National Multistate Research Award

Fly Management in Animal Agriculture Systems and Impacts on Animal Health and Food Safety (S-1060)

Kristina Friesen, Technical Committee Chair
Richard Roeder, Administrative Advisor

Flies are serious pests of livestock and poultry. House fly, stable fly, and horn fly species are responsible for damage and control costs that reach over $2 billion each year in the United States. Painful fly bites can reduce cattle weight gain and milk production and can spread diseases. Flies can also transmit pathogens such as E. coli and Salmonella to animals and humans through water and food they have contaminated. Concerns about flies have led to lawsuits, zoning limitations, and animosity between farmers and nearby residents and businesses. S-1060 formed to develop economically feasible and environmentally friendly technology and practices for controlling flies in conventional and organic animal agriculture systems.

Fly larvae develop in animal bedding, feed debris, and manure, and populations grow very quickly. Dealing immediately with larval developmental sites can reduce stable fly populations by up to 50 percent, which can lead to 60 kilograms of weight gain valued at $100 per cow. Disposing of feed debris can reduce the fly population later in the year. Studies also showed that straw bedding produces about 50 times as many stable flies as compost bedding.

S-1060 researchers developed new chemical, biological, and microbial control methods, such as using adult flies to deliver pyriproxyfen, which disrupts insect growth, to sites where larvae are developing. A new fly trap for controlling horn flies removed between 1.3 and 2.5 million flies from a herd of 150 pastured dairy cows. The trap doesn’t use insecticide and costs $1.50 less per cow than traditional chemical-based treatments.

S-1060 research and outreach have given producers the information and tools they need to select appropriate control methods and apply them in a timely manner. Studies have shown what kinds of weather events and landscape features support fly population growth, and national surveys have
shown where insecticide resistance is present. Effective fly management practices result in increased profits, a higher quality of life for animals, a safer food supply, and improved quality of life in residential and recreational areas near animal facilities. Adoption of new non-chemical control methods significantly reduces the use of expensive insecticides, curtailing costs for livestock producers and reducing harm to the environment.

This project was supported in part through USDA’s NIFA by the Multistate Research Fund established in 1998 by the Agricultural Research, Extension, and Education Reform Act to encourage and enhance multistate, multidisciplinary research on critical national or regional issues. More than $9 million in additional funds were provided by contracts and grants to S-1060 members or groups. S-1060 members are located at over 20 land-grant universities and several Hispanic-serving universities and Canadian institutions, as well as six USDA-ARS labs. Representatives from private industry have been involved as supporters, contributors, or participants in field research.

**Participating Institutions:**
- Auburn University
- Cornell University
- Kansas State University
- Louisiana State University
- New Mexico State University
- North Carolina State University
- The Ohio State University
- Oklahoma State University
- Texas A&M AgLife (Research and Extension)
- University of Arkansas
- Division of Agriculture
- University of California, Riverside
- University of Florida
- The University of Georgia
- University of Illinois
- University of Massachusetts
- University of Minnesota
- University of Nebraska-Lincoln
- University of Tennessee
- USDA ARS (Amarillo, Texas; College Station, Texas; Gainesville, Florida; Kerrville, Texas; Lincoln, Nebraska; McHannan, Kansas)
- Washington State University
- Central Garden and Pet Co. (Wilmington, California)
- Agriculture and Agri-Food Canada

**Regional Excellence in Multistate Research Awards**

**North Central Region**

**Soil and Landscape Assessment, Function and Interpretation (NCERA-3)**

Brian State, Technical Committee Chair
Mickey Ransom, Administrative Advisor

**Participating Institutions:**
- Iowa State University
- Kansas State University
- Michigan State University
- National Cooperative Soil Survey
- North Dakota State University
- The Ohio State University
- Purdue University
- South Dakota State University
- University of Arkansas
- University of Illinois at Urbana-Champaign
- University of Kentucky
- University of Minnesota
- University of Nebraska–Lincoln
- University of Wisconsin–Madison
- USDA NRCS

**Western Region**

**Beneficial and Adverse Effects of Natural, Bioactive Dietary Chemicals on Human Health and Food Safety (W-3122)**

Abby Benninghoff, Technical Committee Chair
H. Michael Harrington, Administrative Advisor

**Participating Institutions:**
- Colorado State University
- Michigan State University
- Mississippi State University
- North Dakota State University
- Oregon State University
- Rutgers, The State University of New Jersey
- Texas A&M University AgriLife (Research and Extension)
- University of Arizona
- University of California, Berkeley
- University of California, Davis
- University of Hawaii
- University of Illinois at Urbana-Champaign
- University of Nevada, Reno
- University of Wisconsin–Madison
- University of Vermont
- USDA-ARS (CA, GA)
- Utah State University
- Washington State University

**Northeast Region**

**Ovarian Influences on Reproductive Success in Ruminants (NE-1227)**

Mila Wolkow, Technical Committee Chair
Gary A. Thompson, Administrative Advisor

**Participating Institutions:**
- Cornell University
- Iowa State University
- Mississippi State University
- The Pennsylvania State University
- University of Connecticut, Storrs

**Fly Management in Animal Agriculture Systems and Impacts on Animal Health and Food Safety (S-1059), 2016**

Improving the Sustainability of Livestock and Poultry Production in the United States (S-1059), 2011

Biological Improvement of Chestnut through Technologies that Address Management of the Species, its Pathogens, and Pests (NE-1033), 2010

Biological Impact, Monitoring, and Management of Soybean Insect Pests in Soybean Production Systems (S-1039), 2009

Porcine Reproductive and Respiratory Disease: Methods for the Integrated Control, Prevention, and Elimination of PRRS in United States Swine (NC-229), 2008

**Microirrigation for Sustainable Water Use (W-2128), 2014**

Sweet Potato Collaborators Conference (SEERA-5), 2013

**Response to Emerging Threat: Soybean Rust (NCERA-208), 2012**