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ID-353

CAFOs

Concentrated Animal Feeding Operations

Contained Animal Feeding Operations—Insect Considerations

EXPERT REVIEWED

ENVIRONMENTAL ISSUES

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This publication is one title in the *Concentrated Animal Feeding Operations* series

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Introduction

As suburbs and farms have grown closer together, concern has mounted as to whether livestock facilities pose any health threats to people through contamination of soil, water, or air. Some people who live near farms also complain about odors and insects. In general, the insects associated with farm animals are just nuisances, but if they become numerous they can affect livestock production.

The Environmental Protection Agency (EPA) monitors livestock farms and animal production facilities called Animal Feeding Operations (AFOs) for waste-caused emissions including ammonia, hydrogen sulfide, methane, carbon dioxide, nitrous oxide, and particulate matter.

AFOs are classified as Contained Animal Feeding Operations (CAFOs) or Confined Animal Feeding Operations depending on the number of animals. Although the EPA doesn't monitor odor or insects, livestock waste that emits these chemicals also contributes to whether bugs become pests.

The type of waste management system also factors into how an animal feeding operation is classified. Livestock manure, urine, bedding, and other farm waste can be disposed of either as solids or as liquids. Correct waste management can minimize pollutants, odor, and insects.

The Insects

The most common insects found around all types of farm animals are house and stable flies, although horse, face, blow, and horn flies also may be present. House flies breed in manure, especially in piles of almost pure fecal material. Stable flies and many of the other fly varieties lay their

eggs in decaying organic materials such as livestock bedding contaminated with feces and urine found in loafing areas, feedlots or stalls. A generation of flies can go from egg to adult in just 10 days.

To avoid insect problems, livestock operations that use solid manure management systems need to spread materials cleaned out of animal areas at least once a week.

Since swine operations usually use lagoons, or liquid manure management systems, to dispose of animal manure and urine, flies generally aren't too much of a problem.

Mosquitoes can be a problem anywhere standing water is present, including the edges of waste lagoons that provide a natural environment for the tiny blood-sucking insect. *Culex* mosquitoes, that transmit West Nile virus to humans and animals, breed in water if allowed to remain in gutters, tires, buckets, water troughs, birdbaths, even puddles – anywhere water can collect and is not cleaned out on a regular basis.

Threat from Insects

Generally, flies are just pests for animals and people, but large numbers of the insects can agitate livestock. When animals are overly stressed, their weight may drop, affecting

meat quality and quantity. In the case of chickens and dairy cows, egg and milk production can be significantly affected.

Face flies, which look similar to house flies, and horn flies can be a problem for cattle kept in small pasture areas. As the name applies, face flies feed on secretions from eyes and nostrils. They also will feed on cuts, scrapes, and the spots where other insects have bitten an animal. Face flies can carry the bacteria that causes pink eye in cattle.

Other flies such as the deer flies and the stable flies can deliver sharp bites to people and livestock. Stable flies actually use bayonet-like mouthpieces that they poke through the outer layer of skin in order to suck blood. The incidence of biting is usually worst at the peak of fly populations and activity — generally August and September depending on the climate.

Although house flies and stable flies have been implicated in carrying a number of organisms that cause diseases, no evidence exists that they have caused outbreaks of any human or animal illness.

However, mosquitoes are known to spread a number of zoonotic diseases – illnesses that both animals and people can contract. In Indiana, these include West Nile virus and Eastern and Western equine encephalitis. In other parts of the United States, Mexico, Central, and South America mosquito-borne diseases also include malaria, Venezuelan equine encephalitis, yellow fever, and dengue fever.

Lice occasionally can be a problem for cattle, poultry, swine, and sheep operations. But these are a different species than the ones that attack people.

Insect Abatement

The most effective and efficient method to control both mosquitoes and flies is to keep the barns, loafing areas, and pastures as clean as possible. This includes:

- Emptying and cleaning weekly anything that has standing water.
- Clearing weeds and brush from around the edges of any bodies of water and keeping grass and weeds cut closely around livestock barns and storage facilities.
- Fixing broken drain tiles in the fields.
- Removing manure, spilled feed, wet straw, or any other decaying plant material at least twice weekly to prevent breeding of house and stable flies. These materials can be spread on fields well away from barns and loafing areas or added to water to liquefy and then spread or put in a liquid manure pit. If a pit is used, the solid waste should not come above the water line.
- Putting all garbage in cans with tight or locked lids. Wet garbage should be put in garbage bags inside the cans. This prevents the flies from using the garbage as a breeding site.

Larvicides and insecticides can aid with insect control, but sanitation and waste removal must be the primary line of defense. Larvicides can break flies' breeding cycles if used directly on manure and other fly habitat, or if used as a feed additive.

Applications of insecticides can be applied as sprays or fogs depending on whether they are used on an animal or to cover an area.

Insecticides include permethrin, synergized pyrethrins, cyluthrin, lambda-cyhalsthrin, dimethoate, tetrachlorvonphos. Baits also are available.

Cattle can be fitted with insecticide-laced ear tags to control face and horn flies in the pasture.

In general, insects won't be a significant problem for animals, farmers, or farm neighbors when livestock facilities are well-designed with proper sanitation methods that eliminate insect breeding areas, and where livestock are kept healthy in waste-free areas.

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