profitability of cattle production. Extension outreach of IPM approaches and techniques have been tremendously instrumental in enhancing producer awareness of pest management alternatives. Keeping outreach sourced with state of the art information, resources and approaches helps ensure the greatest potential educational impact. Developing the specimen boxes and demonstration kits has positively impacted the effectiveness of our outreach efforts.

Background and Justification
Arthropod pests can significantly impact animal health and net profitability of cattle production. Extension outreach of IPM approaches and techniques have been instrumental in enhancing producer awareness of pest management alternatives. Keeping outreach sourced with state of the art information, resources and approaches helps ensure the greatest potential educational impact.

We propose to develop resources for use in dairy cattle and other IPM extension educational outreach programs. Our target pests are flies on pastured cattle, flies in and around livestock confinement facilities, and bed bugs as both a poultry and human pest problem.

<u>Pasture and Confinement Flies</u>

A variety of insects affect the dairy industry in the Northeast. House flies, stable flies, face flies, horn flies, horse flies, and deer flies all are common and significant pests of dairy and beef cattle.

Insect pest activity results in lowered milk production levels and reduced feed conversion efficiency. It exposes cattle to pathogenic microorganisms and causes blood loss and hide damage. It can also lead to public health–public nuisance concerns along with litigation. Moreover, insect pressure can add to stresses on young replacement animals, delaying their entry into production and adversely affecting lifelong production performance. As herd sizes increase on modern farms, pest pressures often are aggravated by large quantities of animal waste that must be handled and by crowded conditions that promote the spread of external parasites.

In the past, management of cattle pests often has relied on insecticide use as a single control tactic. But this single-tactic approach can aggravate insecticide resistance problems in pest populations and inadvertently destroy natural enemies of the target species.

Modern dairy producers are weaving careful use of pesticides into IPM programs. IPM programs seek to maximize the effectiveness of pest control actions while conserving beneficial insects and minimizing pesticide use. The cornerstone of effective IPM is correct pest identification along with accurate and timely pest monitoring. Other components are various combinations of cultural, biological, and chemical control practices designed to keep pest populations below economically injurious levels.

Bed bugs

Bed bugs have been a common pest in the U.S. since before World War II. With widespread use of DDT and other long lasting pesticides, the bed bug was thought to have been nearly eradicated. Since the late 1990's, however, there has been a most significant resurgence of bed bugs in the U.S. Bed bugs are now a very serious and widespread pest throughout the US as both a human and poultry pest problem and often referred to as the insect pest of the 21st Century. Proper bed bug identification and the understanding of bed bug biology, ecology and management are essential to the development and implementation of a cost effective bed bug IPM program.

Objectives

1. Develop a minimum of 6 boxes of pinned fly specimens and 6 boxes of pinned dung beetles for extension and outreach events.
2. Develop kits with examples of recommended materials for both pasture and confinement fly and bed bug talks.

Procedure

We purchased the materials needed for developing demonstration kits for the Veterinary Entomology Extension Program and NYS IPM Program and were able to assemble 12 pinned specimen boxes.

Many times people do not have a good reference of what an insect looks like or its relative size when the different pests are being discussed at presentations. Having a visual display greatly helps reinforce our educational efforts. Each kit contains a box of pinned fly specimens (house flies, face flies, stable flies, horse flies, horn flies, and deer flies) with an explanation of each fly's biology. There are also pinned examples of different types of dung beetles that are indigenous to this area.

Each kit also includes a number of fly traps that are recommended by the Vet Ent Ext. Program and the NYS IPM Program. There are examples of Spider Web sticky tapes (Atlantic Paste and Glue), Epps Biting Fly traps (Horseline Products), Horse Pal traps (Newman Enterprises), and Alsynite Biting Fly traps (Olson Products) available for display.

Spider Web sticky tapes are large sticky tapes that are effective in reducing house fly and stable fly populations in dairy calf greenhouses. These can also be used inside barns to help control flies. The Epps trap is designed to trap biting flies that are present in pasture situations. Horse Pal traps are also recommended for use on pasture for biting flies, including stable flies, horse flies, and deer flies. Lastly, the Alsynite Biting Fly trap uses a special fiberglass panel covered in a sticky paper that is very attractive to stable flies. These traps are also greatly effective in helping to reduce stable flies that are found on pasture.

There is also a tremendous need for visual displays of bed bugs. We were able to make over 25 cast resin bed bug demonstrations. The bed bugs are encased in clear resin so that all sides of the bedbug can be seen. This is a much-needed tool to educate people on the appearance and biology of bed bugs.

Results and Discussions

We were able to procure all items needed for the demonstration kits. Pinned specimen

boxes were also developed for use in extension programs and meetings.

These materials have already been utilized in a variety of meetings and talks. For example, In June, the insect demonstrations were used at a NOFA Pasture Fly IPM meeting in Dryden, NY that had 45 participants. There is a Pastured Cattle IPM program scheduled in February that will also make use of these traps and demonstration materials. Additionally, the resin bed bug cubes have been used a number of times already for a variety of extension and outreach events.

There has been wonderful feedback received regarding our efforts in providing more visual and hands-on demonstrations. Many times, people have been surprised to learn what something looks like or what size it really is. These tools have proven to be a very valuable addition to our already successful Vet Ent and NYS IPM extension programs.