Dairy Cattle & Dairy Premise

Pest Management

LSU AgCenter Research & Extension

External Parasites

The external parasites that attack Louisiana dairy cattle include several species of insects, mites and ticks that feed externally or from the outside. These pests include the horn fly, stable fly, horse and deer flies, lice, mange mites, ticks and mosquitoes. The cattle grub is usually included with the external parasites, although by definition it could be classified as an internal parasite. Of this group, the stable fly, the horn fly and lice are probably the most important pests in Louisiana. Ticks, mange mites and the cattle grub are probably the least important, and problems with these pests are rare. The house fly is not a blood-feeding livestock parasite, but these flies are certainly an important pest of confined dairy cattle.

The external parasites of dairy cattle are the same as those of pastured beef cattle. For a further explanation of their damage and biology, refer to the Louisiana Cooperative Extension Service Publication 1418, "Control of External Parasites on Beef Cattle."

External parasites affect lactating dairy cattle in much the same manner that they affect other cattle. Heavy pest populations can cause cattle to lose weight or fail to gain weight. They also cause reduced resistance to diseases, reduced resistance to harsh environments, anemia and reduced milk production. Also, recent research indicates that the incidence of mastitis can be reduced with effective horn fly control. Although all of these effects are important, the ultimate, and most critical, loss to most dairy producers is in milk production.

The pesticides recommended on page 4 in Table 1 include only those products labeled for use on lactating dairy cattle (dairy cows that are being milked). These pesticides also can be used on non-lactating dairy cattle such as dry cows, replacement heifers, calves and bulls. There are some insecticides labeled for non-lactating dairy cattle only, but they are not listed in this publication. For example, many of the insecticide ear tags labeled for beef cattle are also labeled for non-lactating dairy cattle. Some pesticides labeled for non-lactating dairy cattle have a freshening interval, which is the period between the date of last application and the date of calving.

Always use good judgment in the selection and application of pesticides. Failure to do so may result in illegal pesticide residues in the milk. Never use pesticide recommendations for beef cattle or other livestock, because these products may not be labeled for lactating dairy cattle.

Fly Control in and Around Dairy Barns

Flies are normally the main premise problem involved with dairy production. The two primary fly species found in barns and pens are the stable fly and the house fly. Although they provide a common problem, there are important biological differences between the two species. The stable fly is a true external parasite that sucks blood from its host animal. The house fly is a filth fly that usually feeds on decaying organic matter and annoys cattle by feeding on secretions.

There are similarities and differences in the breeding habits of these two flies, too. The stable fly lays its eggs in some form of decaying organic matter mixed with moist manure. Wet grain, silage, haylage and fermenting green chopped material all make an excellent medium for the development of stable fly larvae. House flies can breed in the same medium that stable flies use, but they also breed in fresh manure. Stable flies never breed in fresh manure. Stable flies will usually rest in shaded areas during the heat of the day. House flies tend to be active during the daytime, but they roost at night under eaves or inside buildings on walls and ceilings.

Both flies are a nuisance and irritate dairy cattle and workers. House flies transmit numerous important diseases, plus cattle infections such as pink eye and mastitis. They are also associated with increased bacteria count in milk. In addition to the problems these flies cause on the dairy premise, heavy fly populations will sometimes migrate from

the dairy to nearby homes and neighborhoods where they are also a nuisance.

Effective, long-term fly control on a dairy premise requires a sound integrated pest management program. Insecticides are an important part of the program, but, if used alone, they will either be ineffective or their effectiveness will be short lived. Probably 75% of the solution to effective fly control is sanitation and waste management. That is, you must take a preventive approach to fly control, and this involves eliminating the breeding habitat of both fly species. The following management practices will greatly enhance fly control.

1. Remove manure from the dairy premise weekly. If manure cannot be hauled regularly, then it should be spread thinly to facilitate drying, or it can be stacked and covered with a black plastic tarp.
2. Do not allow feed and other organic matter to spoil and decompose on the premise. Clean around feed bunks where spilled feed may accumulate. Also, clean pens and calf hutches where straw and hay are used for bedding.
3. Provide for good drainage in the dairy pens and around the barn. This will reduce the moisture source and allow manure to dry faster.

Although these practices may seem burdensome, they will eliminate the habitat where most of the life cycle (egg, larva and pupa) of both fly species occurs. It's much easier to prevent a heavy fly infestation from developing than it is to control an existing one.

Insecticides can be used in several ways to help control flies in and around the dairy barn.

Residual Surface Sprays - Residual sprays are normally applied to interior and exterior surfaces where flies are likely to roost or rest. These areas include walls, ceilings, eaves, partitions and stanchions. Surface sprays should be applied to the point of run-off with a low pressure sprayer. Smooth surfaces will require less spray than rough, porous surfaces. Also, wettable powder formulations usually have a longer residual than do emulsifiable concentrates. Residual, surface sprays can be effective, but they should not be used as the front line fly control practice. Continuous exposure to insecticides will eventually select for resistance, especially with house flies. In general, use residual, surface sprays only occasionally or as a last resort to knock down a heavy, existing infestation. It is also a good resistance management practice to rotate insecticide classes when making a surface treatment. (See Table 2 on page 6.)

Manure Sprays - These sprays are directed at the larval maggots as well as the adult flies. Insecticides should be applied to manure only when it cannot be hauled, dried or composted. Spraying moist manure is normally a last resort. Insecticides should be applied to wet the surface, but not to saturate the manure. Normally, about one gallon of spray solution will treat 100 square feet of manure surface. All insecticides labeled for manure treatment belong to the organophosphate class. (See Table 3 on page 7.)

Space/Aerosol Sprays - Insecticides used for space sprays are normally applied with foggers or mist blowers. They are most effective when applied inside of buildings. They provide rapid knock down of flies present at the time of application, but they offer little or no residual control. As with all insecticides, use space sprays sparingly and only as a part of the total fly control program. Insecticides labeled for use as a space spray in and around the dairy barn include Vapona, various formulations of permethrin such as Ectiban and Guard Star, and ready-to-use formulations of pyrethrins and synergists. Not all of these products, however, are labeled for use in the milk room (see page 3). Refer to the respective insecticide label for specific instructions on how to mix and apply these insecticides as a space spray.

Feed Additives - These insecticides are administered through the feed and are present in the manure to control fly larvae (maggots). They have no effect on adult flies. Feed additives are not effective on stable fly larvae, and they are effective on house fly larvae only if the eggs are laid in fresh manure. Insecticides such as Rabon and Methoprene are registered as feed additives.

Baits - Insecticide baits can help to control house flies, but they are useless for stable flies because this pest is a blood-sucking fly. Malathion can be used to prepare liquid sugar baits. Also, commercially prepared dry baits containing 1% methomyl include Apache, Improved Golden Marlin and several others. Ouickbayt, a new insecticide bait, can be used as a scattered bait outside, but must be placed in bait stations when used inside the milking parlor. In general, do not place baits where livestock, pets or small children might eat them. Fly strips baited with Muscalure and nithiazinine (Quickstrike) are also helpful for fly control.

Biological Control - Natural enemies of flies include various beetle, mite and wasp species that occur in and around the dairy barn. Although they are often unnoticed, these biological predators and parasites help in the natural reduction of fly infestations. Beneficial insects are important, but their populations often lag behind the fly population, plus they are susceptible to many of the insecticides used for fly control. Selective and judicial use of insecticides, however, can help preserve natural enemy populations.

Several species of tiny wasps that act as fly parasites are now commercially reared for mass release around dairy barns. These parasitic wasps control flies by first killing the fly pupa and then laying an egg in the pupal case. This breaks the life cycle, and adult flies do not emerge. Although research from Louisiana is lacking, parasitic wasps have been used with some degree of success in other parts of the country. Although this method of biological control no doubt has potential, there is still much to be learned before it can be used with a high level of success and consistency. Several species of wasps are available commercially, but they may or may not be adapted to Louisiana climatic conditions. Also, multiple releases of parasitic wasps during the fly season will probably be required for effective control. And finally, most residual insecticides directed at adult flies are also highly toxic to parasitic wasps.

Other Methods - There are various designs of fly traps, some of which are odor baited. They may trap flies, but their usefulness as the sole component in a fly control program is limited. Fly and mosquito "zappers" (black light with an electrically charged grid) are effective only in certain confined situations. Ultrasonic pest repellants are generally ineffective. Diatomaceous earth is labeled for use as a livestock "feed-through," but there are no data to support its use for control of fly larvae.

Fly Control in the Milk Room

Current health standards require strict fly control in the milk room. The best way to ensure this is to maintain a good fly control program in and around the dairy barn. Also, use good, tight-fitting screens on the milk room doors and windows to prevent fly entry. Very few insecticides can actually be used in the milk room itself. Pyrethrin plus synergist aerosols can be used for quick knock down of flies. Also, Gard Star (40% permethrin) can be used as a space spray in milk rooms. Mix 1.5 ounces of concentrate in one gallon of water and fog or mists at a rate of 2 fluid ounces per 1,000 cubic feet. Another alternative to insecticides is the use of non-insecticidal sticky traps.

Insecticide Precautions and Limitations

Atroban – Do not apply more than once every two weeks.

Co-Ral – Do not apply to sick animals or calves younger than 3 months old. Do not apply in conjunction with natural or synthetic pyrethroids or their synergists or with other organophosphates.

Cydectin – None

Cylence – Do not apply more than once every three weeks.

Delice – Do not apply more than once every two weeks.

Ectiban – Do not apply more than once every two weeks.

Eprinex – Do not treat cattle younger than 8 weeks old.

Pyrethrins – None.

Python Dust – Do not use concurrently with insecticide ear tags that contain zeta-cypermethrin or cypermethrin.

Rabon – None.

Ravap – Do not apply more than once every 10 days.

Taktic – None.

House Fly: adult flies, eggs, larvae and pupae

Table 1. Pesticides for external parasite control on dairy cattle, 2005.

Pest	Chemical and Formulation	Amount to use Concentration	Remarks
Horn Fly	**Sprays:**		
	Atroban 11% EC (permethrin)	Mix 1 pt. of concentrate in 50 gals. of water or 1 oz. in 3 gals. of water.	Apply 1 qt. coarse spray per animal.
	Ectiban 5.7% EC (permethrin)	Mix 1 qt. of concentrate in 50 gals. of water or 1.5 ozs. in 3 gals. of water.	Apply 1 qt. coarse spray per animal.
	(Other permethrin formulations available)		
	Ravap 23% + 5.7%	Mix 1 qt. in 50 gals. water or 2 ozs. per 3 gals. water.	Apply up to 0.5 gal. coarse spray per animal. Repeat as necessary.
	Pour-Ons:		
	Delice 1% (permethrin)	Apply 0.5 oz. of concentrate per 100 lbs. of body weight or a maximum of 5 ozs. per animal.	Apply down backline.
	(Other permethrin formulations available)		
	Cylence	Apply 4 mls. per 400 lbs. of body weight, 12 mls. for animals over 800 lbs.	Apply down backline.
	Eprinex	Apply 1 ml. per 22 lbs. of body weight.	Apply down backline.
	Dusts:		
	Permectrin 0.25% (permethrin)	Up to 2 ozs. dust per animal.	Use self-treatment dust bag or direct application.
	Rabon 3%	Up to 2 ozs. dust per animal.	Use self-treatment dust bag or direct application.
	Co-Ral 1%	Up to 2 ozs. dust per animal.	Use self-treatment dust bag or direct application.
	Python 0.075%	Up to 2 ozs. dust per animal.	Use self-treatment dust bag or apply directly but not more than every three days.
	Backrubber:		
	Co-Ral 11.6%	Self-treatment. Prepare oil solution by mixing 1 qt. of concentrate in 3 gals. of diesel fuel.	
	Ravap 23% + 5.7%	Self-treatment. Prepare oil solution by adding 1 pt. of concentrate to 3 gals. of diesel fuel.	
	Delice 1% (permethrin)	Self-treatment. Prepare oil solution by mixing 3 pts. of concentrate in 3 gals. of diesel fuel. (Other permethrin formulations available.)	

Pest	Chemical and Formulation	Amount to use Concentration	Remarks
Hornfly (continued)	**Ear Tags:**		
	Python (Pyrethroid)		Apply 2 tags per animal.
	Python Magnum (Pyrethroid)		Apply 1 tag per animal.
Lice	**Sprays:**		
	Co-Ral 6.1%	Mix 1 qt. of concentrate per 50 gals. water or 2.5 ozs. per 4 gals. water.	Wet animals thoroughly. Do not make applications at less than 10 days apart.
	Co-Ral 11.6%	Mix 1 pt. of concentrate per 50 gals. water or 1.25 ozs. per 4 gals. water.	Wet animals thoroughly. Repeat as necessary.
	Ravap 23% + 5.7%	Mix 2.5 qts. of concentrate per 50 gals. or 5 ozs. per 3 gals. water.	Apply up to 0.5 gal. coarse spray per animal. Repeat as necessary.
	Taktic 12.5% (amitraz) (other amitraz formulations available)	Mix 1 pt. concentrate per 50 gals. water or 1 oz. per 3 gals. water.	Use up to 2 gals. coarse spray per grown animal.
	Atroban 11% (permethrin)	Mix 2 pts. concentrate per 50 gals. water or 2 ozs. per 3 gals.	Apply 1-2 qts. coarse spray per animal.
	Ectiban 5.7% (permethrin)	Mix 2 qts. per 50 gals. water or 4 ozs. per 3 gals. water.	Apply 1-2 qts. coarse spray per animal.
	(Other permethrin formulations available.)		
	Pour-ons:		
	Cydectin	Apply 1 ml. per 22 lbs. of body weight.	Apply down backline. Also provides short term hornfly control.
	Delice 1% (permethrin)	Apply 0.5 oz. concentrate per 100 lbs. of body weight, or a maximum of 5 ozs. per animal.	Apply down backline. For optimum control, make 2 applications at 2-week interval.
	(Other permethrin formulations available.)		
	Cylence	Apply 8 mls. per 400 lbs. of body weight, 24 mls. for animals over 800 lbs.	Apply down backline. For optimum control, make 2 applications at 3-week interval.
	Eprinex	Apply 1 ml. per 22 lbs. of body weight.	Apply down backline. Also provides horn fly control for 7 days.
Ticks	Taktic 12.5% (amitraz) (other amitraz formulations available)	Mix 1 pt. concentrate in 50 gals. water or 1 oz. in 3 gals. water.	Use up to 2 gals. coarse spray per grown animal.
	Ravap 23% + 5.7%	Mix 1 gal. concentrate in 50 gals. water or ½ pt. in 3 gals. water.	Apply up to 0.5 gal. coarse spray animal.
	(Ear tags recommended for horn fly control will control ear ticks also.)		

Pest	Chemical and Formulation	Amount to use Concentration	Remarks
Horse Flies, Stable Fly, Mosquitos	Pyrethrins + Synergist (Several formulations)	Mix as per label instructions. May be ready-to-use.	Spray as needed. Frequent applications are usually required.
Mange Mites	Taktic 12.5% (amitraz) (other amitraz formulations available)	Mix 1 pt. concentrate in 50 gals. water or 1 oz. in 3 gals.	Use up to 2 gals. coarse spray per grown animal.
	Atroban 11% (permethrin)	Mix 1 qt. concentrate in 50 gals. water or 2 ozs. in 3 gals.	Apply 1-2 qts. coarse spray per animal.
	Ectiban 5.7% (permethrin) (Other permethrin formulations available.)	Mix 2 qts. concentrate in 50 gals. water or 4 ozs. in 3 gals.	Apply 1-2 qts. coarse spray per animal.
Cattle Grub	Eprinex	Apply 1 ml. concentrate per 22 lbs. of body weight.	Apply down backline.
	Cydectin	Apply 1 ml. concentrate per 22 lbs. of body weight.	Apply down backline.

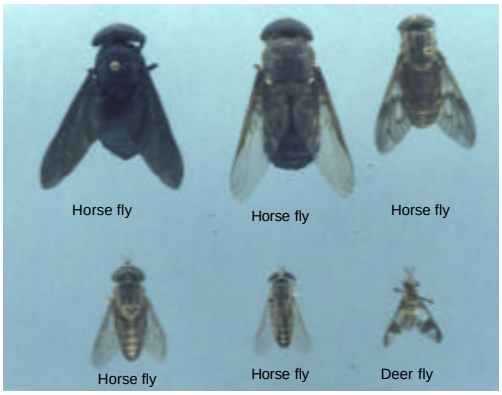
Table 2. Insecticides for fly control in and around dairy barns, 2005.

Insecticide	Chemical Class	How to mix	Remarks
Permethrin	Pyrethroid	Mix 0.1% spray solution as per label instructions	Apply 1 gal. per 750 sq. ft.
	(Numerous formulations: Atroban, Ectiban, Anchor, Permectrin, Gardstar, Insectrin and others.)		
Countdown	Pyrethroid	Prepare 0.1% spray solution as per label instructions.	Inside use spot treatment only. Treat surfaces outside.
Ravap	Organophosphate	Mix 5 ozs. concentrate per gal. water or 1 gal. per 25 gals.	Apply 1 gal. per 500-1,000 sq. ft. Remove animals before spraying and keep out for at least 4 hours.
Rabon	Organophosphate	Mix 4 lbs. concentrate per 25 gals. water.	Apply 1 gal. per 500-1,000 sq. ft. Remove animals before spraying and keep out for at least 4 hours.
Dimethoate	Organophosate	Prepare 1% spray solution as per label recommendations.	Apply 1 gal. per 500-1,000 sq. ft. Remove animals before spraying.
Grenade WP	Pyrethriod	Prepare solution as per label instructions.	Remove animals before spraying.
Vapona 40%	Organophosphate	Mix 1 gal. in 100 gals. water or 2 oz. in 1.5 gals. water	Apply as a coarse spray at 1 qt. per 1,000 square feet.

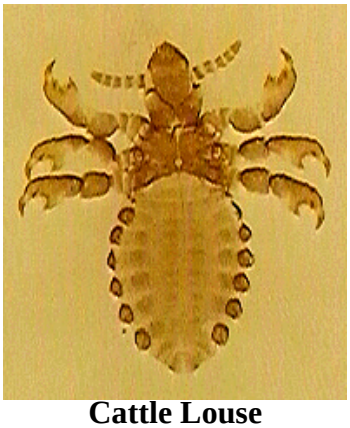
Table 3. Insecticides for manure treatment, 2005.

Insecticide	Chemical Class	How to mix	Remarks
Dimethoate (4)	Organophosphate	Mix 4 ozs. in 5 qts. water.	Apply as a coarse spray.
Rabon 50	Organophosphate	Mix 5 lbs. in 25 gals. water.	Apply 1 gal. per 100 square ft. Can be repeated at 7-10-day intervals.
Ravap	Organophosphate	Mix 5 ozs. in 1 gal. water or 1 gal. in 25 gals. water.	Apply 1 gal. per 100 sq. ft. Can be repeated at 7-10-day intervals.
Vaponna 40%	Organophosphate	Mix 2 ozs. in 1.5 gals. water or 1 gal. in 100 gals. water.	Apply 1-2 qts. per 100 sq. ft. Can be repeated at 7-day intervals.

Horn Flies



Different horse fly species and the deer fly.



Cattle Louse

Lone star tick

Cattle grub

Mange mite

Mosquito

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