National Multistate Research Award

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

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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, cutting costs for livestock producers and reducing harm to the environment.

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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 AgriLife
(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; Manhattan, Kansas)
Washington State University
Central Garden and Pet Co. (Walnut Creek, California)
Agriculture and Agri-Foods Canada

National Excellence in Multistate Research Awards

Fly Management in Animal Agriculture Systems and Impacts on Animal Health and Food Safety (S-1060), 2016

Improving Sustainability in Fruit Tree Production through Changes in Rootstock Use (NC-140), 2015

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

Sweet Potato Collaborators Conference (SERA-5), 2013

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

Improving the Sustainability of Livestock and Poultry Production in the United States (S-1032), 2011

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

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

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