

## ANIMAL INSECT CONTROL

Animal	Pest Problem	Insecticide Formulation	Method and Rate	Restrictions/Remarks
<b>POULTRY</b>	<b>Litter Treatments for Fleas, Lice and Mites</b> (including northern fowl mites)	<b>Sprays</b> 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.	
		<b>Dusts</b> 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.
	<b>Litter Beetles</b> (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.		
		<b>Pyrethroid Insecticides</b> 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.

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<b>POULTRY</b>	<b>Litter Beetles</b> (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.			
		<b>Pyrethroid insecticides</b>			
		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.	
		<b>Organophosphate insecticides</b>			
		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.	
		<b>Neonicotinoid insecticides</b>			
		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.			
<b>Spinosyn insecticides</b>					
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.			
<b>Insect Growth Regulators</b>					
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.				

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<b>POULTRY CAGED LAYER TREATMENTS</b> (directly on birds)	<b>External Parasites: Lice and Mites, including northern fowl mite</b>	<b>Sprays and Dusts</b> 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.
		Ectiban or Permethrin 0.25% D (permethrin)	Use 1 lb per 100 birds.	0 days. Apply with shaker or hand duster.
<b>POULTRY HOUSES</b> (for treatment of poultry facility)	<b>Bed Bugs, Fowl Ticks</b>	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.
		Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)	Mix according to label. Apply to cracks and crevices.	Follow label directions.

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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	<b>Sanitation, Biological Control and Integrated Pest Management (IPM)</b>	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. <b>Parasite and/or insecticide use are not substitutes for a good sanitation and moisture control program.</b>	
	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.
			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.	<b>DO NOT feed Larvadex-treated feed to broiler poultry.</b> 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)	<b>Baits (ready-to-use)</b> 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 <b>ONLY</b> 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.	

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POULTRY HOUSES (for treatment of poultry facility)	Adult House Flies (and other premise flies)	<b>Baits (ready to use)</b> 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.
		<b>Space Treatments</b> 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.

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POULTRY HOUSES (for treatment of poultry facility)	Adult House Flies (and other premise flies) (cont.)	<b>Space Treatments</b> 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.
		<b>Residual Surface Sprays</b> 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.
		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
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			