

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
BARNs, STABLES AND DAIRY BARNs (Not for human dwellings) See Poultry section for poultry houses.	Adult Flies	Sprays and Fogs Rabon 50% WP (tetrachlorvinphos)	3 lb 50% WP in 7.5 gal water. Spray 1 gal/500-1,000 sq ft to wet all surfaces. Repeat every 3 or 4 weeks.	General Precautions for All Insecticides Are: <ol style="list-style-type: none"> 1. Apply where flies congregate; i.e., ceilings, light fixtures, walls, windows, etc. DO NOT apply within 1 week of applying whitewash. 2. DO NOT spray in milk houses. 3. DO NOT spray on milk utensils. 4. DO NOT contaminate feed or water supplies. Cover them when spraying. 5. Remove animals before spraying. 6. Keep out of reach of animals and children. 7. DO NOT mix a combination of compounds. 8. Wear protective clothing—jacket or coveralls, cap or hat, rubber gloves, and preferably a respirator. Wash protective clothing after using. Wash with soap and water after spraying. <p>Apply as directed on label. Treat walls, ceilings, moldings, screens, door and window frames and similar resting places.</p> <p>Apply 0.5% dilution as a space spray mist; spray at the rate of 1 qt per 8,000 cu ft or at 1 qt per 1,000 sq ft for a coarse surface spray. For the 1.0% dilution, apply as above but only half the total volume of mixture. DO NOT use this product in areas where animals have received a direct organophosphate application within 8 hours. If animals are present, ventilate treated area immediately following application. DO NOT contaminate water, feed or foodstuffs, milk or milking utensils.</p> <p>Wet surfaces where flies rest. DO NOT spray animals, humans, animal feed or water. DO NOT apply more than once per week.</p> <p>May be applied to walls, ceilings and other fly resting areas in unoccupied animal housing areas.</p> <p>Apply dilution to horizontal and overhead surfaces where flies rest. DO NOT make applications in areas where animals are present. Allow to dry before reintroducing animals or birds. DO NOT contaminate animal food, feed or water during application.</p> <p>Spray 1 gallon of diluted spray to treat 500-1,000 sq ft fly resting surfaces.</p> <p>Other similar permethrin formulations are registered as surface sprays.</p> <p>1 gallon covers 1,000 sq ft. DO NOT use in milk rooms.</p> <p>Target areas where flies rest such as ceilings, trusses, rafters, supports, walls, windows and vegetation.</p> <p>Spray 1 gallon of diluted spray to treat 500-1,000 sq ft fly resting surfaces.</p>
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	1 gal Ravap EC/25 gal water. Allow 4 hours to dry before returning cows to barn. Apply 1 gal spray solution/1,000 sq ft.	
		Atroban 11% EC (permethrin) Atroban 42.5% EC (permethrin)	1 pt/10 gal clean water. Apply 1 gal/750-1,000 sq ft. Provides up to 8 weeks of control. 4 oz/10 gal water. Apply 1 gal/750-1,000 sq ft.	
		Permethrin 3.2 EC, Tengard SFR (36.8% permethrin)	4 oz/12.5 gal water. Apply 1 gal/750 sq ft.	
		Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.	
		Vapona Concentrate Insecticide (R) (40.2% dichlorvos)	2 oz/1.5 gal water (0.5% dilution) 5 oz/2 gal water (1.0% dilution)	
		Annihilator (0.02% deltamethrin)	Ready to use.	
		Annihilator Polyzone (4.75% deltamethrin)	Mix and apply according to directions.	
		Grenade ER, Oxyfly, Cyonara 9.7 (9.7% lambda-cyhalothrin)	Mix 0.2-0.4 oz/gal water to make a 0.015% to 0.03% dilution.	
		Pyrethrins (synergized)	Use as directed on label.	
		Permethrin II (10% permethrin)	1 qt 10% permethrin/25 gal water. Use 1 gal/750 sq ft.	
		GardStar 40% EC (permethrin)	4 oz/10 gal of water (surface spray).	
		Talstar, Bifenthrin I/T 7.9F, Optashield CS (7.9% bifenthrin)	Mix with water and apply 0.33-1.0 oz product per 1,000 sq ft.	
		StandGuard 5.9 (5.9% gamma-cyhalothrin)	Mix 0.16 oz (5 mL)/gal of water.	

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		QuickBayt, Martin's Quick Draw and Bonanza Fly Bait (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene) Ready-to-Use Fly Bait	Scatter 6 oz of bait/1,000 sq ft around the outside of dairies, stables, animal barns and inaccessible areas of animal housing facilities, or mix 1.5 oz bait/1 oz water, mix thoroughly, let stand for 15 minutes and paint on non-dusty fly resting areas inaccessible to animals.	Use around the outside of dairies and other animal housing structures. DO NOT apply to milking equipment or allow bait to contact food or water. Can be used inside horse stables, broiler, turkey and caged layer houses, swine confinement buildings, dairy barns and milking parlors ONLY if used in bait stations. Bait stations must be placed at least 4 feet above ground level and in areas inaccessible to animals, children or pets.
		QuickBayt Spot Spray (10% imidacloprid and 0.1% muscalure (z)-9-tricosene)	Mix 16 oz/gal of water. Carefully read label directions.	For use in and around agriculture production facilities such as poultry houses, turkey and chicken houses, cattle, sheep and goat facilities, feedlots, dairy barns, swine confinement buildings, dog kennels and horse stables. Carefully read label directions. DO NOT apply on surfaces accessible to children or pets. DO NOT apply where animals can ingest the bait. DO NOT apply to milking equipment at dairy facilities.
		QuikStrike Fly Scatter Bait (0.5% dinotefuran and 0.04% (z)-9-tricosene)	Scatter 4 oz/500 sq ft of fly breeding area, or use bait in any commercial bait station.	Use as a scatter bait only around the outside of animal housing areas. Bait stations must be hung at least 4 feet from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.
		QuikStrike Fly Bait Spray (0.5% dinotefuran and 0.04% (z)-9-tricosene)	To spray on, mix 2 oz product with 16 oz of water to treat 250 sq ft. To paint on, mix 2 oz product with 3 oz water to treat 250 sq ft.	Apply to fly resting areas such as walls, fences, window sills, posts, etc., typically 4 feet above the floor surface. Do not apply to milking equipment.
		QuikStrike Fly Abatement strip (1.0% nithiazine)	Ready-to-hang strip.	Hang 1 strip for every 150-300 sq ft. Hang close to the ground or floor in areas inaccessible to animals, birds or children. Do not place in areas where strips will become wet.
		Golden Malrin (1.1% methomyl and 0.049% (z)-9-tricosene)	Scatter 4 oz/500 sq ft of fly breeding area, or use bait in any commercial bait station.	Use as a scatter bait only around the outside of animal housing areas. Can be used in walkways of caged layer houses. Bait stations must be hung at least 4 feet from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.
		Elector Bait (0.5% spinosad and 0.04% (z)-9-tricosene)	Scatter 12-16 oz of Elector Bait per 2,000 sq ft. Elector Bait can also be used in bait stations or applied to hang boards/cards. Use 8-10 bait stations or hang boards/cards per 2,000 sq ft. See label for more detailed instructions on bait station and hang board/card use.	DO NOT allow Elector Bait to contact food, feedstuffs, water, milk or milking utensils. DO NOT use where milk is processed or stored. When using Elector in bait stations, hang stations in areas inaccessible to children, livestock and pets, Elector Bait stations or hang cards must be located at least 4 feet above the ground.

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BARNs, STABLES AND DAIRY BARNs (Not for human dwellings) See Poultry section for poultry houses.	Adult Flies (cont.)	Baits Zyrox Fly Granular Bait (0.5% cyantraniliprole)	Ready-to-use granular fly bait. Apply from 3.2-6.4 oz granular bait per 1,000 square feet. Depending upon application site, product can be scattered or placed in bait stations.	Do not place bait in areas accessible to food-producing animals or animals being grown for food. Do not place bait in areas accessible to children and pets. Bait stations must be used if bait is applied inside residential structures, commercial establishments, food processing plants, restaurants and animal housing units. Do not apply bait outdoors when rain is expected.
		QuikStrike Fly Abatement Strip (1% nithiazine)	Ready-to-use strip. Hang 1 strip/100-300 sq ft depending on fly population.	Hang in enclosed areas protected from rain. Keep out of reach of children and animals.
	Fly Maggots	Neporex 2 SG (2% cyromazine)	<p>Spray: Mix 1 lb Neporex 2 SG per gallon of water. Apply as a coarse low-pressure spray on fly breeding sites with suitable spray equipment (hand-pressurized or power-operated sprayers). One gallon of finished solution will treat 200 sq ft.</p> <p>Scatter: Apply 1 lb Neporex 2 SG per 200 sq ft. Apply directly and evenly on fly breeding sites. Use dry scattering only in case of wet manure or liquid manure.</p> <p>Treat edges and spillage areas around feed and water troughs and where manure accumulates. The spray solutions may also be applied 3 days after manure removal and repeated after next manure removal or when fly larvae are found.</p>	DO NOT apply directly to livestock or livestock feed. DO NOT feed treated manure to animals. Allow at least 1 day between last application and harvest. May be used with slatted floors to treat areas where manure and other refuse accumulate to create fly breeding sites.
		Dimilin SL (22% diflubenzuron)	For spot treatments: Mix 7.5 oz Dimilin SL to 15 gallons of water. Apply one quart per 10 square feet area of fly breeding material infested with fly eggs and larvae	
		Tekko 10 (9.3% novoluron)	For spot treatments: Apply 3 oz. Tekko 10 per 1,000 square feet of fly breeding material in sufficient volume to ensure coverage.	
	Fire Ants	Apply baits only on the perimeter of barns, stables and dairy barns.		
		Amdro Pro (hydramethylnon)	5 Tbsp/mound or 1.0-1.5 lb/acre if broadcast	Mound treatment – uniformly distribute materials 3-4 feet around the mound NOT on top of mound.
		Extinguish (methoprene)	3-5 Tbsp/mound or 1.0-1.5 lb/acre if broadcast	
		Extinguish Plus (methoprene and hydramethylnon)	3-5 Tbsp/mound or 1.0-1.5 lb/acre if broadcast	
		Esteem Ant Bait (pyriproxyfen)	2-4 Tbsp/mound or 1.5-2.0 lb/acre if broadcast	
		Clinch Ant Bait (abamectin)	5-7 Tbsp/mound or 1.0 lb/acre if broadcast	

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BEEF CATTLE	Cattle Grub (Also controls lice, some reduction of horn flies.)	Pour-Ons			0	
		Cyectin (moxidectin)	1 mL/22 lb body weight.	Pour along midline of back.	Do not use in calves to be processed for veal.	
	Systemics for grub control should be applied before Oct. 15 in Arkansas. Treatment later than Oct. 15 may cause toxic reactions in cattle from dying grubs.	Ivermectin 0.5% pour-on (Ivomec), generics available	1 mL/22 lb body weight.	Pour along midline of back.	48	
		Dectomax pour-on (doramectin)	1 mL/22 lb body weight.	Pour along midline of back.	45	
		Ivomec Eprinex pour-on (eprinomectin)	1 mL/22 lb body weight.	Pour along midline of back.	0	
	Proper timing of treatment is important. For most effective results, cattle should be treated as soon as possible after heel fly activity ceases. Heel fly activity ceases in Arkansas any time after Aug. 1.	Injections				
		Ivermectin 1% injection, generics available	1 mL/110 lb body weight.	Subcutaneous injection.	48	
		Dectomax injection (doramectin)	1 mL/110 lb body weight.	Subcutaneous injection.	35	
		Cyectin injection (moxidectin)	1 mL/110 lb body weight.	Subcutaneous injection.	21	
	Horn Flies, Lice (Aids in control of face flies.)	Dust Bags				
Co-Ral (Coumaphos) 1% livestock dust		Dust bag treatment; self-treatment. No mixing necessary.	DO NOT contaminate feed or water.	0		
permethrin (Permethrin and others) 0.25% D		Dust bag treatment; self-treatment. No mixing necessary.	Dust bags have shown an indication of good lice control when left in place during winter months. Install in gates, doorways, loafing areas, etc.	0		
ProZap Dust'R or Rabon 3% Dust (tetrachlorvinphos)		Dust bag treatment; self-treatment. No mixing necessary.		0		
Python Dust (0.075% zeta-cypermethrin and 0.150% piperonyl butoxide)		Dust bag treatment; self-treatment. Ready-to-use dust.	DO NOT use Python Dust if currently using ear tags containing cypermethrin or zeta-cypermethrin.	0		
Rabon 3% Livestock Dust (tetrachlorvinphos)	Dust bag treatment; self-treatment. Ready-to-use dust.	Dust bags have shown an indication of good lice control when left in place during winter months. Install in gates, doorways, loafing areas, etc.	0			
Several different dusts can be purchased and hand-sprinkled on cattle. Do not use these in dust bags unless the label indicates you can do so.						

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BEEF CATTLE	Horn Flies, Lice (cont.) (Aids in control of face flies.)	Backrubbers				
		Permethrin II, Martin's Permethrin, Durvet Permethrin, Insectrin, Prozap X, Permethrin 10 (10% permethrin)	Backrubber treatment. Add 1 qt to 20 gal oil. Apply 1 gal solution/20 ft cable to saturate backrubber.	Backrubbers help prevent lice infestations. Install cable in gates, doorways, loafing areas, etc., at first sign of pest. DO NOT use motor oil. Use only No. 2 oil or diesel oil. (Mineral oils are a little less irritating than fuel oils.)	0	
		Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Dilute 8 oz. in 5 gallons of oil.		0	
		Co-Ral Fly and Tick Spray (6.15% coumaphos)	Use 9 3/4 oz/gal of fuel oil. Apply 1 gal solution per 20 ft cable to saturate backrubber.		0	
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	Backrubber treatment. Use 1 qt of Ravap in 7 gal of No. 2 diesel oil. Apply 1 gal of mixed solution/20 ft cable to saturate backrubber.		0	
	Prolate/Lintox HD (11.75% phosmet)	Use 1 pt/6.25 gal of fuel oil. Apply solution to backrubber.	DO NOT treat sick, stressed or convalescent animals or animals less than 3 months of age. Phosmet is a cholinesterase inhibitor. Consult veterinarian at first sign of adverse reaction.	3		
	Horn Flies, Face Flies, Biting and Sucking Lice	Pour-Ons				
		CyLence (1% cyfluthrin)	Ready to use in dispenser.	Use 4-12 mL depending on weight of animal. See label.	0	
		Brute (10% permethrin)	Ready to use in dispenser.	Also aids in control of other flies.	0	
		Boss (5% permethrin)	Ready to use.	Pour correct dose on back and down the face.	0	
Permethrin 1% pour-on		Ready to use.	Pour correct dose on back and down the face.	0		
Synergized Permethrin Pour-on (permethrin and piperonyl butoxide), Permethrin CDS, Martin's Fly Ban, Ultra Boss, Synergized DeLice, Permethrin S, Cattle Armor and generic pour-ons		Ready to use.	Pour correct dose on back and down the face.	0		
Ultra Saber Pour-on and Cyonara Plus Pour-on (1% lambda-cyhalothrin and 5% piperonyl butoxide)		Ready to use.	Pour correct dose down the backline at rates specified on label. DO NOT APPLY TO FACE OF CATTLE.	0		
StandGuard Pour-on (0.05% gamma-cyhalothrin)		Ready to use.	Pour correct dose down the backline at rates specified on label. DO NOT APPLY TO FACE OF CATTLE.	0		
Clean-Up Pour-on (5.0% diflubenzuron and 5.0% permethrin) or Clean-Up II pour-on (3% piperonyl butoxide and 5% permethrin)	Apply 3 mL/100 lb of body weight along backline and down face. DO NOT apply more than 30 mL to any animal.		0			

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BEEF CATTLE	Horn Flies, Face Flies, Biting and Sucking Lice	Pour-Ons Saber Pour-on and Cyonara Lambda Pour-on (1% lambda-cyhalothrin)	Apply 10 mL to animals less than 600 lb or 15 mL to animals over 600 lb. Pour along the backline of the animal.	DO NOT apply more than 4 times within a 6-month period. DO NOT apply more often than every two weeks. Not recommended for veal calves. DO NOT apply to dry or lactating dairy cows. DO NOT apply to the face of beef cattle or calves.	0
		Ivomec, Ivermectin, Bimectin pour-on (0.5% ivermectin)	1 mL/22 lb body weight.	Apply along the topline of the back from withers to the tailhead; not labeled to control face flies.	48
		Cydectin (0.5% moxidectin)	1 mL/22 lb body weight.	Apply along the topline of the back from withers to tailhead; not labeled to control face flies. Provides 7 days of persistent activity against horn flies.	0
		Dectomax Pour-on (0.5% doramectin)	1 mL/22 lb body weight.	Apply along the topline of the back from withers to tailhead; not labeled to control face flies. DO NOT use on calves to be processed for veal. Provides 7 days of persistent activity against horn flies.	45
		Ivomec Eprinex pour-on (eprinomectin)	1 mL/22 lb body weight	Pour along midline of back from withers to tailhead. Provides 7 days of persistent activity against horn flies.	0
		Endectocides		Endectocides (ivermectin, moxidectin and doramectin) are used as part of an integrated control program for internal and external parasite management. For optimal horn fly control over an extended period, use other methods and chemistries.	
		Remote Delivery Capsule AIM-L VetCaps (1.5% lambda-cyhalothrin and 7.5% piperonyl butoxide), one vetcap contains 10 mL product)	Apply only 1 VetCap per animal to the upper two-thirds of the body between the front shoulder and 6 inches ahead of the tail with an AIM-L VetGun. Application should be made no closer than 15 feet and no further than 30 feet from the animal.	Use only on cattle weighing 600 pounds or more. DO NOT repeat treatment more often than once every 2 weeks or more often than 4 times within any 6-month period. DO NOT expose VetCaps to humidity above 50% or temperatures above 70°F for any extended period. DO NOT apply to any animal in or within 10 feet of any body of water.	0
Horn Flies, Face Flies	Oral Larvicides Rabon Oral Larvicide (tetrachlorvinphos)	Read label directions carefully. Use salt block or pre-mixed mineral as directed on the label.	Start feeding early in spring before flies appear. Oral larvicides pass through the digestive system and kill fly larvae in manure. For horn, face, stable and house fly control.	0	
	Altosid IGR (methoprene)	Read label directions carefully.	For horn fly control.	0	

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BEEF CATTLE	Horn Flies, Face Flies (cont.)	Oral Larvicides ClariFly Larvicide 0.67% premix or Justify feedthrough – 3% (diflubenzuron)	Read label directions carefully.	For house, stable, horn and face fly control.	0	
		Ear Tags and Ear Strips A number of brand names of insecticide-impregnated ear tags are available for purchase.	Use number of tags recommended on label. Alternating the use of pyrethroid, organophosphate, pyrazole and macrocyclic lactone ear tags will mini-mize resistance/tolerance issues. Ear tags are primarily used to control horn flies and ear ticks; however, some ear tags will aid in controlling face flies.	If ear tags within the same insecticide class have been used for two or more consecutive years, substantial reduction in control effectiveness is possible. Use dusts, sprays or ear tags in a different insecticide class or alternative methods.	0	
	(Aids in control of face flies.)	Horn Flies, Lice, Ticks	Dips Prolate/Lintox-HD (11.75% phosmet)	Follow label directions.	DO NOT treat sick, stressed or convalescent animals or animals less than 3 months of age. Phosmet is a cholinesterase inhibitor. Consult veterinarian at first sign of adverse reaction.	3
			Sprays Co-Ral Fly and Tick Spray (6.15% coumaphos)	For horn flies and lice, use 5 oz/4 gal of water; for ticks, use 10 oz/4 gal of water.	One application of these sprays may be sufficient for lice. If live lice are present after 2 weeks, apply a second treatment.	0
			GardStar 40% EC, Tengard SFR (permethrin)	4 oz/2.5 gal of water. Low-pressure spray. 4 oz/25 gal of water. High-pressure spray.	Spray to point of runoff.	0
			Rabon (tetrachlorvinphos)	Mix as directed on label for specific pest. Use between 1/2 and 1 gal of spray per animal. Spray face to aid in face fly control.		0
			Permethrin II 10% EC, Martin's Permethrin, Durvet Permethrin, Prozap Insectrin X, Permethrin 10 (10% permethrin)	Use 1 qt in 100-200 gal water. Re-treat after 3 to 5 weeks. Spray to runoff or fog using 1 gal spray mix per head.		0
			Atroban, Expar 11% EC (permethrin)	1 pt 11% EC/50 gal water for horn fly; 1 pt/25 gal for lice. Use 1 qt spray per head for horn fly and 2 qt spray for lice.		0
			Atroban DeLice 1% (permethrin)	Ready-to-use pour-on; use as directed.		0
			Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Mix 4 to 8 teaspoons per gallon of water. Thoroughly wet animal's hair.	For severe infestations use the 8 oz./gallon rate.	0
	Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	Use 1 pt Ravap/10 gal water for horn flies and lice or 1 pt/6 gal water for ticks; then use 1/2-1 gal of spray mixture per animal.		0		

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BEEF CATTLE	Lice, Internal Parasites	Injectables Ivomec injection (1% ivermectin)	1 mL/110 lb body weight. Follow label directions.	Subcutaneous injection. For sucking lice.	35
		Cydectin injection (moxidectin)	1 mL/110 lb body weight.	Subcutaneous injection. For sucking lice.	21
		Dectomax injection (doramectin)	1mL/110 lb body weight.	Subcutaneous injection. For sucking lice.	35
		Pour-Ons Ivomec, Ivermectin, Bimectin (0.5% ivermectin)	1 mL/22 lb body weight.	Apply along the topline of the back from withers to tailhead.	45
		Cydectin pour-on (moxidectin)	1 mL/22 lb body weight.	Apply along topline of the back from withers to tailhead.	0
		Dectomax pour-on (0.5% doramectin)	1 mL/22 lb body weight.	Apply along topline of the back from withers to tailhead. DO NOT use on calves to be processed for veal.	45
		Ivomec Eprinex pour-on (eprinomectin)	1 mL/22 lb body weight.	Pour along midline of back from withers to tailhead. Provides 7 days of persistent activity against horn flies.	0
	Ear Ticks	Catron IV (permethrin)	Use as directed on label.	Ear tags will not control lone star tick.	0
		Insecticide-impregnated ear tags	Use as directed on label.		see specific label
	Screwworms (maggots in wounds)	Catron IV (permethrin)	Ready to use. Spray wounds thoroughly.		0

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INSECTICIDE EAR TAGS 2020

Organophosphate Tags		
Trade Name	Market Source	Active Ingredient
Corathon	Bayer Corporation Animal Health	coumaphos (2) + diazinon (2)
Co-Ral Plus	Bayer Corporation Animal Health	coumaphos (2) + diazinon (2)
Dominator	Schering-Plough Animal Health	pirimiphos-methyl (2)
Optimizer	Y-TEX Corporation	diazinon (2)
Patriot	KMG-Bernuth, Inc.*	diazinon (2)
Warrior	Y-TEX Corporation	diazinon (2) + chlorpyrifos (2)
Terminator II	KMG-Bernuth, Inc.*	diazinon (2)

Synthetic Pyrethroid Tags		
Trade Name	Market Source	Active Ingredient
CyGuard (5)	Bayer Corporation Animal Health	beta-cyfluthrin (1)
Cylence Ultra (5)	Bayer Corporation Animal Health	beta-cyfluthrin (1) + piperonyl butoxide (4)
GardStar Plus (5)	Y-TEX Corporation	permethrin (1)
Python Ear Tag or Ear Strip**(5)	Y-TEX Corporation	zeta-cypermethrin (1), piperonyl butoxide (4)
Python Magnum (5)	Y-TEX Corporation	zeta-cypermethrin (1) + piperonyl butoxide (4)
Saber Extra	Schering-Plough Animal Health	lambda-cyhalothrin (1) + piperonyl butoxide (4)

Macrocyclic Lactone Tags		
Trade Name	Market Source	Active Ingredient
XP 820 Ear Tag or XP 820 Ear Strip** (5)	Y-TEX Corporation	abamectin (3) + piperonyl butoxide (4)

Insecticide Combination Ear Tags		
Trade Name	Market Source	Active Ingredient
Tri-Zap (5)	Y-TEX Corporation	Zeta-cypermethrin (1) + abamectin (3) + piperonyl butoxide (4)

1 = synthetic pyrethroid, 2 = organophosphate, 3 = macrocyclic lactone, 4 = synergist, 5 = labeled for use on lactating dairy cattle

Carefully read label concerning the number of tags to apply (1 or 2 per animal) and any precautions concerning calves and lactating dairy cattle.

* Ear tags marketed by KMG-Bernuth, Inc., now marketed by Bayer Corporation.

** Attaches to button side of identification tag.

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DAIRY CATTLE, Lactating	Cattle Grub	Ivomec Eprinex pour-on (eprinomectin)	Pour 1 mL/22 lb body weight along backline.	DO NOT treat after Oct. 15 to avoid toxic reactions in cattle unless cattle were treated for grubs at end of heel fly season.
		Cydetin (0.5% moxidectin)	1 mL/22 lb body weight.	Apply along the topline from withers to the tailhead. To avoid undesirable host-parasite reactions, cattle should be treated as soon as possible after heel fly season (between Aug. 1 and Oct. 15).
Horn Flies (Flies around the face)	Sprinkle-On Dusts and Dust Bags	Coumaphos 1% livestock dust, Co-Ral 1% shaker can (coumaphos)	1-2 oz/head.	Apply at first sign of pest. Dust only after milking. Rub dust lightly into hair on poll, neck, back and upper sides. Repeat Co-Ral dust application as necessary.
		ProZap Dust'R or Rabon 3% Dust (tetrachlorvinphos)	1-2 Tbsp/head.	DO NOT apply more than once every 7 days.
		Co-Ral 1% D (coumaphos)	Follow label directions.	Install bags across gate or door where cows leave milking parlor. DO NOT hang bags over feed, mineral or water troughs. No restrictions when used as recommended.
		ProZap Dust'R or Rabon 3% Dust (tetrachlorvinphos)	Follow label directions.	
		Ectiban, Insectrin or Permethrin 0.25% D (permethrin)	Follow label directions.	
		Python Dust (0.075% zeta-cypermethrin and 0.150% piperonyl butoxide)	Follow label directions.	DO NOT use Python Dust if currently using ear tags containing zeta-cypermethrin or cypermethrin. Apply into the hair over the head, ears, neck, shoulders, back and tailhead. Use shaker can, mechanical duster or dusting glove.
Horn Flies, Stable Flies and Flies around the face	Mist Sprays	pyrethrins 0.3% OS	Ready to use.	
		Permethrin II 10% EC (permethrin)	Use 1 qt in 100-200 gal water applied as mist; use 1 gal of mixture per head.	
		Atroban, Expar 11% EC (permethrin)	1 pt/25 gal water.	
		Vapona Concentrate Insecticide (R) (40.2% dichlorvos)	Mix 5 oz/2 gal water to make a 1% dilution. Apply 1-2 oz of the dilution per animal as a fine mist spray (such as an exit sprayer). May be used daily. DO NOT apply in combination with any other dermal organo-phosphate insecticides (trichlofon). DO NOT treat Brahman or Brahman crossbred cattle due to hypersensitivity to organophosphates. DO NOT apply to calves under 6 months of age.	

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
DAIRY CATTLE, Lactating	Horn Flies, Stable Flies and Flies around the face (cont.)	Animal Sprays Permethrin II and generics (10% permethrin)	Follow label directions for low- or high-pressure spray applications or mixing with oil for spot applications.	Care should be taken so the spray does not come in contact with lactating cows' teats unless they are washed with an approved cleansing solution and dried before milking. Apply the spray at least 20 minutes prior to milking or after milking has been completed.
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	Mix 2 oz Ravap per 3 gal of water. Direct spray to cover thoroughly with up to 1/2 gal of the dilution per animal.	
	Horn Flies, Flies around the face	Ear Tags and Ear Strips Several brand names of insecticide-impregnated ear tags are available for purchase.	Use as directed on label. Make sure it states for use on dairy animals. Ear tags registered for use on lactating dairy cattle include Gold Star Plus, Python, Python Magnum, ZetaGard and CyLence. Ear tags are primarily used to control horn flies and ear ticks; however, some ear tags will aid in controlling face flies.	If ear tags within the same insecticide class have been used for two or more consecutive years, substantial reduction in control effectiveness is possible. Use dusts, sprays or ear tags in a different insecticide class or alternative methods.
	(Aids in control of lice and ticks.)	Backrubbers Co-Ral Fly and Tick Spray (6.15% coumaphos)	Use 9 3/4 oz per gal of fuel oil.	Use only diesel oil or No. 2 fuel oil to dilute concentrates. Use 1 gal of oil solution per 20 ft of backrubber. Re-treat back-rubbers weekly. DO NOT treat calves under 6 months old.
		Permethrin II, Martin's Permethrin, Durvet Permethrin, Insectrin, Prozap X, Permethrin 10 (10% permethrin)	1/2 pt/5 gal of oil.	
		Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Dilute 8 oz. in 5 gallons of oil.	
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	5 oz/1 gal of oil.	
		GardStar 40% EC, Tengard SFR (permethrin)	4 oz/10 gal of oil.	Self-use treatment.
		Dusts Python Dust (0.075% zeta-cypermethrin and 0.15% piperonyl butoxide)	Up to 2 oz per animal.	Apply into hair over the head, ears, neck, shoulders, back and tailhead. Use shaker can, mechanical duster or dusting glove. Python Dust is labeled for use in self-treatment dust bags. DO NOT use Python Dust if currently using ear tags containing cypermethrin or zeta-cypermethrin.
		Coumaphos 1% livestock dust	Dust bag treatment; self-treatment. No mixing necessary.	DO NOT contaminate feed or water.
		Permethrin (Permethrin, Prozap, Insectrin) 0.25% D	Dust bag treatment; self-treatment. No mixing necessary.	Dust bags have shown an indication of good lice control when left in place during winter months. Install in gates, doorways, loafing areas, etc.
		ProZap Dust'R or Rabon 3% Dust (tetrachlorvinphos)	Dust bag treatment; self-treatment. No mixing necessary.	Dust bags have shown an indication of good lice control when left in place during winter months. Install in gates, doorways, loafing areas, etc.

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks	
DAIRY CATTLE, Lactating	Horn Flies, Stable Flies and Flies around the face	Oral Larvicides Rabon oral larvicide (7.76% and 97.3% tetrachlorvinphos formulations)	Use salt block or pre-mixed mineral as directed on label. Look for specific instructions on label.	Start feeding early in the spring before flies begin to appear. Continue feeding throughout the summer and into the fall until cold weather restricts fly activity.	
		Altosid IGR (methoprene)	Methoprene is used as a mineral or feed additive.	Methoprene must be used on a program basis for horn fly control.	
		ClariFly Larvicide 0.67% premix or Justify feedthrough – 3% (diflubenzuron)	Read label directions carefully.	Must be used on a program basis. For control of house, stable, horn and face flies.	
	Horn Flies, Face Flies, Biting and Sucking Lice		Pour-Ons CyLence (1% cyfluthrin)	Ready to use in dispenser.	Use 4-12 mL per animal. See label for dosage. Use on both lactating and non-lactating animals.
			Brute (10% permethrin)	Ready to use in dispenser.	Aids in control of other flies.
			Boss (5% permethrin)		
			Permethrin CDS, Martin's Fly Ban pour-on (permethrin and piperonyl, butoxide)	Pour correct dose on back and down the face.	Comes in ready-to-use dispenser.
			Ultra Boss and Synergized DeLice, Permethrin S, Cattle Armor Pour-ons (permethrin and piperonyl butoxide)	Pour correct dose on back and down the face.	Comes in ready-to-use dispenser.
			Clean-Up pour-on (5.0% diflubenzuron and 5.0% permethrin) or Clean-Up II pour-on (3% piperonyl butoxide and 5% permethrin)	Apply 3 mL/100 lb body weight along backline and down face. DO NOT apply more than 30 mL to any animal.	Ready to use.
			Atroban 1% DeLice, Permethrin 1% pour-on (permethrin)	Follow label directions. Ready-to-use pour-on.	DO NOT exceed 5 fluid oz/animal.
	Cyductin (0.5% moxidectin)	1 mL/22 lb body weight.	Apply along the topline from withers to tailhead. Provides 7 days of persistent activity against horn flies. Not labeled for face fly control.		
Lice and Ticks		Sprays and Dusts Co-Ral Fly and Tick Spray (6.15% coumaphos)	For lice, use 2.5 oz/4 gal of water.	Complete wetting to runoff.	
		Atroban, Expar 11% EC (permethrin)	1 pt/25 gal water. Use 2 qt of spray per animal.	Spray only after milking.	

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks	
DAIRY CATTLE, Lactating	Lice and Ticks (cont.)	Sprays and Dusts			
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	2 oz/3 gal water. 1 gal/200 gal water.	Use 1/2 gal of diluted spray per animal. Repeat as necessary.	
		Ectiban 5.7% EC (permethrin)	1 qt/100 gal water for lice. 1 qt/25 gal water for ticks.	0 days. Repeat 14-21 days after first treatment.	
		GardStar 40% EC, Tengard SFR (permethrin)	4 oz/25 gal water treats 50-100 head. High-pressure spray.	1-2 qt of coarse spray per animal.	
		Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.	Wet hair thoroughly. Spray lactating dairy cows only after milking has been completed.	
		Python Dust (0.075% zeta-cypermethrin and 0.15% piperonyl butoxide)	Up to 2 oz per animal.	Apply into hair over the head, ears, neck, shoulders, back and tailhead. Use shaker can, mechanical duster or dusting glove. Python Dust is labeled for use in self-treatment dust bags.	
ProZap Dust'R or Rabon 3% Dust (tetrachlorvinphos)	2 oz per animal. Dust thoroughly.	DO NOT apply more than once every 7 days.			
DAIRY CATTLE Non-lactating (Dry Cows and Heifers Only)	Cattle Grubs Late summer or fall treatments (July through Oct. 15 prior to freshening)	Pour-Ons			
		Ivomec Eprinex pour-on (eprinomectin)	Pour 1 mL/22 lb body weight along backline.	DO NOT treat after Oct. 15 to avoid toxic reactions in cattle unless cattle were treated for grubs at end of heel fly season.	
		Ivomec Eprinex pour-on (eprinomectin)	1 mL/22 lb body weight.	Pour along midline of back. DO NOT treat after Oct. 15 to avoid toxic reactions in cattle unless cattle were treated for grubs at end of heel fly season.	
		Cydectin pour-on (0.5% moxidectin)	1 mL/22 lb body weight.	Apply along topline from withers to the tailhead. To avoid undesirable host-parasite reactions, cattle should be treated as soon as possible after heel fly season (between Aug. 1 and Oct. 15).	
		Injectables			
		Ivermectin, Ivomec, Noromectin and other generics (1% ivermectin)	1% ready to use. 1.0 mL/110 lb body weight.	Use subcutaneous injection only. Allow 35 days from last application to slaughter. Not for intravenous or intramuscular use. No more than 10 mL of Ivomec should be used on animals over 1,100 lb (see label for specific instructions). Also controls sucking lice. DO NOT use in female dairy cattle of breeding age.	
Cydectin injectable (1% moxidectin)	1% ready to use. 1.0 mL/110 lb body weight.	Use subcutaneous injection only. Cattle must not be slaughtered for human consumption within 21 days of treatment. Not for use in female dairy cattle 20 months of age or older (including dry dairy cows), veal calves and calves less than 8 weeks of age.			

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
DAIRY CATTLE Non-lactating (Dry Cows and Heifers Only)	Lice	Pour-Ons Atroban, DeLice or Expar 1% (permethrin)	0.5 fl oz/100 lb body weight.	0 days. DO NOT exceed 5 fl oz/animal. These pour-ons can also be used on lactating dairy cattle.
		Synergized DeLice, Synergized Permethrin, Permethrin S, Cattle Armor (1% permethrin and 1% piperonyl butoxide)	Pour 1/2 oz/100 lb body weight up to a maximum of 5 oz per animal. Pour correct dose down face and along back.	Can also be applied undiluted as a mist spray or diluted with mineral oil or diesel fuel (1 pt Synergized DeLice to 1 gal mineral oil or diesel fuel) for use in a backrubber.
		Permethrin CDS, Martin's Fly Ban pour-on (permethrin and piperonyl butoxide)	Pour correct dose on back and down the face.	Comes in ready-to-use dispenser.
		Clean-up pour-on (5.0% diflubenzuron and 5.0% permethrin or Clean-Up II pour-on (3% piperonyl butoxide and 5% permethrin))	Apply 3 mL/100 lb body weight along backline and down face. DO NOT apply more than 30 mL to any animal.	
		Ivomec Eprinex pour-on (eprinomectin)	Pour 1 mL/22 lb body weight along backline.	DO NOT treat after Oct. 15 to avoid toxic reactions in cattle unless cattle were treated for grubs at the end of heel fly season.
		Cydectin (0.5% moxidectin)	1 mL/22 lb body weight.	Apply along the topline from withers to tailhead. To avoid undesirable host-parasite reactions, cattle should be treated as soon as possible after heel fly season (between Aug. 1 and Oct. 15).
	Horn Flies	Ear Tags and Ear Strips Several brand names of insecticide-impregnated ear tags are available for purchase.	Use as directed on label. Ear tags are primarily used to control horn flies and ear ticks; however, some ear tags will aid in controlling face flies.	If ear tags within the same insecticide class have been used for two or more consecutive years, substantial reduction in control effectiveness is possible. Use dusts, sprays or ear tags in a different insecticide class or alternative methods.
	Horn Flies, Stable Flies, and Flies Around the Face	Sprays, Dusts and Backrubbers	Insecticides recommended for lactating dairy cattle can be used on non-lactating dairy cattle. Some insecticides recommended for use on beef cattle can be used on non-lactating dairy cattle. Be certain to follow the days to freshening guidelines and instructions on the label before using any insecticide labeled for beef cattle.	

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
DAIRY CATTLE, DAIRY BARNs	House Flies and Flies around the premises	Sanitation, Biological Control and Integrated Pest Management (IPM)	Sanitation is critical to any fly control program in dairies and animal housing facilities. IPM includes sanitation, insecticides (baits, contact insecticides, etc.), surveillance (monitoring and/or trapping) and biological control (conserving natural enemies and/or releases). Use insecticides judiciously to minimize impact on natural enemies and to prevent or delay insecticide resistance. Use a combination of management methods.	Waste (spilled feed, wet feed, manure, bedding) removal and management is the first line of defense in any filth fly management program. Prompt removal and disposal (such as spreading on pastures) of waste will reduce filth fly breeding sites and break the house fly life cycle. Some producers have experienced reduced fly populations with weekly releases of parasitic wasps beginning in April or May. Releases should be made in dry areas out of traffic and in areas where flies reproduce. Parasite and/or insecticide use are not a substitute for a good sanitation program.
		Sticky Ribbons/Tapes	Sticky ribbons and tapes can be effective in managing small to moderate fly populations. Sticky ribbons are also useful in monitoring house fly populations when used weekly.	Sticky ribbons and tapes may require changing every week or two because they become coated with dust, covered with flies or dry out.
		Baits QuickBayt, Martin's Quick Draw and Bonanza Fly Bait (0.5% imidacloprid and 0.1% muscalure, (z)-9-tricosene) Ready-to-Use Fly Bait	Scatter 6 oz of bait/1,000 sq ft around the outside of dairies and in inaccessible areas of animal housing, or mix 1.5 oz/1 oz of water, mix thoroughly, let stand for 15 minutes or until a paste consistency and paint on non-dusty fly resting areas inaccessible to animals.	Use around the outside of dairies and animal housing areas. DO NOT apply to milking equipment or allow bait to contact food or water. Can be used inside horse stables, broiler, turkey and caged layer houses, swine confinement buildings, dairy barns and milking parlors ONLY if used in bait stations. Bait stations must be placed at least 4 feet above ground level and in areas inaccessible to animals, pets or children.
		QuickBayt Disposable Fly Bait Strip (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene)	Ready-to-use strip. Use 1 bait strip/250 sq ft.	DO NOT use in areas accessible to food-producing animals or allow to contact food or water. DO NOT apply directly to milking equipment.
		QuickBayt Spot Spray (10% imidacloprid and 0.1% muscalure (z)-9-tricosene)	Mix 16 oz/gal water. Carefully read label directions.	For use in and around agriculture production facilities such as poultry houses, turkey and chicken houses, cattle, sheep and goat facilities, feedlots, dairy barns, swine confinement buildings, dog kennels and horse stables. DO NOT apply on surfaces accessible to children or pets. DO NOT apply where animals can ingest the bait. DO NOT apply to milking equipment at dairy facilities.
		QuikStrike Fly Scatter Bait (0.5% dinotefuran and 0.04% (z)-9-tricosene)	Scatter 4 oz/500 sq ft of fly breeding area or use bait in any commercial bait station.	Use as a scatter bait only around the outside of animal housing areas. Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.
		QuikStrike Fly Bait Spray (0.5% dinotefuran and 0.04% (z)-9-tricosene)	To spray on, mix 2 oz product with 16 oz of water to treat 250 sq ft. To paint on, mix 2 oz product with 3 oz of water to treat 250 sq ft.	Apply to fly resting areas such as walls, fences, window sills, posts, etc., typically 4 feet above the floor surface. DO NOT apply to milking equipment.
Golden Malrin (1.1% methomyl and 0.049% (z)-9-tricosene)	Scatter 4 oz/500 sq ft of fly breeding area or use bait in any commercial bait station.	Use as a scatter bait only around the outside of animal housing areas. Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.		

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
DAIRY CATTLE, DAIRY BARNs	House Flies and Flies around the premises	Baits		
		Elector Bait (0.5% spinosad and 0.04% (z)-9-tricosene)	Scatter 12-16 oz/2,000 sq ft. Elector Bait can also be used in bait stations or applied to hang boards/cards. Use 8-10 bait stations or hang boards/cards per 2,000 sq ft. See label for more detailed instructions on bait station and hang board/card use.	DO NOT allow Elector Bait to contact food, feedstuffs, water, milk or milking utensils. DO NOT use where milk is processed or stored. When using Elector in bait stations, hang stations in areas inaccessible to children, livestock and pets. Elector Bait stations or hang cards must be located at least 4 ft above the ground.
		Zyrox Fly Granular Bait (0.5% cyantranilprole)	Ready-to-use granular fly bait. Apply from 3.2-6.4 oz granular bait/1,000 square feet. Depending upon application site, product can be scattered or placed in bait stations.	DO NOT place bait in areas accessible to food-producing animals or animals being grown for food. DO NOT place bait in areas accessible to children and pets. Bait stations must be used if bait is applied inside residential structures, commercial establishments, food processing plants, restaurants and animal housing units. DO NOT apply bait outdoors when raining.
		Sprays		
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	12 Tbsp/gal water/500-1,000 sq ft.	Remove animals from barn before spraying. Allow at least 4 hours for spray to dry before allowing cows to return to the barn. DO NOT contaminate feed, water or milking utensils.
		Rabon 50% WP (tetrachlorvinphos)	4 lb per 25 gal applied/1 gal per 500 sq ft.	
		GardStar 40% EC, Tengard SFR (permethrin)	4 oz/10 gal water. Surface spray.	1 gal/750-1,000 sq ft. (DO NOT use in milk rooms.)
		Pounce 3.2 EC (permethrin)	4 oz/12.5 gal water. Apply 1 gal solution/750 sq ft.	Apply as directed on label.
		Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.	Apply as directed on label. Treat walls, ceilings, moldings, screens, door and window frames and similar resting places.
		Vapona Concentrate Insecticide (R) (40.2% dichlorvos)	2 oz/1.5 gal water (0.5% dilution). 5 oz/2 gal water (1.0% dilution).	Apply 0.5% dilution as a space spray mist to open air space at the rate of 1 qt/8,000 cu ft or as a coarse surface spray to indoor surfaces at the rate of 1 qt/1,000 sq ft. For the 1.0% dilution, apply as above but only half the total volume of mixture. DO NOT use this product in areas where animals have received a direct organophosphate application within 8 hours. If animals are present, ventilate treated area immediately following application. DO NOT contaminate water, feed or foodstuffs, milk or milking utensils.
Annihilator (0.02% deltamethrin)	Ready to use.	Wet surfaces where flies rest. DO NOT spray animals, humans, animal feed or water. DO NOT apply more than once per week.		
Grenade ER (9.7% lambda-cyhalothrin)	Mix 0.2 to 0.4 oz/gal water to make a 0.015% to 0.03% dilution.	Apply dilution to horizontal and overhead surfaces where flies rest. DO NOT make applications in areas where animals are present. Allow to dry before reintroducing animals or birds. DO NOT contaminate animal food, feed or water during application.		

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
DAIRY CATTLE, DAIRY BARNs	House Flies and Flies around the premises (cont.)	Sprays Atroban, Expar 11% EC (permethrin)	1 pt/10 gal water. Apply 1 gal/750-1,000 sq ft of surface.	Apply as directed on label.
		Talstar, Bifenthrin I/T 7.9F, Optashield CS (7.9% bifenthrin)	Mix with water and apply 0.33 to 1.0 oz product per 1,000 sq ft.	Target areas where flies rest such as ceilings, trusses, rafters, supports, walls, windows and vegetation.
		StandGuard 5.9 (5.9% gamma-cyhalothrin)	Mix 0.16 oz (5 mL)/gal of water.	Spray 1 gal of diluted spray to treat 500-1,000 sq ft fly resting surfaces.
DAIRY CATTLE, MILK ROOMS Check label of any product before using in milk room.	Adult Flies	Sprays Pyrethrins (synergized)	Use as directed on label.	
		Tempo 20WP (cyfluthrin)	10-20 grams per 1,000 sq ft.	Use adequate water for coverage.
		Baits QuickBait Disposable Fly Bait Strip (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene)	Ready-to-use strip; use 1 bait strip/250 sq ft.	DO NOT use in areas accessible to food-producing animals or allow to contact food or water. DO NOT apply directly to milking equipment.
		QuickBait, Martin's Quick Draw and Bonanza Fly Bait (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene) Ready-to-Use Fly Bait	1.5 oz/bait station/250 sq ft.	Can be used inside horse stables, broiler, turkey and caged layer houses, swine confinement buildings, dairy barns and milking parlors ONLY if used in bait stations. Bait stations must be placed at least 4 feet above ground level and in areas inaccessible to animals, children or pets.
		Zyrox Fly Granular Bait (0.5% cyantraniliprole)	Ready-to-use granular fly bait. Apply from 3.2-6.4 oz granular bait/1,000 square feet. Depending upon application site, product can be scattered or placed in bait stations. When applied inside, product must be placed in commercial bait stations.	Bait stations must be used if bait is applied inside residential structures, commercial establishments, food processing plants, restaurants and animal housing units. Do not place bait in areas accessible to food-producing animals or animals being grown for food. Do not place bait in areas accessible to children and pets. Do not apply bait outdoors when raining.

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
PREMISES	Fleas (premises)	Often, animal treatment alone does not completely control severe flea infestations. Sanitation (removal of pet bedding, etc.) and insecticide application of the infested areas with an adulticide and an insect growth regulator mixture may be necessary.		
		<p>Adulticides Permethrin concentrates (several formulations available): Martin's permethrin 10, Permethrin II, Tengard SFR</p> <p>Cypermethrin concentrates (Martin's Viper Insecticide Concentrate and others)</p> <p>Bifenthrin Bug Blaster Bifenthrin 2.4 and others (Outdoor USE only)</p>	Mix according to label directions. Can be mixed with an insect growth regulator such as Nylar or Precor – listed below.	Can be mixed with an insect growth regulator. Apply only as directed on the label. Outdoors: When treating outdoors, concentrate in areas where fleas are present. Presence of fleas in the yard can be confirmed by walking the area while wearing white socks pulled to the knees; fleas will be easily seen against the white background of the socks. It is not usually necessary to treat the entire yard. Fleas normally occur in areas where pets rest, sleep, and run such as doghouse and kennel areas, under decks, along fences and next to the foundation. Indoors: Use only products labeled for indoor use and apply only as directed on the label. Pets and humans should not be in the house during treatment and should not return until the spray has dried or as directed on the label. Apply where pets spend the most time. Treat pet bedding, rugs, area under pet bedding, under furniture and in cracks and crevices. Hardwood floors seldom require treatment, but the area should be vacuumed thoroughly.
		<p>Insect Growth Regulators Nylar (pyriproxyfen): Martin's IG Regulator</p>	Mix according to label directions. Can be mixed with an adulticide such as those listed above.	Can be mixed with an adulticide. Apply only as directed on the label. Outdoors: When treating outdoors, concentrate in areas where fleas are present. Presence of fleas in the yard can be confirmed by walking the area while wearing white socks pulled to the knees; fleas will be easily seen against the white background of the socks. It is not usually necessary to treat the entire yard. Fleas normally occur in areas where pets rest, sleep, and run, such as doghouse and kennel areas, under decks, along fences and next to the foundation. Indoors: Use only products labeled for indoor use and apply only as directed on the label. Pets and humans should not be in the house during treatment and should not return until the spray has dried or as directed on the label. Apply where pets spend the most time. Treat pet bedding, rugs, area under pet bedding, under furniture and in cracks and crevices. Hardwood floors seldom require treatment, but the area should be vacuumed thoroughly.
<p>Ready-to-Use IGR and Adulticide Mixtures (Precor Premise Plus, Vet-Kem Siphotrol Plus II Premise spray (aerosol): (S)-methoprene, permethrin, phenothrin, N-octyl bicycloheptene dicarboximide, piperonyl butozide)</p>	Ready-to-use aerosol	Use only as directed on label. For use in the home, garage, kennel and commercial buildings. Cover aquariums before making applications. Pets and humans should not be in the house during treatment and should not return until the spray has dried or as directed on the label.		

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
PREMISES	Fleas (premises) (cont.)	Prescription Treatment Ultracide Pressurized Flea IGR and Adulticide (aerosol): pyriproxyfen, pyrethrins, N-octyl bicycloheptene dicarboximide, permethrin	Ready-to-use aerosol	Use only as directed on label. For use in the home, garage, kennel and commercial buildings. Cover aquariums before making applications. Pets and humans should not be in the house during treatment and should not return until the spray has dried or as directed on the label.
		Prescription Treatment Alpine Flea Insecticide with IGR (aerosol): dinotefuran, pyriproxyfen, prallethrin	Ready-to-use aerosol	
		Raid Flea Killer Plus Carpet and Room Spray (aerosol): pyrethrins, tetramethrin, piperonyl butoxide, N-octyl bicycloheptene dicarboximide, (S)-methoprene	Ready-to-use aerosol	
DOGS	Fleas, Ticks	Dusts, Sprays, Spot-ons and Collars		
		GardStar Garden and Poultry Dust and others (0.25% permethrin dust).	Ready to use. Use 1/2 oz on dogs 20 lb and under. Use 1 oz on dogs greater than 20 lb.	Can be used to dust dog bedding and dog house. DO NOT use on puppies under 12 weeks of age. Use only on dogs.
		Hartz Flea and Tick Powder for Dogs (3.3% tetrachlorvinphos)	Ready to use. Use 1/2 ounce on small dogs, 1 oz on medium-sized dogs and 1 1/4 oz on large dogs.	Can be used to dust dog bedding – read label directions. DO NOT use on puppies under 12 weeks of age. Use only on dogs.
		Sergeant's Flea Powder for Dogs (2.0% piperonyl butoxide and 0.50% permethrin)	Ready to use. Follow label directions.	Follow cautions and age restrictions on the label.
		Preventic Tick Collar for Dogs (amitraz)	Ready-to-use collar. Follow label directions.	DO NOT use on puppies less than 12 weeks old. For ticks only.
		Permethrin II 10% EC (permethrin)	1 oz in 3-5 gal water. Use 1 qt on big dogs; 1 pt on small dogs.	Aerosol pest sprays are also available for controlling fleas and ticks.
		Expar 3.2% EC (permethrin)	Use 4 Tbsp in 1 gal water.	Dip, sponge or swab dog until thoroughly wet.
		Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Mix 2 to 8 oz. product per gallon of water	Pet sensitivities may occur after using a pesticide product. If you see signs of sensitivity bathe your pet with mild soap and rinse with large quantities of water. If signs continue, consult a veterinarian immediately. Do not treat puppies less than twelve weeks old.
		Frontline or Parastar spot-on (fipronil)	Follow label directions.	Also controls ticks. DO NOT use on puppies less than 8 weeks old.
		Frontline Plus or Martin's Preferred for Dogs (9.8% fipronil and 8.8% methoprene)	Follow label directions.	DO NOT use on puppies less than 8 weeks old.
Promeris for Dogs (metaflumizone and amitraz)	Ready-to-use spot-on.	DO NOT use on puppies less than 8 weeks old. For ticks, fleas, lice and demodectic mange mites.		
Parastar Plus (fipronil and cyphenothrin)	Follow label directions.	DO NOT use on puppies less than 12 weeks old.		

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks	
DOGS	Fleas, Ticks (cont.)	Dusts, Sprays, Spot-ons and Collars Sergeant's PreTect Squeeze-on (45% permethrin and 1.9% pyriproxyfen)	Follow label directions.	DO NOT apply to puppies less than 3 months of age.	
		Certifect for Dogs (fipronil, (S)-methoprene, amitraz)	Ready-to-use spot-on.	DO NOT use on puppies less than 8 weeks old. For ticks, fleas and lice.	
		K-9 Advantix (8.8% imidacloprid and 44% permethrin)	Ready-to-use spot-on. Apply 3 or 4 spots to the skin along the backline between back of the shoulders and base of the tail.	Purchase the appropriate formulation for the weight and age of your dog. Also repels mosquitoes and biting flies.	
		Organic Solution pet powder for dogs (pyrethrins, piperonyl butoxide and diatomaceous earth)	Work into hair of animal down to skin. Dust bedding. Repeat once a month.	Apply as directed on label.	
		GardStar 40% EC, Tengard SFR One Shot (permethrin)	4 oz/20 gal water (dip)	Make sure all areas are soaked to skin. DO NOT rinse off.	
		Oral Tablets			
		NexGard (afoxolaner)	Available through prescription only. Administer tablet every 30 days.	DO NOT use on puppies less than 8 weeks old.	
		Bravecto (fluralaner)	Available through prescription only. One tablet will last for 12 weeks.	Use only on dogs over 4.4 pounds or six months of age.	
		Simparica (sarolaner)	Available through prescription only. Administer tablet every 30 days.	Use only on dogs over 2.8 pounds or six months of age.	
		Fleas	Flea collars containing Vapona, Rabon, Chlorpyrifos, Baygon, Propoxur and other chemicals (permethrin)	Use as directed on label. Some animals are sensitive to collars.	Fleas are killed quickly. Ticks are tough and are killed slowly. They will usually be dead in 1-5 days. When bathing dogs, remove collar until dog is dry. Replace collar when effectiveness diminishes. Specially formulated dips for dogs are available for purchase.
	Also controls ticks	Vet-Kem PowerBand Flea and Tick Collar for Dogs (propoxur and (S)-methoprene)	Use as directed on label.	DO NOT use on puppies less than 12 weeks of age.	
	Also controls ticks	Seresto Collar (flumethrin and imidacloprid)	Collar. Use as directed on label.	DO NOT use on puppies less than 7 weeks old.	
	Also controls ticks	Hartz UltraGuard Plus Flea and Tick Collar for Dogs and Puppies (tetrachlorvinphos and (S)-methoprene)	Use as directed on label.	DO NOT use on puppies less than 6 weeks of age.	
		Synergized pyrethrins soap	Wet pet thoroughly. Apply soap and work up good lather. Let stand 5-10 minutes to kill fleas. Rinse.	The lather of this soap cleans, grooms and deodorizes as it kills fleas.	
		methoprene or Precor 1%	Follow mixing directions on label and combine with adulticide for best results.	Premise spray for control of fleas. DO NOT use on dogs.	
		methoprene 0.075% + permethrin 0.5% Ortho Total Flea Control	Follow label directions.	Medicated shampoos and dips labeled for use on dogs will often help reduce flea and tick problems.	
	Also controls ticks, mosquitoes, mites and lice	Vectra 3D (dinotefuran, pyriproxyfen and permethrin)	Topical, Follow label directions	Use the appropriate formulation based on the animal's weight.	
	Also controls ticks and lice	Frontline Tritak for Dogs (fipronil, cyphenothrin and methoprene)	Topical, follow label directions.	Use the appropriate formulation based on the animal's weight. For use on dogs. Use only on dogs and puppies over 12 weeks of age. Do not use on cats.	

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
DOGS	Fleas (cont.)	Comfortis (spinosad)	Chewable tablet. Follow label directions.	Available by prescription from licensed veterinarians.
		Advantage Spot-on (9.1% imidacloprid)	Ready-to-use spot-on. Apply 3 or 4 spots to the skin along the backline between back of the shoulders and base of the tail.	Purchase the appropriate formulation for the weight and age of your dog.
		Advantage Multi for Dogs (imidacloprid and moxidectin)	Ready-to-use spot-on.	Available by prescription only. Also labeled for treatment of intestinal parasites and heartworm prevention.
		Program Flea Control (lufenuron)	Oral.	Available by prescription only.
		Capstar tablet (nitenpyram)	Oral tablet.	Do not use on puppies less than 4 weeks old.
		Activyl for Dogs (indoxacarb)	Topical, follow label directions.	Use the appropriate formulation based on the animal's weight. Do not use on puppies under 8 weeks of age and weighing less than 4 lbs. Do NOT use on cats. Do not use on dogs (male or female) intended for breeding, pregnant or nursing.
	Ear Mites	Malathion 5% aerosol spray can	Apply to the ears.	Repeat every 7 days as needed.
		Adams Pene-Mite, Eradimite and others (pyrethrins and piperonyl butoxide)	Ready-to-use drops.	DO NOT use on puppies less than 12 weeks of age.
		Ready-to-use permethrin or pyrethrin drops such as Mite-X and Ear-Rite		Apply as directed on label.
		Pet Care Ear Mite Solution (0.12% rotenone and 0.16% cube resins)	Ready to use.	DO NOT use on puppies less than 12 weeks of age.
CATS	Fleas	Pyrethrin 1% D	Lightly work material into the hair down to the skin. Repeat once a month.	Apply as directed on label.
		Also controls ticks	Bravecto spot-on (fluralaner)	Available by prescription only. One application lasts 12 weeks.
		Assurity (spinetoram)	Ready-to-use spot-on.	Apply as directed on label. Do not use on kittens less than 8 weeks of age.
		Organic Solution pet powder for cats (pyrethrins, piperonyl butoxide and diatomaceous earth)		Apply as directed on label.
	Also controls ticks	Adams Plus Breakaway Flea and Tick Collar for Cats and Kittens, Vet-Kem Breakaway Plus Fleas and Tick Collar for Cats and Kittens (propoxur, (S)-methoprene)	Use as directed on label.	Do not use on kittens less than 12 weeks of age.
		Flea collars containing Vapona, Rabon, Baygon and other chemicals	Use as directed on label.	Fleas are killed quickly. Ticks are tough and are killed slowly. They will usually be dead in 1-5 days. New flea collars can sometimes cause severe skin irritation around the necks of dogs and cats. Should irritation occur, remove the collar and place it in a quart jar with a screw lid. Put the collar back on the pet after 2 or 3 days.
	Also controls ticks	Sentry PurrScriptions Dual Action Collar for Cats (phenothrin and propoxur)	Collar. Use as directed on label.	DO NOT use on kittens less than 12 weeks old.
Also controls ticks	Seresto Collar (flumethrin and imidacloprid)	Collar. Use as directed on label.	DO NOT use on kittens less than 10 weeks old.	

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
CATS	Fleas (cont.) Also controls ticks	Frontline, EasySpot and Sentry Fiproguard (fipronil)	Spray or spot-on.	
	Also controls ticks	Frontline Plus, Martin's Preferred for Cats and Sentry Fiproguard Plus (fipronil and (S)-methoprene)	Available to use as a spot-on.	Apply as directed on label.
	Also controls ticks	Bio-Spot for Cats (5.3% pyriproxyfen)	Follow label directions.	DO NOT apply to kittens less than 12 weeks of age. DO NOT apply more often than every 3 weeks.
	Also controls ticks	Zodiac Spot-on for Cats and Kittens (S)-methoprene	Follow label directions.	DO NOT apply to kittens less than 12 weeks of age.
		Promeris for Cats (metaflumizone)	Spot-on. Follow label directions.	DO NOT apply to kittens less than 8 weeks old.
		Cheristin (spinetoram)	Topical. Follow label directions	Do not use on cats or kittens < 8 weeks of age and weighing < 1.8 lbs.
		Advantage Multi for Cats (imidacloprid and moxidectin)	Follow label directions.	Available by prescription only. Also labeled for treatment of intestinal parasites, ear mites and heartworm prevention.
		Advantage II (imidacloprid and pyriproxyfen)	Follow label directions.	DO NOT use on kittens less than 8 weeks old.
		Program Flea Control (lufenuron)	Oral	Available by prescription only.
		Capstar tablet (nitenpyram)	Oral tablet	Do not use on kittens less than 4 weeks old.
		Activyl for Cats (indoxacarb)	Topical. Follow label directions.	Activyl Spot-On for Cats, containing 0.03 fl. oz. (1.03 ml), is meant for larger cats over 9 lbs and 8 weeks old. Activyl Spot-On for Cats and Kittens has 0.02 fl. oz. (0.51 ml) and should be given to small cats and kittens weighing between 2 and 9 lbs, but over 8 weeks old.
	Ear Mites	Malathion 5% aerosol spray can	Apply to the ears.	Repeat every 7 days as needed.
		Advantage Multi for Cats (imidacloprid and moxidectin)	Follow label directions.	Available by prescription only. Also labeled for treatment of intestinal parasites, ear mites and heartworm prevention.
		Pet Care Ear Mite Solution (0.12% rotenone and 0.16% cube resins)	Ready to use.	DO NOT use on kittens less than 12 weeks of age.
		Ear Rite Miticide, Adams Pene-Mite, Eradimite and others (pyrethrins and piperonyl butoxide)	Ready-to-use drops.	DO NOT use on kittens less than 12 weeks of age.
BIRDS, CANARIES AND PARAKEETS	Mites	Pyrethrins + Piperonyl butoxide	Remove birds and spray entire cage.	Apply as directed on label.
	Lice	Pyrethrins + Piperonyl butoxide	Spray bird directly—hold aerosol 18 inches from bird; spray one burst 2-3 seconds.	Apply no more than 3 times per week.
RABBITS	Ear mites	Adams Pene-Mite, Eradimite and others (pyrethrins and piperonyl butoxide)	Ready-to-use drops.	DO NOT use on rabbits less than 12 weeks of age.
	Ear mites, fur mites and rabbit bots (Cuterebra spp.)		More effective treatments are available from licensed veterinarians.	Consult your veterinarian for other effective treatment options.

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
HORSES	Bots	Ivermectin (Zimecterin, Eqvalan, Equimectrin) 1.87% paste	Oral paste.	Treat horses after second killing frost.
		Quest Plus Equine Oral Gel (moxidectin/praziquantel)	Oral paste.	
		Equinox Dewormer (ivermectin/praziquantel)	Oral paste.	
		Quest Equine Oral Gel (moxidectin)	Oral paste.	
		Manual Controls	Sponge animal with warm water (120 degrees F) to initiate egg hatching.	Firmly sponge horse's forelegs, chest, neck and belly on cool days (below 60 degrees F) so that larva will hatch and die of exposure. Manual control may limit bot infestations but may NOT eliminate infestations.
	Lice, Ticks	Co-Ral Fly and Tick Spray (6.15% coumaphos)	For horn flies and lice, use 5 oz in 4 gal water. For ticks, use 10 oz in 4 gal water.	Follow label directions. DO NOT use on horses intended for slaughter. Co-Ral is a cholinesterase inhibitor. DO NOT treat sick, stressed or convalescent animals. DO NOT use on animals less than 3 months of age. Use 2 qt spray per animal.
		Atroban 11% EC (permethrin)	Mix 1 pt in 25 gal water.	
		Horse Lice Duster III and other permethrin dust formulations (0.25% permethrin)	Apply 2 oz over the head, shoulders and back.	
		Clean-Up pour-on (5% diflubenzuron and 5% permethrin)	Apply 3 mL/100 lb body weight as a spray or wipe-on only. DO NOT apply more than 30 mL to any one animal.	
	Horn Flies Stable Flies Horse Flies Mosquitoes Black Flies Deer Flies Biting Gnats House Flies Face Flies	Atroban 11% EC (permethrin)	Mix 1 pt 11% EC with 25 gal water. Horn flies require only 1 pt 11% EC/50 gal water.	Use 2 qt finished spray per animal.
Permethrin II and generics (10% permethrin)		For high-pressure sprayers: Mix 1 qt in 200 gal of water; 8 oz in 50 gal of water.	Spray to thoroughly cover entire animal. Apply from 1/2 to 1 gal of spray per head. For lice or mites, a second treatment is recommended 14-21 days later.	
Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)		Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.	Wet hair thoroughly.	
		For hand or garden sprayers and low-pressure sprayers: Mix 8 oz in 3 gal of water; 2.5 oz (5 Tbsp) in 1 gal of water; or 20 mL (4 tsp) in 1 qt of water.	Spray each animal with up to 8 oz of mixed spray. For lice and mites, a second treatment is recommended 14-21 days later.	
Spray-N-Repel (pyrethrins)		Pyrethrin mist spray.	2 oz/animal.	
Flypel, Flysect, Equi-Spot, Fly Rid Plus (permethrin or pyrethrin)		Ready-to-use sprays and spot-ons.	Follow label directions.	
GardStar 40% EC, Tengard SFR (permethrin)		0.25 oz/1 pint of water. Low-pressure spray.	1-2 fl oz of spray per animal. Spot treat back, face, legs, tail and ears.	
Co-Ral Fly and Tick Spray (6.15% coumaphos)		For horn flies and lice, use 5 oz in 4 gal water. For ticks, use 10 oz in 4 gal water.	Follow label directions. DO NOT use on horses intended for slaughter. Co-Ral is a cholinesterase inhibitor. DO NOT treat sick, stressed or convalescent animals. DO NOT use on animals less than 3 months of age.	
	Flypel, Flysect (permethrin or pyrethrin)	Ready-to-use sprays and spot-ons.		
	Tri-Tec 14 (cypermethrin + pyrethrin)	Fly repellent and killer. Ready to use in dispenser.	Also kills ticks.	

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks	
HORSES	Horn Flies Stable Flies Horse Flies Mosquitoes Black Flies Deer Flies Biting Gnats House Flies Face Flies (cont.)	Tri-Tec Concentrate Fly Spray for Horses (cypermethrin, pyrethrin, piperonyl butoxide, Di-n-propyl isocinchomeronate, butoxy polypropylene glycol)	Mix 1 part Tri-Tec Concentrate to 3 parts water. Use spray or wipe-on solution.	DO NOT allow solution in horse's eyes, nose or mouth. Wear protective gloves when using as a wipe-on.	
		Equi-Spot Spot-on Fly Control and generics (permethrin)	Ready to use. Follow label directions.		
		Brute pour-on, Tuttle's Brute Insecticide for Horses (10% permethrin)	Ready to use. Apply 3-6 mL per 200 lb body weight (do not exceed 30 mL).	Apply as a whole body wipe with a cloth or insecticide application mitt. For horn flies, pour 3-6 mL per 200 lb body weight over the withers and down the back. DO NOT treat more often than once every 7 days. DO NOT treat foals under 12 weeks of age.	
		Permethrin CDS, Buzz Off pour-on, Martin's Fly Ban pour-on (7.4% permethrin and 7.4% piperonyl butoxide)	Ready to use. Apply 8-16 mL as a pour-on spray or wipe.	Apply as a whole body wipe with a cloth or insecticide application mitt. For pour-on application, pour over the withers and down the back. For spray application, apply with a mist sprayer in undiluted form after riding or exercise.	
		Python Dust (0.075% zeta-cypermethrin and 0.150% piperonyl butoxide)	Ready-to-use dust. Apply up to 2 oz per animal.	DO NOT apply more often than every 3 days. Also controls ticks.	
		A number of wipe-on towels and roll-on products are available in ready-to-use formulations for horses. These products can be useful, particularly on equines that become restless or agitated when attempting to apply insecticide spray formulations or to treat sensitive areas of the animal.			
		Roll-Ons			
		Endure Roll-On for Horses (0.15% cypermethrin, 0.02% pyrethrins, 1.63% piperonyl butoxide, 0.05% di-n-propyl isocinchomeronate and 4.85% butoxy polypropylene glycol)	Ready to use. Follow label directions.	DO NOT use on horses or foals intended for slaughter.	
		Flysect Roll-On fly repellent face lotion or Farnum Roll-On fly repellent (0.40% pyrethrins, 1.0% piperonyl butoxide, 1.0% di-n-propyl isocinchomeronate and 0.4% n-octyl bicycloheptene dicarboximide)	Ready to use. Follow label directions.	DO NOT use on animals less than 12 weeks of age. May also be used on dogs.	
		Paste			
War Paint Insecticide Paste (7% permethrin, 1% piperonyl butoxide)	Ready to use. Follow label directions. Applications can be directed to specific body areas to kill and repel specific fly species	Do not apply to wet animals because the product does not adhere to wet surfaces.			
Towels					
Absorbine UltraShield Towelettes (0.40% permethrin, 0.08% pyrethrins and 0.79% piperonyl butoxide)	Ready to use. Follow label directions.	May also be used on dogs.			

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
HORSE BARNs	Flies	SANITATION, BIOLOGICAL CONTROL AND INTEGRATED PEST MANAGEMENT (IPM)	Sanitation is critical to any fly control program in horse barns and animal housing facilities. IPM includes sanitation, insecticides (baits, contact insecticides, etc.), surveillance (monitoring and/or trapping) and biological control (conserving natural enemies and/or releases). Use insecticides judiciously to minimize impact on natural enemies and to prevent or delay insecticide resistance. Use a combination of management methods.	Waste (spilled feed, wet feed, manure, bedding) removal and management are the first lines of defense in any filth fly management program. Prompt removal and disposal (such as spreading on pastures) of waste will reduce filth fly breeding sites and break the house fly life cycle. Some producers have experienced reduced fly populations with weekly releases of parasitic wasps beginning in April or May. Releases should be made in dry areas out of traffic and in areas where flies reproduce. Parasite and/or insecticide use are not substitutes for a good sanitation program.
		Bait Mixtures		
		QuickBayt, Martin's Quick Draw and Bonanza Fly Bait (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene) Ready-to-Use Fly Bait	Ready-to-use fly bait. Scatter 6 oz of bait/1,000 sq ft around the outside of horse barns in areas inaccessible to horses. Can also be mixed with water and painted on fly resting areas. See label directions.	Use only in fly bait stations inside horse stables. Place bait stations in areas inaccessible to animals.
		QuickBayt Disposable Fly Bait Strip (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene)	Ready-to-use strip. Use 1 bait strip/250 sq ft.	DO NOT use in areas accessible to food-producing animals or allow to contact food or water.
		QuickBayt Spot Spray (10% imidacloprid and 0.1% muscalure (z)-9-tricosene)	Mix 16 oz/gal water.	For use in and around agriculture production facilities such turkey and chicken houses, cattle, sheep and goat facilities, feedlots, dairy barns, swine confinement buildings, dog kennels and horse stables. DO NOT apply on surfaces accessible to children or pets. DO NOT apply where animals can ingest the bait.
		Golden Malrin (1.1% methomyl and 0.049% (z)-9-tricosene)	Ready to use. Scatter 4 oz/500 sq ft of area where flies congregate, rest or feed, or use bait in any commercial bait station.	Use as a scatter bait only around the outside of animal housing areas. Can be used in horse stables ONLY if used in bait stations. Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.
		QuikStrike Fly Scatter Bait (0.5% dinotefuran and 0.04% (z)-9-tricosene)	Scatter 4 oz/500 sq ft of fly breeding area, or use bait in any commercial bait station.	Use as a scatter bait only around the outside of animal housing areas. Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.
		QuikStrike Fly Bait Spray (0.5% dinotefuran and 0.04% (z)-9-tricosene)	To spray on, mix 2 oz product with 16 oz of water to treat 250 sq ft. To paint on, mix 2 oz product with 3 oz of water to treat 250 sq ft.	Apply to fly resting areas such as walls, fences, window sills, posts, etc., typically 4 feet above the floor surface.
Zyrox Fly Granular bait (0.5% cyantraniliprole)	Ready-to-use granular fly bait. Apply from 3.2-6.4 oz granular bait/1,000 sq ft. Depending upon application site, product can be scattered or placed in bait stations.	DO NOT place bait in areas accessible to food-producing animals or animals being grown for food. Do not place bait in areas accessible to children and pets. Bait stations must be used if bait is applied inside residential structures, commercial establishments, food processing plants, restaurants and animal housing units. Do not apply bait outdoors when raining.		
Nithiazine strip (QuikStrike)	Ready to use.	DO NOT use in areas accessible to animals.		

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
HORSE BARN	Flies (cont.)	Automatic Spray Systems Resmethrin, pyrethrin and piperonyl butoxide		Follow label directions.
		Residual Sprays Rabon 50% WP (tetrachlorvinphos)	3 lb 50% WP in 7.5 gal water. Spray 1 gal/500-1,000 sq ft to wet all surfaces. Repeat every 3 or 4 weeks.	General Precautions for All Insecticides Are: 1. Apply where flies congregate; i.e., ceilings, light fixtures, walls, windows, etc. DO NOT apply within 1 week of applying whitewash. 2. DO NOT contaminate feed or water supplies. Cover them when spraying. 3. Remove animals before spraying. 4. Keep out of reach of animals and children. 5. DO NOT mix a combination of compounds. Wear protective clothing—jacket or coveralls, cap or hat, rubber gloves, and preferably a respirator. Wash protective clothing after using. Wash with soap and water after spraying.
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	1 gal Ravap EC/25 gal water. Allow 4 hours to dry before returning animals to barn. Apply 1 gal spray solution/1,000 sq ft.	
		Atroban 11% EC (permethrin)	1 pt/10 gal clean water. Apply 1 gal/750-1,000 sq ft. Provides up to 8 weeks of control.	
		Atroban 42.5% EC (permethrin)	4 oz/10 gal water. Apply 1 gal/750-1,000 sq ft.	
		Permethrin 3.2 EC, Tengard SFR (36.8% permethrin)	4 oz/12.5 gal water. Apply 1 gal/750 sq ft.	
		Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.	Apply as directed on label. Treat walls, ceilings, moldings, screens, door and window frames and similar resting places.
		Vapona Concentrate Insecticide (R) (40.2% dichlorvos)	2 oz/1.5 gal water (0.5% dilution) 5 oz/2 gal water (1.0% dilution)	Apply 0.5% dilution as a space spray mist; spray at the rate of 1 qt per 8,000 cu ft or at 1 qt per 1,000 sq ft for a coarse surface spray. For the 1.0% dilution, apply as above but only half the total volume of mixture. DO NOT use this product in areas where animals have received a direct organophosphate application within 8 hours. If animals are present, ventilate treated area immediately following application. DO NOT contaminate water, feed or foodstuffs, milk or milking utensils.
		Annihilator (0.02% deltamethrin)	Ready to use	Wet surfaces where flies rest. DO NOT spray animals, humans, animal feed or water. DO NOT apply more than once per week.
		Grenade ER, Oxyfly, Cyonara 9.7 (9.7% lambda-cyhalothrin)	Mix 0.2-0.4 oz/gal water to make a 0.015% to 0.03% dilution.	Apply dilution to horizontal and overhead surfaces where flies rest. DO NOT make applications in areas where animals are present. Allow to dry before reintroducing animals or birds. DO NOT contaminate animal food, feed or water during application.
Permethrin II (10% permethrin)	1 qt 10% permethrin/25 gal water. Use 1 gal/750 sq ft.	Other similar permethrin formulations are registered as surface sprays.		

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
HORSE BARNs	Flies (cont.)	Residual Sprays (cont.) GardStar 40% EC (permethrin)	4 oz/10 gal of water (surface spray).	1 gal covers 1,000 sq ft. DO NOT use in milk rooms.
		Talstar, Bifenthrin I/T 7.9F, Optashield CS (7.9% bifenthrin)	Mix with water and apply 0.33-1.0 oz product per 1,000 sq ft.	Target areas where flies rest such as ceilings, trusses, rafters, supports, walls, windows and vegetation.
		StandGuard 5.9 (5.9% gamma-cyhalothrin)	Mix 0.16 oz (5 mL)/gal of water.	Spray 1 gal of diluted spray to treat 500-1,000 sq ft fly resting surfaces.
	Fly Maggots (developing in manure and/or moist spilled feed)	Dimilin SL (22% diflubenzuron)	For spot treatments: Mix 7.5 oz Dimilin SL to 15 gallons of water. Apply one quart per 10 square feet area of fly breeding material infested with fly eggs and larvae	DO NOT apply directly to livestock or livestock feed. DO NOT feed treated manure to animals.
		Tekko 10 (9.3% novoluron)	For spot treatments: Apply 3 oz. Tekko 10 per 1,000 square feet of fly breeding material in sufficient volume to ensure coverage	
		Neporex 2 SG (2% cyromazine)	Spray: Mix 1 lb Neporex 2 SG per gal of water. Apply as a coarse low-pressure spray on fly breeding sites with suitable spray equipment (hand-pressurized or power-operated sprayers). One gal of finished solution will treat 200 sq ft. Scatter: Apply 1 lb Neporex 2 SG per 200 sq ft. Apply after cleaning underneath bedding on stall floors.	Read and follow labeled rates. DO NOT use on horses intended for slaughter. Prevents the development of house and stable fly larvae in treated manure.
		Feed-Through SimpliFly LarvaStop Fly growth regulator (0.24% diflubenzuron)	FOR HOUSE AND STABLE FLIES ONLY. Feed daily to horses. Rate is dependent on weight of the horse.	Read and follow labeled rates. DO NOT use on horses intended for slaughter. Prevents the development of house and stable fly larvae in treated manure.
		Equitol II (diflubenzuron)	Feed-through house fly control for horse barns and stables. Add specified amount of Equitol to your horse's daily ration.	DO NOT use on horses intended for slaughter.
		Prairie Pride Rabon Supplement Block (0.3% tetrachlorvinphos)	Follow label directions. Feed blocks at the rate of 0.88 oz per 100 lb of bodyweight per day.	Not to be used on horses destined for slaughter. PRECAUTIONS FOR HORSE USE: This product contains tetrachlorvinphos, a cholinesterase inhibitor. The most frequently reported clinical signs of cholinesterase inhibition in the horse are abdominal pain, lethargy, sweating, tearing and excessive salivation. If these signs are seen in horses, consult your veterinarian immediately. DO NOT use this product simultaneously or within a week before or after treatment with cholinesterase-inhibiting drugs, pesticides or chemicals. Consult a veterinarian before using this product on debilitated, aged, pregnant or nursing animals. This product has not been tested in breeding horses.
		Solitude IGR feed-through (2.12% cyromazine)	Daily Dosage: Using 1/2 oz scoop supplied with the product, mix one (1) scoop of Solitude IGR in the horse's ration every day . Alternate Day Dosage: Using 1/2 oz scoop supplied with the product, mix two (2) scoops of Solitude IGR in the horse's ration every other day .	DO NOT USE ON HORSES INTENDED FOR SLAUGHTER. Follow precautions on label.

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
POULTRY	Litter Treatments for Fleas, Lice and Mites (including northern fowl mites)	Sprays Rabon 50% WP (tetrachlorvinphos)	For floor management/roost paint, make 1% solution (1/2 lb Rabon 50% per 3 gal water). Spray finished solution into cracks and crevices at rate of 1 pt solution per 100 ft.	No withholding period from last application to slaughter. Read label directions carefully.
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	Mix 1 gal of Ravap in 50 gal water. Use 1-2 gal of finished spray per 1,000 sq ft. Spray evenly for penetration of litter surface. Spray walls, roosts, cracks, crevices and interiors thoroughly. Spray birds lightly. Mix EC with water as directed on label.	
		Dusts Rabon Beetle Shield (3% tetrachlorvinphos)	For roost paint, mix 1 lb of Rabon Beetle Shield with 1 pt of water to make a slurry (will treat 100 ft).	Check label. No waiting period between application and slaughter.
		Rabon 50% WP (tetrachlorvinphos)	Mix evenly throughout top layer of box using 2.5 oz per 50 birds.	No waiting period between application and slaughter.
	Litter Beetles (Darkling beetles, black bugs, lesser mealworms)	A litter beetle treatment/monitoring program should be maintained year-round to reduce litter beetle populations and damage caused by this pest. Frequent removal of litter and replacement with fresh shavings in poultry houses can help reduce beetle populations. Litter beetle populations at outbreak levels are difficult to control. Loss of insecticide susceptibility has been observed in some parts of the country; therefore, periodic rotation of insecticides from different insecticide classes should be considered. The life cycle from egg to an adult darkling beetle ranges from about 40 to 100 days, indicating that classes should be rotated every 2-3 flocks (in broiler production) depending upon growout duration.		
		Pyrethroid Insecticides ZetaGard LBT (0.375% zeta-cypermethrin (2S), 0.750% piperonyl butoxide)	Apply from 25-50 lb per broiler or turkey growout house (see remarks to the right). Applications should be made with a drop-type dust/granular spreader in bands under feed lines and along walls. See product label for more details.	For use in chicken broiler houses and turkey growout houses. Do not apply with power duster equipment. Do not enter or allow others to enter until dusts have settled. The maximum use rate is 50 pounds of product per broiler or turkey growout house. The application can be split into two 25-pound applications, or one single 50-pound application, per flock. These applications can occur as one application at the 50-pound rate prior to the flock being placed in the broiler house, or as one application at the 25-pound rate prior to the flock being placed in the broiler house and a second 25-pound application occurring not later than three weeks prior to shipping the birds for slaughter. If one single application is made at the maximum rate of 50 pounds, slaughter cannot occur sooner than six weeks after application.
		Tempo 20 WP (cyfluthrin) 9.5-gram packet or 50-gram powerpack OR	Two 9.5-gram packets (19 grams) or two Tempo scoopfuls of 20 WP in a water-based spray per 1,000 sq ft. Four level teaspoonfuls also equals 9.5 grams.	DO NOT apply while birds are in house. DO NOT make application to feeding or watering equipment. When applications are made with existing manure and litter on the floor, allow that accumulation to dry enough to form a crust before applications are made.
		Tempo SC Ultra (11.8% beta-cyfluthrin)	Mix 15 mL per gallon of water. Apply as a general spray or to cracks and crevices.	DO NOT apply when birds are present. DO NOT contaminate feed, water or feeding and watering equipment with spray.
		Grenade ER, OxyFly, Cyonara 9.7 (9.7% lambda-cyhalothrin)	Mix 0.8 oz (24 mL) per gallon of water. Apply to walls and floors following cleanout.	Also helps in fly control if applied to fly resting areas. Apply only when birds are NOT present. DO NOT contaminate feed, water or feeding and watering equipment with spray.
		StandGuard (5.9% gamma-cyhalothrin)	Mix according to label. Apply to walls and floor following cleanout or after growout.	Follow label directions. Apply only when birds are NOT present. DO NOT contaminate feed, water or feeding and watering equipment with spray.

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks	
POULTRY	Litter Beetles (cont.) (Darkling beetles, black bugs, lesser mealworms)	A litter beetle treatment/monitoring program should be maintained year-round to reduce litter beetle populations and damage caused by this pest. Frequent removal of litter and replacement with fresh shavings in poultry houses can help reduce beetle populations. Litter beetle populations at outbreak levels are difficult to control. Loss of insecticide susceptibility has been observed in some parts of the country; therefore, periodic rotation of insecticides from different insecticide classes should be considered. The life cycle from egg to an adult darkling beetle ranges from about 40 to 100 days, indicating that classes should be rotated every 2-3 flocks (in broiler production) depending upon grow-out duration.			
		Pyrethroid insecticides			
		ActiShield (7.9% bifenthrin)	Mix according to label. Apply to walls, floors and posts following cleanout or after growout.	Follow label directions. Apply only when birds are NOT present. DO NOT contaminate feed, water or feeding and watering equipment with spray.	
		Organophosphate insecticides			
		Durashield CS (20% chlorpyrifos)	Mix 2-5 oz/1,000 sq ft in an adequate amount of water to provide good coverage.	Follow label directions. Treat litter, especially under feeder lines, water lines and perimeter. Apply only when birds are NOT present.	
		Rabon 50% WP (tetrachlorvinphos)	Mix 2 lb of 50% WP in 25 gal of water.	Treat evenly and thoroughly using 3/4 oz/100 sq ft.	
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	Mix as directed on label. Use as a residual spray.	Apply 1 gal of dilution/500-1,000 sq ft.	
		Neonicotinoid insecticides			
		Credo SC, Midash Forte and others (42.8% imidacloprid)	Mix as directed on the label. Apply 3 fl oz Credo SC diluted in water per 1,000 sq ft.	Apply between flocks following de-caking/sanitation procedures. Apply a 3-foot band to litter under feed and/or water lines and a 3-foot band to litter adjacent to walls, including 1 foot up the wall above the foundation. Follow all other application directions on the label. Under severe infestations, Credo SC and specific generics may be applied to the whole house.	
		Credo D (21.4% imidacloprid with DStar adjuvant)	Mix as directed on the label. Apply 6.4 fl oz Credo D diluted in water per 1,000 sq ft. Apply from 1/2 to 2 1/2 gal of finished spray per 1,000 sq ft.	Apply between flocks following de-caking/sanitation procedures. Apply a 3-foot band to litter under feed and/or water lines and a 3-foot band to litter adjacent to walls, including 1 foot up the wall above the foundation. Follow all other application directions on the label. Under severe infestations, Credo D may be applied to the whole house.	
		Darlex (23.6% clothianidin)	Use 4 oz product per 1,000 sq ft. For example, mix 4 oz product with 1/2 to 2 gal of water to treat 1,000 sq ft of floor, litter or wall.	Apply between flocks following de-caking/sanitation procedures. Do not apply when birds are present. Addition of disinfectants to insecticide tank mix may affect insecticidal activity.	
		Spinosyn insecticides			
Elector PSP (44.2% spinosad)	Use 8 oz per 20,000 sq ft (use up to 16 oz for heavy infestations). Mix enough water to ensure coverage of treated area. Treat litter along feed and water lines, walls and support beams.	DO NOT apply premise treatment directly to poultry. Read and follow label precautions.			
Insect Growth Regulators					
Pyri-Shield EC, Archer 1.3 (1.3% pyriproxyfen)	Use 1 oz/1,000 sq ft space in sufficient volume water to wet litter. General broadcast, spot, crack and crevice treatment.	FOR LARVAL CONTROL ONLY. Pyri-Shield and Nylar are insect growth regulators that will alter the development of larval forms. Can be used in conjunction with an adulticide to provide immediate control of adults. For best results, apply following cleanout. Remove birds from immediate treatment area. DO NOT contaminate food or water.			
Nylar IGR Concentrate (10% pyriproxyfen)	Use 4-12 mL/1,500 sq ft of surface area in sufficient water to wet the surface.				

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
POULTRY CAGED LAYER TREATMENTS (directly on birds)	External Parasites: Lice and Mites, including northern fowl mite	Sprays and Dusts		
		Rabon Beetle Shield 3% insecticide dust (3% tetrachlorvinphos)	Apply 1 lb/300 birds. Direct dust application to vent and fluff areas.	DO NOT repeat more often than every 14 days. No withdrawal from last application to slaughter.
		Rabon 50% WP (tetrachlorvinphos)	8 lb of 50% WP/100 gal of water. 1 gal/100 birds. Apply directly to birds; spray vent and fluff areas from below. Repeat when necessary.	DO NOT repeat more often than every 14 days.
		Ectiban, Insectrin or Permaban 5.7% or 11% EC (permethrin)	0.05% spray. Mix 1 qt 5.7% EC or 1 pt 11% EC in 25 gal water.	Apply 1 gal diluted spray to 100 hens using high pressure. Apply to vent area for best results.
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	Mix 1 gal Ravap/50 gal water. 1 gal of finished spray per 100 birds. Apply directly to birds. Spray vent and fluff areas from below. For chickens on litter, spray as above and apply 1-2 gal of dilution/1,000 sq ft of litter surface. Also spray walls, roosts, cracks and crevices.	DO NOT repeat more often than every 14 days. Spray birds lightly.
		Permethrin II 10% EC and generics (permethrin)	1 qt/50 gal water. Spray 1-2 oz/bird at vent area. Cover or remove feed and water.	Repeat at 7-10 weeks if necessary. 14 days between last application and slaughter.
		GardStar 40% EC, Tengard SFR (permethrin)	1-4 oz/3.75 gal water. Treats 1,500 birds.	Use high-pressure spray. 1 gal coarse spray per 100 birds. Pay particular attention to vent area.
		Atroban 11% EC (permethrin)	1 pt/25 gal water. Use 1 gal of finished spray per 100 birds.	One application should eliminate an infestation.
POULTRY HOUSES (for treatment of poultry facility)	Bed Bugs, Fowl Ticks	Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Dilute 1.28 oz. product per gallon of water.	Apply one gallon per 100 birds.
		Ectiban or Permethrin 0.25% D (permethrin)	Use 1 lb per 100 birds.	0 days. Apply with shaker or hand duster.
		ActiShield (7.9% bifenthrin)	Mix according to label. Apply to cracks, crevices, walls, posts, nest boxes and mobile side curtains.	Follow label directions. DO NOT apply directly to birds. For occupied areas of poultry facility, apply to cracks and crevices ONLY. DO NOT contaminate feed, water or feeding and watering equipment with spray.
		Grenade ER, OxyFly, Cyonara 9.7 (9.7% lambda-cyhalothrin)	Mix according to label. Apply to cracks, crevices, walls, posts and cage frames.	Follow label directions. DO NOT apply in areas where birds are present. DO NOT contaminate feed, water or feeding and watering equipment with spray.
		Tempo 20 WP (cyfluthrin) 9.5-gram packet or 50-gram powerpack	Mix according to label. Apply to cracks and crevices.	Follow label directions. DO NOT apply when birds are present. DO NOT contaminate feed, water or feeding and watering equipment with spray.
		Tempo SC Ultra (11.8% beta-cyfluthrin)	Mix according to label. Apply to cracks and crevices.	Follow label directions. DO NOT apply when birds are present. DO NOT contaminate feed, water or feeding and watering equipment with spray.
		Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Dilute 1.28 oz. product per gallon of water.	Spray crevices of roost poles, cracks in nests and walls where chicken mites and bed bugs hide.
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	Mix according to label. Apply to cracks and crevices.	Follow label directions.

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
POULTRY HOUSES (for treatment of poultry facility)	Bed Bugs, Fowl Ticks (cont.)	Rabon 50 WP	Mix according to label. Apply to cracks and crevices.	Follow label directions.
		Permethrin (various formulations)	Mix according to label. Apply to cracks and crevices.	Follow label restrictions and directions.
	House Flies and Flies around the premises	Sanitation, Biological Control and Integrated Pest Management (IPM)	Sanitation is critical to any fly control program in poultry facilities. IPM includes sanitation, insecticides (baits, contact insecticides, etc.), surveillance (monitoring and/or trapping) and biological control (conserving natural enemies and/or releases). Use insecticides judiciously to minimize impact on natural enemies and to prevent or delay insecticide resistance. Use a combination of management methods.	Waste removal and management is the first line of defense in any filth fly management program. Waste management includes both removal and moisture control. Minimizing the amount of moisture in waste will reduce fly breeding potential. Some producers have experienced reduced fly populations with releases of parasitic wasps. Parasite and/or insecticide use are not substitutes for a good sanitation and moisture control program.
Fly Maggots (in droppings under caged layers)		Larvicides Vapona Concentrate Insecticide (40.2% dichlorvos) or Prozap Vapona 400E (41.4% dichlorvos)	Mix 2 oz in 1.5 gal water. Apply 1-2 qt/100 sq ft of manure.	Larvicides used on accumulated droppings will give some control, but removal or controlling the moisture in the droppings is preferable. Keep spray away from birds. DO NOT contaminate feed, poultry litter or feed troughs. DO NOT apply to poultry or cages. Well-timed spot treatment of heavy maggot infestations should eliminate the need for "blanket" applications on a routine basis. Repeat applications as needed. Sanitation, such as cleanup of spilled feed outside poultry houses, should not be overlooked. KEEP MANURE DRY. STOP WATER DRIPS. MOW WEEDS NEXT TO HOUSE.
		Dimilin SL (22% diflubenzuron)	For spot treatments: Mix 7.5 oz Dimilin SL to 15 gallons of water. Apply one quart per 10 square feet area of fly breeding material infested with fly eggs and larvae.	
		Tekko 10 (9.3% novoluron)	For spot treatments: Apply 3 oz. Tekko 10 per 1,000 square feet of fly breeding material in sufficient volume to ensure coverage.	
		Neporex 2 SG (2% cyromazine)	Mix 1 lb Neporex 2 SG per gal of water. Apply as a coarse low-pressure spray on fly breeding sites with suitable spray equipment (hand-pressurized or power-operated sprayers). One gal of finished solution will treat 200 sq ft.	DO NOT apply directly to poultry or poultry feed. DO NOT feed treated manure to animals. Allow 1 day between last application and slaughter. DO NOT use Neporex 2 SG in conjunction with Larvadex-treated feed.
		Larvadex 1% premix (cyromazine)	Mix 1 lb of Larvadex 1% premix per ton of feed. Feed Larvadex continuously as directed for 4 to 6 weeks. Read label thoroughly before use.	DO NOT feed Larvadex-treated feed to broiler poultry. Larvadex-treated feed must be removed from layers at least 72 hours before slaughter.
		Rabon EC or WP (tetrachlorvinphos)	4 gal of 24.3% EC or 16 lb of 50% WP in 100 gal of water. Apply to droppings at rate of 1 gal/100 sq ft.	
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	Mix 1 gal Ravap EC in 25 gal water. Apply 1 gal of finished spray per 100 sq ft of manure.	
Adult House Flies (and other premise flies)	Baits (ready-to-use) QuickBayt, Martin's Quick Draw and Bonanza Fly Bait (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene) Ready-to-Use Fly Bait	Scatter 6 oz of bait/1,000 sq ft around the outside of poultry houses and in inaccessible areas of animal housing, or mix 1.5 oz/1 oz of water, mix thoroughly, let stand for 15 minutes or until a paste consistency and paint non-dusty fly resting areas inaccessible to animals.	Use only around the outside of poultry houses. In caged layer houses, apply only on the outside and in walkways. Place bait in areas inaccessible to animals. DO NOT allow bait to contact food or water. Can be used inside horse stables, broiler, turkey and caged layer houses, swine confinement buildings, dairy barns and milking parlors ONLY if used in bait stations. Bait stations must be placed at least 4 ft above ground level and in areas inaccessible to animals, pets or children.	

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
POULTRY HOUSES (for treatment of poultry facility)	Adult House Flies (and other premise flies) (cont.)	Baits (ready to use) QuickBayt Spot Spray (10% imidacloprid and 0.1% muscalure (z)-9-tricosene)	Mix 16 oz per gallon of water.	For use in and around poultry, turkey and chicken houses. DO NOT apply to surfaces accessible to children or pets. DO NOT apply where animals can ingest product.
		QuickBayt Disposable Fly Bait Strip (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene)	Ready-to-use strip. Use 1 bait strip per 250 sq ft.	DO NOT use in areas accessible to food-producing animals or allow to contact food or water.
		Golden Malrin (1.1% methomyl and 0.049% (z)-9-tricosene)	Ready to use. Scatter 4 oz per 500 sq ft of area where flies congregate, rest or feed or use bait in any commercial bait station.	Use as a scatter bait only around the outside of animal housing areas and poultry facilities. Can be used on walkways in caged layer houses. Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children. When using baits, DO NOT contaminate equipment, feed or water. Keep baits out of reach of birds, pets or children.
		QuikStrike Fly Scatter Bait (0.5% dinotefuran and 0.04% (z)-9-tricosene)	Scatter 4 oz/500 sq ft of fly breeding area or use bait in any commercial bait station.	Use as a scatter bait only around the outside of animal housing areas. Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.
		QuikStrike Fly Bait Spray (0.5% dinotefuran and 0.04% (z)-9-tricosene)	To spray on, mix 2 oz product with 16 oz of water to treat 250 sq ft. To paint on, mix 2 oz product with 3 oz of water to treat 250 sq ft.	Apply to fly resting areas such as walls, fences, window sills, posts, etc., typically 4 feet above the floor surface.
		Elector Bait (0.5% spinosad and 0.04% (z)-9-tricosene)	Scatter 12-16 oz/2,000 sq ft. Can also be used in bait stations or applied to hang boards/cards. Use 8-10 bait stations or hang boards/cards per 2,000 sq ft. See label for more detailed instructions on bait station and hang board/card use.	DO NOT allow Elector Bait to contact food, feedstuffs or water. When using Elector in bait stations, hang stations in areas inaccessible to children, livestock and pets. Elector Bait stations or hang cards must be located at least 4 ft above the ground.
		Zyrox Fly Granular bait (0.5% cyantraniliprole)	Ready-to-use granular fly bait. Apply 3.2-6.4 oz granular bait/1,000 sq ft. Depending upon application site, product can be scattered or placed in bait stations.	DO NOT place bait in areas accessible to food-producing animals or animals being grown for food. DO NOT place bait in areas accessible to children and pets. Bait stations must be used if bait is applied inside residential structures, commercial establishments, food processing plants, restaurants and animal housing units. DO NOT apply bait outdoors when raining.
		QuikStrike (1% nithiazine) Fly Abatement Strip	Ready-to-use strip.	Hang 1 strip per 100-300 sq ft in enclosed area protected from rain. Observe safety restrictions.
	Space Treatments Pyrethrins 0.3% to 5% plus Piperonyl Butoxide 1.5% to 25%	Ready-to-use oil sprays, aerosols, ULV concentrates and concentrates for dilution are available. Follow directions on label. Saturate the atmosphere with electric fogging gun for quick kill when adult flies are numerous.	Follow manufacturer's directions, ESPECIALLY FIRE HAZARD PRECAUTIONS. Can be used while birds are in houses.	

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
POULTRY HOUSES (for treatment of poultry facility)	Adult House Flies (and other premise flies) (cont.)	Space Treatments Vapona Concentrate Insecticide (40.2% dichlorvos and 3% related compounds equivalent to 43.2% Vapona)	Apply 1 pt of 1% spray/8,000 cu ft as mist or fog. To make a 1% solution, mix 1 gal concentrate to 50 gal water or 5 oz concentrate to 2 gal water.	Reduce air movement as much as possible. DO NOT apply directly to birds. DO NOT contaminate eggs, feed or water.
		Residual Surface Sprays Grenade ER, Cyonara 9.7, OxyFly (9.7% lambda-cyhalothrin)	Apply to walls and ceilings. Mix 0.2- 0.4 oz/gal water to make a 0.015% to 0.03% dilution. Rates can be increased to a 0.06% dilution (0.8 oz/gal of water) if environmental conditions are severe or populations are high.	Apply dilution to horizontal and overhead surfaces where flies rest. DO NOT make applications in areas where birds are present. Allow to dry before reintroducing birds. DO NOT contaminate bird food, feed or water during application.
		Rabon 50% WP (tetrachlorvinphos)	Use 16 lb 50% WP/100 gal water. 1 gal/500 sq ft.	No need to remove birds from house. DO NOT apply to chickens.
		Pounce 3.2 EC (permethrin)	4 oz/12.5 gal water.	Apply 1 gallon solution/750 sq ft.
		Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.	Apply as directed on label. Treat walls, ceilings, moldings, screens, door and window frames and similar resting places.
		Atroban 11% EC (permethrin)	1 pt 11% EC to 10 gal water. 1 gal/750-1,000 sq ft.	Avoid contamination of feed and water.
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	1 gal Ravap EC to 25 gal water.	Apply 1 gallon diluted spray/1,000 sq ft.
		Also Permethrin (Ectiban, Insectrin, Permethrin Overtime)	Follow label mixing instructions.	DO NOT apply more often than once every two weeks.
		Talstar, Bifenthrin I/T 7.9F, Optashield CS (7.9% bifenthrin)	Mix with water and apply 0.33 to 1.0 oz product per 1,000 sq ft.	Target areas where flies rest such as ceilings, trusses, rafters, supports, walls, windows and vegetation.
		StandGuard 5.9 (5.9% gamma-cyhalothrin)	Mix 0.16 oz (5 mL)/gal of water.	Spray 1 gal of diluted spray to treat 500-1,000 sq ft fly resting surfaces.
Fire Ants		Amdro Pro (hydramethylnon) (outside use only)	2-5 Tbsp/mound broadcast 1.0-1.5 lb/acre	Apply when ants are active and soil temperature is above 60 degrees F. DO NOT treat if rain is anticipated within 6 hours. Check with complex integrator before using insecticides inside the house.
		Extinguish (methoprene) (outside use only)	3-5 Tbsp/mound broadcast 1.0-1.5 lb/acre	
		Extinguish Plus (methoprene and hydramethylnon) (outside use only)	3-5 Tbsp/mound broadcast 1.0-1.5 lb/acre	
		Esteem Ant Bait (pyriproxyfen) (outside use only)	2-4 Tbsp/mound or 1.5-2.0 lb/acre if broadcast	
		Clinch Ant Bait (abamectin) (outside use only)	5-7 Tbsp/mound or 1.0 lb/acre if broadcast	

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks	Minimum Days From Last Application to Slaughter	
SHEEP AND GOATS (DO NOT treat animals under 3 months old, dairy goats or sick animals.)	Fleeceworms and Screwworms (Wool maggots and maggots in wounds)	Catron IV (0.5% permethrin)	Ready-to-use spray. Spray wound and surrounding area.	Check label for restrictions.		
		Prozap Screw Worm Aerosol (0.5% permethrin)				
	Lice, Keds and Ticks (In fall or spring after shearing)	Treat animals 3-6 months old lightly only. Read insecticide label for further instructions. Repeat after 2-3 weeks if needed. (DO NOT repeat within 1 week.) Treat during fall and winter.				
		GardStar 40% EC, Tengard SFR (permethrin)	4 oz/25 gal water. Treats 50-100 head.	Use high-pressure spray.	0	
		Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.	Wet hair thoroughly.		
		Permethrin II 10% EC and generics (permethrin) (sheep only)	Check label for dosages.		0	
		Permethrin CDC (permethrin) (sheep only)			0	
		Python Dust (0.075% zeta-cypermethrin and 0.25% piperonyl butoxide)	Ready-to-use dust. Dust animals. Apply up to 2 oz per animal.		0	
		Ectiban, Hard Hitter or Insectaban 5.7% EC (permethrin)	1 qt/25 gal water.	Use 1-2 qt/animal.	0	
		Atroban DeLice 1% (permethrin)	Ready-to-use pour-on.	Pour along back. Treatment at 14-day intervals.	0	
Nasal Bots	Ivomec Sheep Drench (0.08% ivermectin)	Administer orally at 3 mL per 26 lb body weight.	Formulated for sheep only. May cause severe reactions in other animals. DO NOT treat within 11 days of slaughter.	11		

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Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks	Minimum Days From Last Application to Slaughter
SWINE	Sarcoptes Mange and Lice	GardStar 40% EC, Tengard SFR (permethrin)	4 oz/25 gal water. Treats 50-100 head.	Repeat at 14 days. Thoroughly wet or dip animals. Mange—spray pens thoroughly.	0
		Atroban 11% EC (permethrin)	1 qt/50 gal water. Use 1 pt of spray per animal.	DO NOT spray food or water.	5
		Ivomec 1% Injection (ivermectin)	1 mL/75 lb body weight.	Subcutaneous administration only. An Ivomec 0.27% formulation is available for grower and feeder pigs.	18
		Dectomax Injectable Solution (1% doramectin)	1 mL/75 lb body weight.	Intramuscular injection.	24
		Prolate/Lintox-HD (11.75% phosmet)	Mix 1 qt/25 gal water.	DO NOT treat pigs less than 3 months old.	1
		Swine Gard pour-on (10% permethrin)	Ready to use. Apply 3 mL per 100 lb of body weight up to a maximum of 15 mL. Pour across back of head and ears then apply down midline of neck and over shoulders.	DO NOT treat more often than every two weeks. For optimum control, two treatments 14 days apart may be required. Apply to swine 85 lb and over.	5
	Demodex Mange	No known treatments for swine.			
	Lice Only	Rabon 50% WP (tetrachlorvinphos)	Mix 4 lb/50 gal water or 1/2 lb/6 gal water.	Apply 1-2 qt per animal as a coarse spray. Wet animal entirely.	0
		Co-Ral Fly and Tick Spray (6.15% coumaphos)	Mix 5 oz/4 gal water. Spray animal until runoff.	DO NOT apply more frequently than 10 days.	10
		Co-Ral (shaker can) (coumaphos)	1 oz/head.		0
		Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)	Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.	Wet hair thoroughly.	
Atroban 11% EC (permethrin)		Apply 1/4-1/2 Tbsp.	Can be used on pigs less than 30 days old.	0	
Ectiban, Insectrin or Permethrin 0.25% D (permethrin)	1 oz/animal.		5		
Rabon Dust (3% tetrachlorvinphos)	3-4 oz/animal.	In severe infestations, apply to bedding. Apply 1 lb/150 sq ft of bedding.	0		

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
SWINE BARNS (not on animals)	House Flies and Flies around the premises	Sanitation, Biological Control and Integrated Pest Management (IPM)	Sanitation is critical to any fly control program in swine operations. IPM includes sanitation, insecticides (baits, contact insecticides, etc.), surveillance (monitoring and/or trapping) and biological control (conserving natural enemies and/or releases). Use insecticides judiciously to minimize impact on natural enemies and to prevent or delay insecticide resistance. Use a combination of management methods.	Waste (spilled feed, wet feed, manure and bedding) removal and management is the first line of defense in any filth fly management program. Prompt removal and disposal (such as spreading on pastures, use of lagoons, etc.) of waste will reduce filth fly breeding sites and break the house fly life cycle. Some producers have experienced reduced fly populations with weekly releases of parasitic wasps beginning in April or May. Releases should be made in dry areas out of traffic and in areas where flies reproduce. Parasite and/or insecticide use are not a substitute for a good sanitation program.
	Adult Flies	Sprays Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos) Pounce 3.2 EC (permethrin) Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide) Rabon 50% WP (tetrachlorvinphos) Atroban 11% EC (permethrin) Vapona Concentrate Insecticide (R) (40.2% dichlorvos) Annihilator (0.02% deltamethrin) Grenade ER (9.7% lambda-cyhalothrin) Talstar, Bifenthrin I/T 7.9F, Optashield CS (7.9% bifenthrin) StandGuard 5.9 (5.9% gamma-cyhalothrin)	12 Tbsp/gal water. 4 oz/12.5 gal. Apply 1 gal/750 sq ft. Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate. 1/2 lb/3 gal water. 1 pt/10 gal water. 2 oz/1.5 gal water (0.5% dilution). 5 oz/2 gal water (1.0% dilution). Ready to use. Mix 0.2-0.4 oz/gal water to make a 0.015% to 0.03% dilution. Mix with water and apply 0.33-1.0 oz product per 1,000 sq. ft. Mix 0.16 oz (5 mL)/gal of water.	Use 1 gal of diluted spray per 500-1,000 sq ft. Apply as directed on label. Treat walls, ceilings, moldings, screens, door and window frames and similar resting places. Use 1 gal diluted spray per 750-1,000 sq ft. Apply 0.5% dilution as a space spray mist to open air space at the rate of 1 qt/8,000 cu ft or as a coarse surface spray to indoor surfaces at the rate of 1 qt /1,000 sq ft. For the 1.0% dilution, apply as above but only half the total volume of mixture. DO NOT use this product in areas where animals have received a direct organophos-phate application within 8 hours. If animals are present, ventilate treated area immediately following application. DO NOT contaminate water, feed or foodstuffs. Wet surfaces where flies rest. DO NOT spray animals, humans, animal feed or water. DO NOT apply more than once per week. Apply dilution to horizontal and overhead surfaces where flies rest. DO NOT make applications in areas where animals are present. Allow to dry before reintroducing animals or birds. DO NOT contaminate animal food, feed or water during application. Target areas where flies rest such as ceilings, trusses, rafters, supports, walls, windows and vegetation. Spray 1 gal of diluted spray to treat 500-1,000 sq ft fly resting surfaces.
		Baits QuickBayt, Martin's Quick Draw and Bonanza Fly Bait (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene) Ready-to-Use Fly Bait	Scatter 6 oz of bait/1,000 sq ft around the outside and inaccessible areas of swine confinement facilities, or mix 1.5 oz bait/1 oz water, mix thoroughly, let stand for 15 minutes and paint on non-dusty fly resting areas inaccessible to animals.	Use around the outside of animal housing structures. DO NOT allow bait to contact food or water. Can be used inside swine confinement buildings ONLY if used in bait stations. Bait stations must be placed at least 4 feet above ground level and in areas inaccessible to animals, pets or children.

ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
SWINE BARNS (not on animals)	Adult Flies (cont.)	Baits		
		QuickBayt Spot Spray (10% imidacloprid and 0.1% muscalure (z)-9-tricosene)	Mix 16 oz per gallon of water.	For use in and around swine confinement buildings. DO NOT apply on surfaces accessible to children or pets. DO NOT apply where animals can ingest product.
		Golden Malrin (1.1% methomyl and 0.049% (z)-9-tricosene)	Ready to use. Scatter 4 oz/500 sq ft of area where flies congregate, rest or feed, or use bait in any commercial bait station.	Use as a scatter bait only around the outside of animal housing areas or swine confinement buildings. Bait stations must be hung at least 4 ft above ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.
		QuikStrike Fly Scatter Bait (0.5% dinotefuran and 0.04% (z)-9-tricosene)	Scatter 4 oz/500 sq ft of fly breeding area, or use bait in any commercial bait station.	Use as a scatter bait only around the outside of animal housing areas. Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.
		QuikStrike Fly Bait Spray (0.5% dinotefuran and 0.04% (z)-9-tricosene)	To spray on, mix 2 oz product with 16 oz of water to treat 250 sq ft. To paint on, mix 2 oz of product with 3 oz water to treat 250 sq ft.	Apply to fly resting areas such as walls, fences, window sills, posts, etc., typically 4 feet above the floor surface.
		Elector Bait (0.5% spinosad and 0.04% (z)-9-tricosene)	Scatter 12-16 oz of Elector Bait/2,000 sq ft. Elector Bait can also be used in bait stations or applied to hang boards/cards. Use 8-10 bait stations or hang boards/cards per 2,000 sq ft. See label for more detailed instructions on bait station and hang board/card use.	DO NOT allow Elector Bait to contact food, feedstuffs or water. When using Elector in bait stations, hang stations in areas inaccessible to children, livestock and pets. Elector Bait stations or hang cards must be located at least 4 feet above the ground.
		Zyrox Fly Granular bait (0.5% cyantraniliprole)	Ready-to-use granular fly bait. Apply from 3.2-6.4 oz granular bait/1,000 sq ft. Depending upon application site, product can be scattered or placed in bait stations.	DO NOT place bait in areas accessible to food-producing animals or animals being grown for food. DO NOT place bait in areas accessible to children and pets. Bait stations must be used if bait is applied inside residential structures, commercial establishments, food processing plants, restaurants and animal housing units. DO NOT apply bait outdoors when raining.
	Fly Maggots (fly breeding areas)	Neporex 2 SG (2% cyromazine)	Spray: Mix 1 lb Neporex 2 SG/gal of water. Apply as a coarse low-pressure spray on fly breeding sites with suitable spray equipment (hand-pressurized or power-operated sprayers). One gallon of finished solution will treat 200 sq ft. Treat manure surface and wet spots around feed and water troughs. Also apply 3 days after manure removal or when larvae are found. Scatter: Apply 1 lb Neporex 2 SG/ 200 sq ft. Apply after cleaning and prior to the installation of pigs on fly breeding sites where fly larvae are found.	DO NOT apply directly to livestock or livestock feed. DO NOT feed treated manure to animals. Allow at least 1 day between last application and harvest. May be used with slatted floors to treat areas where manure and other refuse accumulate to create fly breeding sites.
		Dimilin SL (22% diflubenzuron)	For spot treatments: Mix 7.5 oz Dimilin SL to 15 gallons of water. Apply one quart per 10 square feet area of fly breeding material infested with fly eggs and larvae.	
		Tekko 10 (9.3% novoluron)	For spot treatments: Apply 3 oz. Tekko 10 per 1,000 square feet of fly breeding material in sufficient volume to ensure coverage.	