

**Title:** Dairy and Beef Biting and Nuisance Flies IPM Meeting Series - 2013

**Project Leaders:**

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**Type of project:** Public Education

**Project location:** New York State

**Abstract**

A series of on-farm summer field meetings were held for dairy and beef producers to increase awareness of issues and IPM approaches to manage nuisance and biting flies on dairy cattle for animals on pasture.

**Background and Justification**

Dairy production is an integral component of many rural communities in the northeastern US, helping to sustain the economic viability of our region. In New York, 5,700 dairy farms were in production in 2010 contributing nearly \$1.6 billion in dairy products to the state's economy (NY NASS, 2010). In 1997, northeast U.S dairy and beef cattle associated revenues totaled \$4.4 billion (USDA Census of Agriculture, 1997). Additionally, the value of these commodities in the eastern US, where the results of this project are most applicable, total \$ 15.4 billion.

Biting and nuisance flies, and external parasites adversely affect animal health, productivity and reduce farm profitability. A complex of pests is usually involved, which can differ in the intensity of direct and indirect host effects. Damage from infestations of summer and winter active arthropod pests of dairy and beef cattle in the U.S. have been estimated to exceed \$2.26 billion in losses annually (Byford et al. 1992).

In a 1997 survey of New York dairy farmers, twenty-eight percent of respondents indicated flies in and around barn areas were most difficult to control and 43% indicated animal confinement area flies were the most likely to cause economic loss (Harrington et al. 1998). Flies in and around the barn were treated with an insecticide an average of once a week. Most respondents (80-90%) employed cultural practices such as manure removal, while less than 5% of respondents released beneficial insects to manage barn flies. In this same survey, 52% of respondents selected flies on pastured cattle as being the most difficult pest to control and 56% indicated pasture flies were the most likely to cause economic loss (Harrington et al. 1998). Additionally, dairy farmers reported using insecticides two to three times per month to manage flies on pastured cattle.

Several challenges currently face those seeking to effectively manage livestock pests today. Implementation of the 1996 federally mandated Food Quality Protection Act (FQPA) resulted in the removal of a number of commonly used livestock insecticide materials, such as dimethoate,

naled and chlorpyrifos. In the last decade, relatively few new insecticides have been registered for use on livestock. Efforts by the Cornell University Veterinary Entomology research group have documented widespread insecticide resistance in house flies, a primary pest on livestock operations (Kaufman, et al. 2001). In some cases, 100% of house flies treated with specific insecticides survived when treated with the legal application rate of insecticides. The combination of fewer insecticides available and an increased presence of insecticide resistance heighten the potential for effective pest management options.

To complicate matters, as suburban areas encroach on rural agricultural landscapes, emigration of pest flies to off-site locations can act as a community lightning rod creating a new set of challenges for those involved in animal agriculture. This results from potential public health concerns and nuisance complaints from neighboring communities.

Individuals relying upon a largely insecticide-based pest management strategy will find this tactic an inadequate approach to controlling these pests. With fewer insecticides available, prospects for new materials limited, insecticide resistance more prevalent, and urbanization of once rural areas becoming more common place, livestock producers will continue to face increased challenges with fly management in the future.

These issues highlight the need for producers to have the best information available to manage dairy cattle pests and to utilize a broad integrated approach that includes a variety of cultural, biological, physical and chemical tactics.

Adult learning research indicates producers are more likely to adopt targeted new practices when the educational design promotes small groups, open discussion, and experiential hands-on learning on the farm (Kolb 1984, Koontz et al. 1994, Richardson 1994, Rogers 1983). Having the IPM dairy field meetings on a local producer's farm and inviting the local dairy farmers creates a trusting atmosphere. Producers are more inclined to adopt new methods of pest control when they can see and do it on their own farm. A series of field meetings were held to extend dairy cattle IPM information to better manage common nuisance and biting flies attacking animals on dairy pasture and in confinement areas.

## Objectives:

1. To increase the number of producers utilizing livestock IPM by increasing the number, awareness and IPM skill level of dairy producers and other agriculture professionals in the New York.
2. Evaluation of producer adoption will provide indications on the effectiveness of current educational efforts and identify strengths, weaknesses and opportunities to improve on training approach, impact, and producer use of IPM methods.

## Procedures:

Four on-farm meetings were held across New York to provide dairy producers, extension personnel, veterinarians and others with an overview of dairy and beef cattle IPM principles and practical approaches to managing common fly pests affecting cattle on pasture. These presentations were followed by an in the field demonstration and hands-on experience. By actively engaging individuals through seeing and doing, producers are more willing to adopt many of the new procedures and practices being taught on farms. We teamed with extension educators with direct connection to local producers in several areas of New York to strengthen outreach and potential impact. A typical meeting agenda is in Appendix 1.

As part of the program's activities and to enhance discussion, several examples of commercially available pasture fly traps (alsynite, Horse Pal and Epps biting fly traps) were installed at each location prior to the meeting. When possible traps were installed 1 – 2 days in advance to demonstrate trap use and application and the types of flies caught. Meetings were advertised locally by the host extension educator. Each meeting offered NYS Department of Environmental Conservation pesticide recertification credits.

## Results and Outcomes:

A total of 4 dairy IPM meetings were held in New York during 2013. Meetings were held on farms in Essex, Delaware, Rensselaer, and Allegany Counties (Table 1). A total of 5 extension educators in addition to LFC IPM specialists were directly involved in this outreach effort.

Table 1: Meetings conducted by date, location, audience and number of people attending.

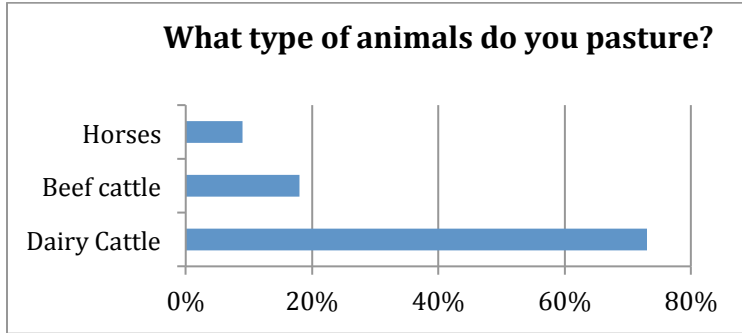
Date	Topic	Location	Audience	Participants
July 11	Dairy Cattle Pasture Fly IPM	Rensselaer County	Producers	6
July 12	Dairy Cattle Pasture Fly IPM	Delaware County	Producers	10
July 24	Dairy Cattle Pasture Fly IPM	Allegany County	Producers	28
August 29	Dairy Cattle Pasture Fly IPM	Essex County	Producer	20
			TOTAL	64

The primary focus of the meetings was IPM issues related to pastured dairy and beef cattle. The majority of participants were livestock producers, in addition a few participants raised horses. A few veterinarians and agribusiness personnel also attended the meetings.

Nineteen percent of participants completed post-program evaluations. The results of these evaluations follow. The actual questionnaire can be found in Appendix 2.

Figure 1 indicates the majority of participants raised either dairy or beef cattle with some horses on pasture.

Figure 1: Percentage of respondents (n=12) on what the type of animals they pasture?



The dairy and beef producers reporting owned and managed about 572 cattle on 600 acres of pasture. Horn, stable and face flies were the predominant fly species participants observed on their pastured livestock (Table 2). Participants indicated they felt face, stable and horn flies cause economic losses to their animals (Table 2).

	Horn fly	Stable fly	Face fly	Deer fly	Horse fly
What insect pest appears to be most common on your pastured animals?	21%	18%	35%	13%	13%
What insect pests do you feel cause economic loss to your animals on pasture?	21%	29%	50%	0%	0%

All participants responding to the meeting evaluation questionnaire either highly agreed or moderately agreed that the meeting helped them better understand management of fly pests on pasture.

Prior to the meeting 20% of participants reported they did not use IPM thresholds in making fly management decisions. Following the meeting 80% of the participants indicated they would use IPM thresholds in their fly management.

Table 3: The percent of participants that use of IPM thresholds

	Used IPM Thresholds	Did not use IPM Thresholds
Before Meeting	20%	80%
After Meeting	80%	20%

Table 4 indicates what management practices participants used before the meeting and what they might change after the training. During the pasture fly IPM meetings we presented and demonstrated three traps effective against biting pasture fly pests: the Epps Biting Fly Trap, the

Horse Pal Horse Fly Trap, and the Alsynite Biting Fly Trap (see photos below). Many producers indicated prior to the meeting, they did not use the Alsynite, Epps, Horse Pal or the walk through traps (insecticide free). Following the meeting demonstration 73% of participants indicated they would consider using the alsynite biting fly trap.

Table 4: The percent of respondents (n=12) indicating specific fly management practices used prior to this meeting and what they will use (or consider using) after this meeting.

	Before		After	
	Yes	No	Yes	No
Epps Trap (non-toxic)	0%	100%	0%	100%
Horse Pal Trap (non-toxic)	0%	100%	0%	100%
Alsynite Trap (non-toxic)	0%	100%	73%	27%
Walk Through Trap (non-toxic)	0%	100%	0%	100%
Repellents (non-toxic)	27%	73%	1%	99%
Back rubbers (Pesticides)	18%	82%	36%	64%
Pour-on (Pesticides)	55%	45%	36%	64%
Feed Through (Pesticides)	36%	64%	18%	82%
Ear Tag (Pesticides)	36%	64%	0%	100%



Alsynite Biting Fly Trap for stable fly management

Horse Pal Horse Fly Trap



As a result of the meetings 100% of the participants stated that they would incorporate lessons learned to help reduce the use of insecticides on cattle.

Participant comments regarding knowledge gained to improve fly management practices and meeting effectiveness are shown in tables 5 and 6.

Table 5: Comments made by participants responding to:  
 “Please indicate how this meeting might have improved you fly management practices?”

May start using some traps.
Knowledge / Action.
Keep a better practice on removing more breeding areas of flies.
Consideration of resistance to products used.
Provides greater understanding of life cycles and pesticide resistance.
Knowledge.
It made me more aware.

Table 6: Comments made by participants responding to:  
 “What did you like most about this meeting?”

Speakers sticking to the topic!
Focus on the species and habits of flies, some of the ideas on management.
Dung beetle study.
Informative.

**Summary:**

Dairy fly IPM meetings were held in 4 New York counties during the summer of 2013. These events were successful in sharing dairy cattle IPM information with 64 participants. The

meetings helped participants learn IPM principles and applied practices as applied to management of dairy biting and nuisance flies. The meetings were held on farms and employed an experiential learning approach with hands-on opportunities. Farmers preferred the on-farm classroom environment and were very willing to interact. Producer responses indicated they greatly appreciated the interactive and participatory learning approach of these meetings personalized to their specific farming environment. As a result of knowledge gained through participation in these meetings producers stated they were going to use economic thresholds to better manage flies on animals. They also stated that they would consider using asynite biting fly traps to potentially reduce insecticide use on the farm. Participants expressed a better understanding of the importance and use of scouting and evaluating thresholds. Producers and extension personnel expressed enthusiasm and interest in having more meetings in dairy fly IPM and learning IPM approaches to manage arthropod pests affecting several other livestock species in the future.

**Key Words:** Stable fly, house fly, face fly, horn fly, deer fly, horse fly, dairy, cattle, IPM, integrated pest management, on-farm education.

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**Appendix 1: Flies Affecting Animals on Pasture Meeting Agenda**(Hour 1)

-Conduct a fun “Pasture Fly Quiz” with Participant

Importance aspect of Pasture Fly IPM:

- Animal Health,
- Economic Impacts
- Population Growth
- Pesticide Resistance
- Food Quality and Protection Act

-On / Off Site fly emigration and other effects

Identification and Biology of Horn Flies, Face Flies and Stable Flies.

-Similarities and Differences

-Management lies within the Biology for the flies

-All flies are not created equal - other potential pests

Integrated Management

-Monitoring Techniques & Threshold Guides

- Fly Trapping Technology (What can they do?)

-Natural Enemies are They Effective?

-Chemical Control, back-rubbers, sprays, ear tags

-Insecticide Resistance Management

-Organic repellent Sprays-Do they Work?

Pasture Walk (1 Hour)

-Bio-security Issues

-Overview of Farm / Animal Production operation -host farmer or CCE personnel

-Pasture walk with eyes on fly managements issues, challenges, opportunities, how-to's, where's, whys, hands-on demonstration(s), other FAQ's

- Discussion

-Review answers to Pasture Fly Quiz

**Appendix 2 – Blank Questionnaire**

NYS IPM Pastured Cattle –Fly Management Evaluation

1. What type of animals do you pasture?

Dairy Cattle    Beef Cattle    Horses    Other

2. What is the size of your herd? \_\_\_\_\_ How many acres do you pasture \_\_\_\_\_?

3. What insect pest appears to be most common on your pastured animals?

Horn Fly , Stable Fly , Face Fly , Deer Fly , Horse Fly  Other (name) \_\_\_\_\_

4. What insect pests do you feel cause economic loss to your animals?

Horn Fly , Stable Fly , Face Fly , Deer Fly , Horse Fly  Other (name) \_\_\_\_\_

5. Do you use action thresholds to determine if flies on you animals need to be managed?

Before this meeting \_\_\_\_\_ After this meeting \_\_\_\_\_

Yes , No

Yes , No

6. What fly management practices did you use prior to this meeting and what will you use (or consider using) after this meeting for pastured animals:

Before the meeting                      After the meeting

Check only 1 per column

- |                      |  |  |
|----------------------|--|--|
| a. Epps Trap         | Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| b. Horse Pal Trap    | Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| c. Alsynite Trap     | Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| d. Walk Through Trap | Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| e. Repellents        | Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| f. Back rubbers      | Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| g. Pour-on           | Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> |



- h. Feed through                      Yes \_\_\_ No \_\_\_                      Yes \_\_\_ No \_\_\_  
i. Ear tags                              Yes \_\_\_ No \_\_\_                      Yes \_\_\_ No \_\_\_

7. Will you reduce the use of insecticides because of this meeting?

Yes \_\_\_                      No \_\_\_

8. This meeting helped me better understand the fly management issues of cattle on pasture.  
Highly agree    Moderately agree    Not Sure    Moderately Disagree    Strongly Disagree

\_\_\_\_\_

9. Please indicate how this meeting might have improved you pasture fly management practices?

10. What did you like most about this meeting?

11. Where can we improve on research based information to better meet your needs as a producer?

12. What state do you farm in? \_\_\_\_\_