

Swine Pest Control

Gene Burgess

Rev 4/06

Swine

| Pest and Product | Dilutions or Final Strength in Water | Application Rate | Remarks |
|--|---|--|--|
| HOG LICE | | | |
| SPRAYS | | | |
| 1. Amitraz (Taktic) ME 12.5% | 0.06% Mix 1 qt. of 12.5% EC in 50 gals. of water or mix 1 fl. oz. EC in 2 gals. of water | Apply a coarse spray to point of runoff. Pay strict attention to jowls, legs, inside of ears and the underside of the body. Use 70-150 psi. Spray must wet skin until runoff. Piglets (weaners) can be dipped. | Remove feed from pen and cover drinking bowls. Remove and destroy bedding. Hose out feces and excess feed. Use Taktic solutions within 6 hours of mixing. Treat each animal thoroughly. Spray walls, floor and fittings in the pen. Repeat 7 to 10 days after the first treatment for mange mites and 10 - 14 days for lice. Do not treat animals more than 4 times per year. 1 day from last application until slaughter. |
| 2. Coumaphos (Co-Ral) OP, ME 6.15% | 0.06% Mix 2 qts. of 5.8% EC in 50 gals of water. | Wet to point of run-off. Treat no more than six times per year. Do not make applications less than 10 days apart. | Do not treat sick, convalescent or stressed animals. Do not spray animals for 10 days before or after shipping or weaning, or after exposure to contagious or infectious diseases. Do not spray in a confined, non- ventilated area. Do not apply in conjunction with oral drenches or other internal medication, or with natural or synthetic pyrethroids or their synergists, or with other organophosphates or cholinesterase inhibiting drugs, pesticides or chemicals. Zero (0) day from last application to slaughter. |
| 3. Dormactin Injectable (Decto Max) | 1% Ready-to-use | Inject 1 ml/75 lbs. | Intramuscular injection 24 days from last application until slaughter. |
| 4. Lindane CH, ME 25% WP (Restricted- use) | 0.05% Mix 1 lb. of 25% WP OR mix 2 pints of 20% EC in 100 gals. of water. | Wet to point off or runoff. | Repeat sprays every 2 to 3 weeks if needed. Do not treat pigs before weaning. Do not treat sows within 2 weeks of farrowing or for a least 3 weeks thereafter. Do not treat thirsty, overheated or sick animals. Do not treat animals under 3 months of age. |
| 5. Malathion OP, ME 57% EC 25% WP | 0.5% Mix 1 gal. of 57% EC OR mix 16 lbs. of 25% WP in 100 gals of water. | Wet to point of runoff. | Treat every 2 to 3 weeks if needed. Sprayed hogs should be kept out of sun and wind for a few hours after treatment. 0 days frm last application until slaughter. |
| 6. Methoxychlor CH, ME 50% WP | 0.5% Mix 8 lbs of 50% WP in 100 gals water | Wet to point of run-off | Spray animals thoroughly. Repeat after 3 weeks, if needed. |

Swine

| Pest and Product | Dilutions or Final Strength in Water | Application Rate | Remarks |
|---|--|---|---|
| 7. Permethrin SP, ME (Atroban, Ectiban, Gardstar, Insectrin, Permethrin) 5.7% EC, 10% EC, 11% EC, 40% EC, 42.5% EC Swine Guard 10% | 0.025- 0.054% Mix 1 pt of 11% EC OR mix 1 qt. of 5.7% EC OR mix 1 cup 10% EC OR mix 50-118 ml or 40% EC OR mix 4 ozs. of 42.5% EC in 25 gals. of water. Ready-to-use | Wet thoroughly (Approximately 1 pint per animal) 3cc/100 lb No mixing | Spray entire animal thoroughly. Pay special attention to ears and hard to spray areas. Make a second application 14 days later if needed. 5 days from last application until slaughter. Apply across back of head & ears, then apply down midline of neck over shoulders. |
| 8. phosmet (Del-Phos, Lintox-HD, Prolate) OP, ME 11.6% EC | 0.06% Mix 1 qt in 25 gals water | Wet to point of run-off. Wet thoroughly to skin. | See 32. Single application should be effective. Should a second application be needed, it may be made 14 days following the first treatment. Do not treat suckling pigs. Do not treat within 1 day of slaughter. |
| 9. stirofos or tetra- chlorvinphos OP, ME (Rabon) 50% WP | 0.5% Mix 4 lbs. of 50% WP in 50 gals. of water. | 1 to 2 qts. Wet animal thoroughly | Apply as a coarse spray. Repeat in 2 weeks, if needed. Zero (0) days from application to slaughter. |
| HOG LICE | | DIPS | |
| 10. Lindane (Restricted Use) CH, ME 25% WP | 0.05% Mix 1 lb of 25% WP in 100 gals of water | Immerse entire animal | Repeat dips every 2 to 3 weeks, if needed. Do not treat pigs before weaning. Do not treat sows within 2 weeks of farrowing or for at least 3 weeks thereafter. Do not treat animals under 3 months of age. Do not treat within 60 days of slaughter. |
| 11. Malathion OP, ME 57% EC 25% WP | 0.5% Mix 1 gal of 57% EC OR mix 16 lbs. of 24% WP in 100 gals of water | Immerse entire animal | Treat every 2 to 3 weeks, if needed. Zero (0) days from last application to slaughter. |
| 12. Methoxy- chlor OP, ME 50% WP | 0.5% Mix 8 lbs of 50% WP in 100 gals of water | Immerse entire animal | Repeat after 3 weeks, if needed. Zero (0) days from last application to slaughter. |
| 13. Permethrin (Gardstar) SY, ME 40% EC | 0.025-0.05% Mix 50-118 ml in 25 gals. of water. | Immerse entire animal. | Dip animals including ears. Spray pen floors, sides and bedding. Repeat at 14 days. 5 days from last application until slaughter. |

Swine

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|--|---|--|---|
| HOG LICE | | DUSTS | |
| 14. Malathion OP, ME 4 to 5% D | Ready-to-use | Dust thoroughly | Treat every 2 to 3 weeks, if needed. For pigs under one month of age apply 1/4 to 1/2 Tbs. 0 days from last application until slaughter. |
| 15. Permethrin (Ectiban, Insectrin) PY, ME 0.25% D | Ready-to-use | Dust thoroughly | Apply up to 1 oz. (2 1/2 Tbs.) Per animal. Pay particular attention to ears and other hard to reach areas. Re-treat 14 days later if needed. 5 days from last application to slaughter. |
| 16. Phosmet (Prolate) OP, ME 1% D | Ready-to-use | Dust thoroughly. Apply 1/2 to 1 oz. of dust per animal to backline and lightly rub in. Repeat in 10 to 14 days or as needed. | Dust animals thoroughly. See restrictions under Co-Ral in No. 2 above. 1 day from last application until slaughter. |
| 17. Stirofos or tetra-chlorvinphos (Rabon) OP, ME | Ready to use | Dust thoroughly. Use 3 to 4 ozs. | Apply by hand or with conventional hand or power duster. Do not retreat with more than 2 ozs. per head within 14 days. Heavily infestations may require bedding be treated at one lb. per 150 ft. ² 18 days from last application until slaughter. |
| HOG LICE | | INJECTABLE | |
| 18. Ivermectin (Ivomec) ME 1% | Ready-to-use | 1 ml. per 75 lbs. body weight. (300 mcg of ivermectrin per kilogram of body weight) | Inject subcutaneously. Follow label instructions. |
| HOG LICE | | POUR-ON | |
| 19. Fenthion (Tiguvon) OP, ME 3% PO | Ready to use | 1/2 fl oz per 100 lbs body weight | Pour evenly along backline. Treat all animals in herd for best results. Tiguvon is a cholinesterase inhibitor. Do not use this product on animals simultaneously or within a few days before or after treatment with or exposure to cholinesterase inhibiting drugs, pesticides or chemicals. Do not treat sick, convalescent or stressed animals. Do not treat within 14 days of slaughter |
| MANGE MITES | | | |
| 20. Fenvalerate SP, ME | Use according to instructions given under hog lice control in No. 3 above | | |

Swine

| Pest and Product | Dilutions or Final Strength in Water | Application Rate | Remarks |
|---|---|--|---|
| 21. Ivermectin ME | | | Use according to instructions given under hog lice control in No. 18 above. |
| 22. Lindane CH, ME | | | Use according to instructions given under hog lice control in No. 4 and No. 10 above except mix 1 ½ lbs. of 25% WP in 100 gals. of water. For most effective treatment apply 2 sprays one week apart. |
| 23. Malathion OP, LE | | | Use according to instructions given under hog lice control in No. 5, 11, & 14 above |
| 24. Permethrin SP, ME | | | Use according to instructions given under hog lice control in Nos. 7 & 13 above. |
| 25. Permethrin (Atroban) SY, ME 42.5% EC | 0.108% Mix 8 ozs. of 42.5% EC in 25 gals of water. | Spray animals thoroughly (approximately 1 pt./animal). | See No 13 above. Repeat application in 14 days. 5 days from last application until slaughter. |
| BLOWFLIED, MOSQUITOES, FLEAS AND TICKS | | | |
| 26. Permethrin (Permethrin II) SP, ME 10% EC | 0.025% Mix 1 qt. of 10% EC in 25 gals. of water. | Spray, paint or dip to apply 1 pint per hog, especially around ears. | See No. 7. Five days from last application until slaughter. |
| 27. Phosmet (Del-Phos, Lintox-HD, Prolate) OP, ME | | | Use according to instructions given under hog lice control in No. 8 above |
| TICKS | | | |
| 28. Coumaphos (Co-Ral) OP, ME 25% WP | 0.24% Mix 8 lbs. of 25% WP in 100 gals. of water. | Thoroughly wet animal. Repeat as needed but not more often than every 14 days. | See No. 2. 0 days from last application until slaughter. |
| WOUND-INFESTING MAGGOTS | | | |
| 29. Coumaphos OP, ME (Co-Ral) 25% WP | 0.24% Mix 8 lbs of 25 % WP /100 gals water | Thoroughly treat wound and surrounding area with light but thorough coverage. | Application instructions and restrictions same as for Co-Ral in No. 2 above. Repeat as needed but not more often than every 14 days. 0 days from treatment to slaughter. |

¹ Insecticides recommended for hog lice control will aid in the control of ticks, mange mites and flies on swine.

² When applying insecticides, do not contaminate feed or drinking water.

³ Do not treat animals less than 3 months old with insecticides unless specifically allowed on the insecticide label.

⁴ OP - organophosphate, SP - Pyrethroids, NP - natural pyrethrins, CH - organochlorine, CR - carbamate, LE - less effective or effectiveness not determined, ME - most effective.

⁵ Limit spray applications in winter to warm, calm days when temperatures are above freezing.

⁶ Do not treat sick, convalescent or stressed animals.

Poultry External Parasite Control

Gene Burgess

IMPORTANT: Effective, economical fly control depends on producer management. Check fly-breeding areas (manure, around feed bins, etc.) Weekly and maintain an integrated pest management program (IPM) to ensure long term fly control.

Poultry

| Insecticide ¹ | Formulation and Mixing Instructions | Application Instructions | Safety Restrictions ² |
|--|---|---|---|
| BEDBUGS, CHICKEN LICE, FLEAS, FOWL TICKS, and MITES | | | |
| For Direct Treatment to Birds or Poultry Facility | | | |
| DUSTS ³ | | | |
| 1. | Malathion (Cythion) 4% or 5% Dust, OP | Dust Ready to use | Apply 1 lb/100 birds by direct application to birds or apply 1 lb/50 sq ft of litter and floor space and to nests, roosts, and adjacent areas or apply 1 lb in 18"x12"x3" dust box/30 birds. |
| 2. | Permethrin (Ectiban, Insectrin, Permethrin) 0.25% Dust, PY, | Dust Ready to use | Apply 1 lb/100 birds. Ensure thorough treatment of vent for northern fowl mite control. |
| 3. | Rabon (stirofos, tetrachlorvinphos) 50% WP or 3% Dust, OP | Dust Ready to use | Apply 2.5 ozs (5 Tbs)/100 sq ft of litter or mix 2.5 ozs (5 Tbs) per 50 birds evenly throughout contents of top layer in dust boxes. Apply 1 lb of dust/300 birds on wire and 1 lb of dust/100 sq ft of litter for floor birds. |
| 4. | Sevin (carbaryl) 5% or 10% Dust CR | Dust Ready to use | Apply 1 lb/100 birds by direct application. Use 1 lb/40 sq ft on litter, walls, etc. As a supplement to litter treatment, apply 1.5 lbs in dust box/50 birds. On ranges, provide 2 natural wallows containing 2.5 lbs. dust/50 birds. On ranges, provide 2 natural wallows containing 2.5 lbs dust/50 birds. |
| SPRAYS ⁴ | | | |
| 5. | Malathion (Cythion) 25% WP or 5 lbs ai per gal EC (57%), OP | 0.5% spray: Mix 1.5 lbs WP OR 2/3 cup (2 Tbs/gal) EC in 10 gals water. 1.0% spray: Mix 3 lbs WP OR 1 1/3 cups EC in 10 gals water. | Apply 1 gal/100 birds of 0.5% spray OR apply 1 gal 1.0% spray/1000 sq ft to litter, walls, ceilings, nests, roosts and adjacent areas. Do not apply 1.0% spray directly to birds. |

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Poultry

| Insecticide ¹ | Formulation and Mixing Instructions | Application Instructions | Safety Restrictions ² |
|---|---|--|---|
| 6. Permethrin (Ectiban, Insectrin, Permaban, Permethrin) 5.7% EC, SP | 0.05% spray: Mix 1 qt 5.7% EC OR 1 pt 11% EC in 25 gals water | Apply 1 gal diluted spray to 100 hens using high pressure. Apply to vent area for best results. | One application should provide control. A second application may be needed 4 to 12 weeks later. |
| 7. Rabon (stirofos, tetrachlorvinphos) 50% WP, OP | 0.5% spray: Mix 2 lbs WP in 25 gals water. | Apply 1 gal/100 birds. Apply directly to birds. Spray vent and fluff areas from below using high pressure (100 psi and up). For treatment of litter, walls, ceilings, roosts, cracks and crevices, apply 1 to 2 gals per 1000 sq ft. | Repeat as necessary, but not more often than once every 14 days. Spray birds lightly. |
| 8. Ravap (23.0% stirofos + 5.7% dichlorvos) 28.7% EC, OP | 0.5% spray: Mix 2 qts EC in 24 gals water. | Apply 1 gal/100 birds. Apply directly to birds. Spray vent and fluff areas from below using high pressure (100 psi and up) sprays. Wet feathers around vent area for effective control. For floor birds, apply 1 to 2 gals of spray per 1000 sq ft of litter. | Do not spray birds more often than once every 14 days. Spray birds lightly. |
| 9. Sevin (carbaryl) 80% SP or 50% WP, CR | 0.5% spray: Mix (1/4 lb) 80% SP OR (1/2 lb) 50% WP in 5 gals water. | Apply 1 gal/100 birds. Apply directly to birds. | Do not treat nest litter. Waiting period between application and slaughter: 7 days. |
| BEDBUGS, CHICKEN MITES, FLEAS and FOWL MITES | | | |
| For Treatment of Poultry Facility Only Not For Direct Application to Birds | | | |
| 10. Dibrom (naled) 4 lbs ai per gal EC (37%), OP | 0.3% spray: Mix 1 cup EC in 10 gals water. | Apply 1 gal/500 sq ft to infested areas in house but not directly on birds. Force into cracks. | Do not apply to birds, nests or eggs. |
| 11. Malathion (Cythion) 5 lbs ai per gal EC (57%), OP | 3.0% spray: Mix 3/4 cup EC in 1 gal water. | Apply 1 to 2 gals/1000 sq ft. Force into cracks. | Do not apply to birds, nests or eggs. |
| 12. Rabon (stirofos, tetrachlorvinphos) 50% WP OR 2 lbs ai per gal EC (24%), OP | 1.0% spray: Mix 4 lbs WP OR 1 gal EC in 25 gals water. | Apply 1 gal/125 sq ft with high pressure. Force into cracks. | Do not apply to birds, nests, or eggs. |

IMPORTANT: Effective, economical fly control depends on producer management. Check fly-breeding areas (manure, around feed bins, etc.) Weekly and maintain an integrated pest management program (IPM) to ensure long term fly control.

Poultry

| Insecticide ¹ | Formulation and Mixing Instructions | Application Instructions | Safety Restrictions ² |
|--|--|---|--|
| 13. Ravap (23%) stirofos, tetrachlorvinphos + (5.7%) dichlorvos 28.7% EC OP | 1.25% or 2.5% spray or 1.25% roost paint: Mix 1 gal EC in 12.5 gals of water to make 2.5% mixture or mix 1 gal EC in 25 gals of water to make 1.25% mixture. | Apply roost paint at the rate of 1 pt of finished mixture per 100 ft of roost area with brush or spray OR apply 1 gal of spray per 100-150 sq ft for fowl ticks or 1 gal of spray per 500-1000 sq ft for other parasites. | |
| 14. Sevin (carbaryl) 50% WP OR 80% SP, OP | Mix 5 lbs 80% SP/100 gals of water for chicken mites, fleas and bedbugs; for fowl ticks mix 20 lbs 80% SP/100 gals of water. | Apply 1 to 2 gals spray mixture/1000 sq ft to walls, bedding, litter and roosts. | Repeat as needed. Avoid spraying nests, eggs and feeding and watering troughs. Waiting period between application and slaughter: 7 days. |
| TURKEY LESION CHIGGERS For Treatment of Ranges Only | | | |
| 15. Malathion 5 lbs ai per gal EC (57%), OP | Apply 1 to 1.5 pints EC/acre. | Apply broadcast on range in enough water (100 to 150 gals/acre) for good coverage. | Apply 1 day before putting turkeys on range. Repeat every 2 to 3 weeks, if needed. |
| 16. Malathion (Cythion) 4% or 5% Dust, OP | 25 lbs of 4% dust OR 20 lbs of 5% dust/acre. | Apply broadcast on range. | Apply 1 day before putting turkeys on range. Repeat every 2 to 3 weeks, if needed. |
| 17. Dursban (chlorpyrifos) 50% WP, OP | Apply 8 lbs WP/acre. | Apply broadcast on range in enough water (100 to 150 gals/acre) for good coverage. | Apply just before turkeys are placed on ranges. Dursban can only be applied twice to infested ranges at a four-week interval. Do not spray turkeys, feed or water. Allow at least 3 weeks after application for lesions to heal. Waiting period between application and slaughter: 7 days. |
| LITTER BEETLES (Darkling beetles, black bugs, black poultry bugs, lesser mealworms) | | | |
| 18. cyfluthrin (Tempo) 11.8% WP, SP | Mix 16 ml in 1 gal. water | Apply as a general surface and/or a crack and crevice spray. | Do not make applications when birds are present. Do not make applications to feed, water and feeding and watering equipment. |
| 19. Rabon (stirofos, tetrachlorvinphos) 50% WP, OP | 0.5% spray or 50% WP: Mix 2 lbs WP in 25 gals water or use 50% WP undiluted. | Apply 1 to 2 gals per 1000 sq ft of litter, walls, center posts and foundation walls. Apply undiluted dust using 3/4 oz per 100 sq ft of litter using rotary or mechanical duster. | |

IMPORTANT: Effective, economical fly control depends on producer management. Check fly-breeding areas (manure, around feed bins, etc.) Weekly and maintain an integrated pest management program (IPM) to ensure long term fly control.

Poultry

| Insecticide ¹ | Formulation and Mixing Instructions | Application Instructions | Safety Restrictions ² |
|--|---|--|---|
| 20. Safecide (orthoboric acid) 99% dust INO | Dust ready to use when purchased. When making spray mixture, mix 1 to 2 lbs of 100% dust per 3 gals of water. | Apply ready to use dust at 1 to 2 lbs per 100 sq ft after litter and birds have been removed. Apply spray mixture at 3 gals per 100 sq ft of side walls, top plates, posts and framing. | Don't treat litter or birds. Reapply as needed between grow outs. Spray into cracks and crevices. |
| 21. Sevin (carbaryl) 20% bait, 41.2% water dispersable liquid (Sevin XLR and Sevin FL) and 80% S, CR | Bait is ready to use when purchased. Mix 50 qts of 43.4% water dispersable liquid OR mix 62.5 lbs 80% S in 100 gals of water. | Apply 8 to 12 ozs of 20% bait uniformly per 1000 sq ft of litter surface. Apply 1 to 2 gals of spray mixture per 1000 sq ft of litter surface. | Birds can be present during application. Repeat bait treatment after 5 weeks, if needed. No waiting period between application and slaughter when using bait. Don't apply spray when birds are in houses. Ventilate while spraying. Waiting period between application and slaughter is 7 days when using spray. |

¹ Abbreviations used: CR - carbamate; NP - natural pyrethrum; OP - organophosphate; INO - inorganic; SP - synthetic pyrethroid.

² Do not contaminate feed, water or feeding and watering equipment.

³ Dust birds thoroughly, especially under the wings and around the vent. Provide thorough ventilation while dusting.

⁴ Penetration of feathers around vent is essential for northern fowl mite control. Apply directed sprays using 100 to 125 psi. Provide thorough ventilation while spraying. Force sprays into cracks and crevices when treating for chicken red mites, bedbugs, fleas and fowl ticks.

Poultry - Fly Control

Poultry

| Insecticide | Spray Concentrations and Mixing Instructions | Application Methods | Safety Restrictions ¹ |
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|-------------|--|---------------------|----------------------------------|

RESIDUAL AND BAIT SPRAYS

Residual and bait sprays are used when a residual insecticide deposit is needed for adult fly control. Apply to surfaces in poultry operations where flies rest and feed.

NOTE: Use of residual sprays promotes insecticide resistance. Use of synthetic pyrethroid (SP) insecticides virtually eliminates the implementation of a dump fly (*Hydratea anescens*) biological control program.

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|----|--|--|--|---|
| 1. | Permethrin (Atroban, Ectiban, Insectrin, Permethrin, Permet, Overtime) 5.7% EC, 10% EC or 25% WP, SP, LE | 5.7% EC is ready to use as a spray OR mix 1 qt 5.7% EC in 12 1/2 gals of water OR mix 6 ozs 25% WP in 11 gals of water OR mix 1 qt 10% EC in 25 gals of water. | Apply as a residual surface spray to fly resting areas (walls, ceilings, etc.). | Do not spray manure or litter. Do not apply directly to poultry. Do not apply in egg storage areas. |
| | | | Apply 5.7% EC undiluted at 4 ozs per 1000 sq ft of surface area or apply diluted WP and EC mixtures at 1 gal/750 sq ft. | Don't apply more than once every 2 weeks. |
| 2. | Rabon (Poultry Spray) 50% WP, OP, LE | 1.0% spray: Mix 1 1/2 lbs WP in 10 gals of water (5 Tbs per gal). | Direct spray to inside and outside surfaces of poultry buildings where flies congregate and feed to include floors, manure, walls, ceilings, grass, etc. Apply thoroughly to point of runoff (about 1 gal per 500 to 1000 sq ft). To make bait spray, add 1 cup sugar or syrup per gal of spray. | Do not contaminate eggs, feed or water. Keep spray away from birds. |
| 3. | Ravap (Rabon 2 lbs, ai per gal (21.4%) and Vapona 0.5 lb, ai per gal (5.7%) EC, OP | 1.0% spray: Mix 1 gal EC in 25 gals of water (12 Tbs/gal). | | Methods of application and safety restrictions same as for Rabon in #2 above. |

CONTACT SPRAYS

These sprays are also called space sprays and are only effective for very short periods. They kill flies directly contacted by the spray. Several types of mist, aerosol and ULV (ultra-low volume) equipment are sold for applying these sprays. Be sure that insecticides bear full label instructions for use in poultry houses to avoid violation of Federal and State laws.

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| 4. | Dibrom (naled) 4 lbs ai per gal EC (37%) OP, LE | 0.3% EC spray: Mix 1 cup EC in 10 gals of water. | Apply as a light mist spray when adult flies are present. Direct space spray throughout fly infested areas. | Do not apply directly to birds. Do not contaminate eggs, feed or water. |
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Poultry

| Insecticide | Spray Concentrations and Mixing Instructions | Application Methods | Safety Restrictions ¹ |
|---|--|---|---|
| 5. Pyrethrins (0.3 - 5.0%) plus Piperonyl Butoxide (1.5 - 25%) NP, ME | Ready to use, dilute oil sprays. Aerosols, ULV concentrates, and concentrates for dilution are available. | | Apply fog or mist sprays when adult flies are present to obtain temporary adult fly suppression. Advantage is safety when used around animals and food products. Pyrethrin knockdown sprays are essential for emergency fly control. Aerosol, dilute mist or ULV cold fog equipment should be available for use when needed. |
| 6. Vapona or DDVP (dichlorvos) 2 lbs ai per gal EC (21.8%) OP, LE | 0.5% spray: Mix 3 1/3 cups EC in 10 gals of water. | Apply as a light mist spray when adult flies are present. Direct space spray throughout fly infested area. | Do not apply directly to birds. Do not contaminate eggs, feed or water. |
| LARVICIDE (Maggot) SPRAYS and FEED THROUGH LARVICIDES | | | |
| Another way to control flies is to destroy the immature or maggot fly. Heavy use of a given insecticide could result in flies developing a resistance to the insecticide. To kill adult flies, use fly traps and apply baits, residual sprays, bait sprays and contact sprays either alone or in combination. | | | |
| 7. Cygon (dimethoate) 2 lbs ai per gal EC (23.4%) OP, ME | 1% spray: Mix 6 2/3 cups EC in 10 gals of water. | Under cages, use about 1 gal/25-100 sq ft of manure applied broadcast as a coarse, low-pressure spray. Apply at 7-10 day intervals along with an intensive adult house fly control program until manure begins to dry or cone up. Spot spraying of manure and continued use of adult house fly control will maintain control. | Do not contaminate eggs, feed or water. Keep spray away from birds. |
| 8. Larvadex (Cyromazine) 1% Premix, HE | 5 parts per million in total diet of commercial layers or hatching egg layers. Mix 1 lb of 1.0% premix per 2000 lbs of feed. | Feed treated feed as daily ration as needed to control house flies and soldier flies. | The high rate of Larvadex will kill dump fly (<i>Hydratea anescens</i>) in the pits thus destroying this biological fly control agent. If attempting biological fly control, producers will need to use Larvadex based on a sound and carefully managed IPM program. Treated feed must not be fed to layers for a minimum of 3 days (72 hours) before slaughter for food. |
| 9. Larvadex (Cyromazine) 2% Liquid Larvacide, LE | Mix 64 fl ozs of the 2% liquid in 10 gals of water. | Apply 1 gal of 0.1% spray per 100 sq ft of area where fly larvae are present. | Do not apply more frequently than once every 21 days. Do not apply to poultry or poultry feed. Allow 1 day (24 hours) between application and slaughter. Before applying treated manure to soils and crops, read the Larvadex 2SL label carefully to avoid illegal residues or crop damage. |

Poultry

| Insecticide | Spray Concentrations and Mixing Instructions | Application Methods | Safety Restrictions ¹ |
|---|---|--|---|
| 10. Rabon (Poultry Spray) 50% WP OR 2 lbs ai per gal EC (24%) OP, LE | 1% spray: Mix 3 1/4 cups 50% WP OR 7 1/2 cups 24% EC in 10 gals of water. | Apply 1 gal per 25-100 sq ft of manure. | Observe same methods of application and safety restrictions as for Cygon in #7 above. |
| 11. Ravap (Rabon 2 lbs ai per gal 21.4% and Vapona 0.5 lb ai per gal 5.7%) EC, OP, ME | 1% spray: Mix 6 1/2 cups EC in 10 gals of water. | Apply 1 gal per 25-100 sq ft of manure. | Observe same methods of application and safety restrictions as for Cygon in #7 above. |
| 12. Vapona or DDVP (dichlorvos) 2 lbs ai per gal (21.8%) EC, OP, ME | 0.5% spray: Mix 3 1/3 cups EC in 10 gals of water. | Apply enough spray to penetrate manure (until thoroughly wet). | Since Vapona has such a short residual, heavy treatment is required for larval kill. Once control is established, Vapona is an economical spot spray. Observe same methods of application and safety restrictions as for Cygon in #7 above. |

DRY BAITS

In some operations, dry baits can be used to control adult house flies. These materials can be bought ready to use.

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| 13. methomyl (Apache, Golden Malrin, Improved Golden Malrin, Blue Streak) 1% bait, CR, ME | Ready to use bait. | Scatter on floors, walkways, etc., throughout house. Apply heavy (about 1/2 - 2 lbs/1000 sq ft) until flies are suppressed. | Wear rubber gloves when applying baits. Do not allow workers on treated floors without shoes. Keep pets out of house. Do not contaminate eggs, feed or water. Keep baits away from birds. |
| 14. Nithiazine (Quick Strike) 1.0% fly abatement strips | Ready-to-use strip | Hang one strip per 100 ft. ² or 300 ft. ² depending on fly population in enclosed areas that are protected from rain. | |
| 15. trichlorton (Sugarcide) 1% bait, OP, LE | Ready to use as a dry bait. As a liquid bait: Mix 4 ozs in 1 gal of water, and add 2 cups of corn syrup or 1 lb of sugar and stir until dissolved. | As a dry bait: Apply and follow precautions as for methomyl (#12) above. As a liquid bait: Sprinkle the solution in a 4-10 inch wide band or apply the solution to burlap bags or squares of hard surface material and place on floors, window sills of farm buildings and outside buildings when fly population is intense. | |

¹ Do not contaminate feed, water or feeding and watering equipment. OP - organophosphate, CR - carbamate, SP - synthetic pyrethroid, NP - natural pyrethrin, LE - less effective or effectiveness not determined, ME - most effective.

Horses -- External Parasite Control

Gene Burgess

Horse

| External Parasites | Insecticide ¹ | Formulation & Mixing Instructions | Application Instructions & Use Restrictions |
|--|--|--|---|
| FLIES: Biting midges, Black flies, Deer flies, Face flies, Gnats, Horn flies, Horse flies, Lice, Mosquitoes, Punkies, Ticks, Wound infesting larvae (screwworms) | coumaphos (Co-Ral) OP, LE 11.6%E.L.I. (Restricted Use). 5.8% EC and 25.0% WP | Fly, Lice and Tick Control: 0.06% to 0.125% WP or EC spray. Mix 1 or 2 lbs 25% WP in 50 gals water OR 2½ - 5 ozs 11.6% EC in 4 gals water OR mix 5 to 10 oz. Of 5.8% EC in 4 gals. of water | Spray: Apply higher concentrations for ticks. Treat wounds for wound-infesting larvae. Treat animal thoroughly. Do not treat animals less than 3 months old. Do not treat sick, convalescent or stressed horses or those that have been treated with other drugs. Do not treat horses intended for slaughter. |
| | cypermethrin SP, ME 0.15% (Bite Free, Tri-Tec 14) | Fly Control: Ready-to-mix | Mist spray or wipe-on: Apply mist spray to horses as needed every 5 to 14 days. Not for use on horses intended for human consumption. |
| | fenvalerate 8.0% Collar/Brow Band (Ectrin, Fly Guard) SP, LE | Fly Control: Ready-to-use | Collar/Brow band: Apply one per animal when flies reach damaging levels. Remove when control begins to drop off and during cooler months of the year. Due to fly resistance problems, don't reapply except during alternate years. |
| | fenvalerate 10% WDL (Ectrin) SP, ME | Fly Control: 0.12% spray. Mix 1 qt of 10% WDL in 25 gals of water OR mix 2 ozs of 10% WDL in 1.5 gals of water | Mist spray: Apply 8 ozs as light spray with attention to head and legs. Repeat as needed. Do not treat animals intended for slaughter. |
| | lindane 25% WP (Restricted Use) CH, ME | Fly, lice and tick control: Mix 1 lb. Of 25% WP in 100 gals. of water, or 1 oz. In 6 gals. of water | Spray: Apply up to 2 qts. Diluted spray per animal. Use proportionately lesser amounts for smaller animals. Do not treat animals under 3 months of age. Avoid treating animals in cold, stormy weather. Do not spray thirsty, overheated or sick animals. Read label carefully and follow label directions. Do not treat animals intended for slaughter. |
| | malathion 57% EC (Cythion) OP, LE | Fly Control: 0.5% or 0.6% spray. Mix 1 gal of 57% EC in 100 gals of water. Fly Control: 4% or 5% dust - Ready-to-use - No mixing required | Spray animals thoroughly. Apply about 2 qts of spray per mature animal. Apply every 3 weeks, if needed. Do not treat animals under 1 month old. No waiting period between application and slaughter. Dust: Apply 1 to 1.5 ozs per animal. Repeat, if needed, every 10 to 14 days. No waiting period between application and slaughter. |
| | methoxychlor 5.0% EC (Purina Horse Spray Concentrate Insecticide) CH, LE | Fly Control: Mix 1 pt of 5.0% EC in water to make 1 gal of mixture | Sponge-on: Apply 1 pt to 1 qt per animal to infested areas (ears, neck, back - but not under the saddle, belly and legs). Treat as needed to maintain control. No waiting period between application and slaughter. |

Continues on next page

Horse

| External Parasites | Insecticide ¹ | Formulation & Mixing Instructions | Application Instructions & Use Restrictions |
|--|--|---|---|
| FLIES & Other Insects: (cont'd) | methoxychlor (continued) | Fly and Lice Control: Mix 1 qt of 5.0% EC in 9 qts of water | Spray: Spray entire animal until hair is wet to the skin. Apply 1 pt to 1 qt per animal. Treat as needed to maintain control. For lice, retreat in 10 days. No waiting period between application and slaughter. |
| | methoxychlor 0.5% + butoxypolypropylene-glycol 10.0% + pyrethrins 0.05% + synergist (Buzz Off, Horse spray and Rub-on) CH + R + NP, LE | Kills and repels flies: Ready-to-use - No mixing required | Spray and wipe-on: Apply up to 2 ozs per day. Do not spray feed or water. |
| | methoxychlor 5.0% + butoxypolypropylene-glycol 50.0% concentrate (Purina Horse spray) CH, LE | Kills and repels flies and lice: Sponging, mix 1 pt concentrate in 7 pts of water. Spraying, mix 1 qt concentrate in 9 qts of water. | Sponge on: Treat haircoat in the region of the ears, neck, back (not under saddles) and legs. Spraying: Spray entire animal to dampen haircoat or wet the skin. Apply 1 pt to 1 qt per animal. |
| | permethrin 5.7% EC (Insectrin, Insectaban, Overkill) SP, ME | Fly, mange, tick and lice control: Mix 1 pt of 5.7% EC in 12.5 gals of water | Spray: 1 to 2 qts per animal over whole body surface. For mange, lice, and scabies control, thoroughly soak animal and apply a second treatment 14 days later. No waiting period between application and slaughter. |
| | | Lice control: Mix 1 pt of 5.7% EC in 25 gals of water | Spray: until animal is thoroughly treated. A second application is recommended 14 days later. No waiting period between application and slaughter. |
| | | Fly and ear tick control: Mix 1 pt of 5.7% EC in 1.25 gals of water | Spray mist: Apply 1 to 2 ozs per animal. Spot treat back, face, legs and ear. Do not use on horses intended for human consumption. |
| | permethrin 10.0% to 11.0% EC (Atroban, Overkill, Permethrin II) SP, ME | Fly and lice control: Mix 1 pt of EC in 25 or 50 gals water (1 oz in 6 qts of water) | Spray: Use high concentrations for stable flies and face flies. Apply directly to animals at 1 qt to 2 qts per animal. Light rates are for horn fly control only. Repeat as needed but not more often than once every 2 weeks. Do not contaminate feed or water. |
| permethrin 0.25% Dust (Horse Lice Duster III) SP, ME | Fly and lice control: Ready-to-use dust | Dust: Apply 2 ozs of dust per animal by shaker can over the head, neck, shoulders, back and tailhead. Repeat as necessary. | |

Horse

| External Parasites | Insecticide ¹ | Formulation & Mixing Instructions | Application Instructions & Use Restrictions |
|---|--|--|---|
| FLIES & Other Insects: (cont'd) | permethrin 0.4% to 1.0% ready-to-use spray or wipe-on (Buzz Off II, Expar, Hard Hitter, Hunter, Tech-Trol), SP, ME | Fly, lice and tick control: ready-to-use when purchased. No mixing required | Spray or wipe-on: Apply as needed. Do not soak hair or skin. Pay particular attention to legs, shoulders and neck. Do not get in animal's eyes. Do not treat horses intended for human consumption. |
| | permethrin 1.84% Pour-on (Poridon Insecticide Pour-on) SP, LE | Aids in fly control: Ready-to-use when purchased. No mixing required | Pour-on: Apply 2 to 4 ozs per animal. Start by pouring a line bead from the poll, along the neck, and continue posteriorly down the back parallel with the spinal column or apply as a wipe-on. |
| | permethrin 25% WP (Permethrin) SP, ME | Fly, lice, tick & mite control: Mix 6 ozs (21 level Tbs) of 25% WP in 19 gals of water | Spray: Spray to run off or use 1 gal spray mix per head. Do not spray feed or water. |
| | permethrin 40% EC (Gardstar) SP, ME | Fly, mite, tick and lice control: Mix 7.5 ml in 1 pt. of water (0.64%) | Spray: Apply as a low pressure spray. Apply 1-2 fl. Oz. (30-60 ml) spray per animal. Spot treat back, face legs, tail ;and ears. |
| | | Fly, mite, tick and lice control: Mix 5-12.5 ml in 2 gal. of water (0.026-0.067%) | Dip wash: Thoroughly wet animal to skin with sponge or rag. Let drip dry. Do not wet the animal's face. |
| | permethrin 10% (Brute) | | Pour-on or Wipe: Apply 3-6 ml / 200 lb. Body wt., up to 30 ml. Max. Do not trat foals under 12 week of age. |
| | permethrin 45% (Celebration) | Kills & repels fly, mosquito, gnat: | Spot-On: 1. Streak 2 cc on the poll 2. Streak 0.5 cc on each side of the withers 3. Streak 1 cc on each side of the hind quarters 4. Spot 1 cc to the back of each front leg below the elbow 5. Spot 1 cc above each hock, on the gaskin muscle Place empty applicator in trash. Do not reapply for 14 days. |
| | pyrethrins + synergist NP, LE | Fly control: 0.05% to 0.2% plus synergist mist spray - Ready-to-use - No mixing required | Spray or wipe-on: Apply mist spray or wipe-on to wet the ends of the hair but not enough to wet the hide (1 to 4 fl ozs per animal). Direct application will kill ticks. Repeat as needed. |
| | pyrethrins 0.4% + synergist EC (Repel-X) NP, LE | Fly and tick control: Mix 1 pt of 0.4% EC in enough water to make 1 gal of mixture. For horse flies, deer flies (Tabanids), stable flies and ticks, mix 1 pt of 0.4% EC in 2 qts of water | Spray or sponge-on: Apply heavily to wet animal every 3 to 4 days or as needed to control flies and ticks. Do not use on animals intended for human consumption. Avoid getting into animal's eyes. |

Horse

| External Parasites | Insecticide ¹ | Formulation & Mixing Instructions | Application Instructions & Use Restrictions |
|---|--|--|---|
| Flies & Other Insects: (Cont'd) | pyrethrins 0.36% + synergist spray (Swat) NP, LE pyrethrins 0.05% + synergist 0.5% + permethrin 0.1% to 0.5% ready-to-use spray (Flycycle 2, Repel-X) NP+SP, LE | Fly, lice, tick and flea control: Ready-to-use when purchased. No mixing required | Spray or wipe-on: Apply to wet hair but not skin of animal. Remove excess dirt and dust before treating. Repeat as needed. Do not treat horses intended for human consumption. |
| | Pyrethrins 0.1% + synergist spray and Wipe-on (Wipe II) NP, LE | Fly, gnat and mosquito control: Ready-to-use when purchased. No mixing required. | Spray or wipe-on: Apply to wet hair but not the skin. Remove excess dirt and dust before treating. Repeat as needed. |
| | pyrethrins 0.2% + synergist wipe-on (Wipe) NP, LE | Fly gnat and mosquito control: Ready-to-use when purchased. No mixing required. | Wipe-on: Apply as a wipe-on to wet hair but not the skin. Remove excess dust and dirt before treating. Repeat as needed. |
| | pyrethrins 0.2% + synergist ointment (Swat) NP, LE | Fly repellent/control: Ready-to-use when purchased. No mixing required | Ointment: To treat superficial wounds, abrasions, sores and scratches, apply enough ointment to cover the wound. Apply directly to the wound and use daily. |
| | resmethrin 0.5% + butoxypolypropylene-glycol 10.0% (Super Shield II) SP + R, LE | Fly control: Ready-to-use - No mixing required | Spray or wipe-on: Apply to wet hair but not the skin of animal. For maximum protection apply 4 to 6 ozs to animal and repeat every 2 to 3 days if needed. Do not use on horses intended for slaughter. |
| | resmethrin 0.554% + butoxypolypropylene-glycol 11.0% (Fly Repellent) SP + R, LE | Fly and tick control: Apply by spray or wipe-on - Mix 4 ozs of concentrate in 28 ozs of water to make 1 qt | As a wipe-on: Dampen a soft cloth and rub over hair after cleaning debris from animal. Apply spray mist to horse's coat. Pay particular attention to legs, shoulders, and neck while avoiding eyes. Do not use on horses intended for slaughter. |
| | tetrachlorvinphos (Rabon) OP + pyrethrins (NP) + synergist (Flycycle 1, Purina Fly Screen) LE | Fly control: Available in ready-to-use gels, wipe-ons, aerosol sprays, and dust formulations - Primarily for temporary relief | Prior to application, brush dirt and dust away from the hair coat. Treat areas that need protection. Apply up to 1 to 2 fl ozs per animal. Do not wet the skin of the animal - only the hair should be treated. Apply as needed for protection. No waiting period between application and slaughter. |

Horse

| External Parasites | Insecticide ¹ | Formulation & Mixing Instructions | Application Instructions & Use Restrictions |
|---|---|---|--|
| Flies: face flies, horn flies | tetrachlorvinphos 0.475% to 2.468% Horse Feed Supplement (Rabon, Equitrol, Vita-Plus with Equitrol, Drive with Equitrol) OP, LE | Manure breeding flies: Ready-to-use feed supplement - each horse must consume 70 mg tetrachlorvinphos per 100 lbs of body weight daily | Feed additive: Follow feeding instructions on the label. Each horse must consume sufficient quantities if adequate control is to be achieved. Do not feed to horses intended for slaughter. This product must be supplemented with other fly control products. |
| MANGE: Sarcoptic or Psoroptic | lindane (restricted use) CH, ME | 0.03% to 0.05% spray or dip. Mix 1/4 to 3/4 lb of 25% WP in 50 gals of water | For best results, dip or treat animals with 2 qts spray. Retreat after 7 days. Do not treat sick or otherwise weakened animals. The waiting period between application and slaughter is 60 days. |
| | malathion OP, LE | When applied as for flies, will provide marginal control if great care is taken to thoroughly treat infested areas. | |
| | permethrin 5.7% EC (Purina Hard Hitter, Stable Spray, Insectrin, Insectaban) SP, LE | Fly, mange, tick and lice control: Mix 1 pt of 5.7% EC in 12.5 gals of water | Spray: 1 to 2 qts per animal over whole body surface. For mange, lice and scabies control, thoroughly soak animal and apply a second treatment 14 days later. No waiting period between application and slaughter. |
| BOTS | dichlorvos (Equiguard, Horse Wormer) OP, ME | 17.5% PVC pellets 1 packet (19.5 grams) per 300 lbs of animal body weight | Give to individual horses in half the grain portion at a single feeding to ensure maximum bot removal. Withhold water 4 to 6 hours before and 3 hours after consumption of drug. Do not treat sick animals. Do not give with or within 1 week of the administration of tranquilizing drugs or other internal parasite drugs. Do not treat horses intended for human consumption. Veterinary consultation is recommended. |
| | ivermectin (Eqvalan, Zimecterin) ME | 1.87% oral paste - Ready-to-use when purchased - No mixing required | Follow directions on pre-filled syringe. Do not treat horses less than 4 months of age. Do not treat horses intended for food purposes. |
| | trichlorfon (Combot Liquid, Combot Paste) OP, ME | 40% oral paste - Administer 16 mg/lb of trichlorfon / lb. Of body weight orally. 12.3% liquid - Ready-to-use when purchased - No mixing required. Administer ½ ounce Combot Liquid per 100 lbs. of body weight. | Treat 30 days following first killing frost. Repeat after 3 to 4 months, but never more frequently than every 30 days. Do not treat sick animals, horses to be used for food, colts less than 4 months of age or mares in the last month of pregnancy. Do not give horses intravenous anesthetics, especially muscle relaxants, within 2 weeks of treatment. Be sure to follow label directions carefully. Consult with veterinarian. |

¹ OP -- organophosphate, SP -- synthetic pyrethroid, CH -- chlorinated hydrocarbons, NP -- natural pyrethrin, CR -- carbamate, LE -- less effective or effectiveness not determined, ME -- more effective, R -- repellent

Fly Control In Horse Facilities - Residual (Contact) or Bait Sprays ^{1,2}

Horse

| Insecticide | Spray Concentration & Mixing Instructions | Methods of Application & Safety Regulations |
|--|--|--|
| cyfluthrin (Countdown) 24.3% EC, 20.0% WP SP, ME | Mix 9.5 grams or 19 grams of 20.0% WP OR mix 16 ml of 24.3% EC in sufficient water to cover 1000 ft. ² | Direct a coarse, wetting spray to surfaces in horse operations where flies congregate to include ceilings, walls, fences, posts and manure. Apply to point of runoff (1 gal. per 500 to 1000 ft ²). Do not contaminate feed or drinking water. Do not apply as a space spray. Do not apply directly to animals. Repeat as needed. For baited solutions add 1 lb. of sugar per gal. of spray. Remove animals before spraying and return them when spray dries. |
| dimethoate (Cygon) 2 lbs (23.4%) a.i. per gal EC, OP, ME | 1% spray. Mix 1 gal of 2 lbs per gal EC in 25 gals water | Direct a coarse, wetting spray to surfaces in horse operations where flies congregate, to include ceilings, walls, fences, posts, floor and manure. Apply to point of runoff (1 gal per 500 to 1,000 sq ft). Do not contaminate feed or drinking water. Do not apply as a space spray. Repeat as needed. Do not apply directly to animals. Remove animals before spraying and return them after spray dries. |
| fenvalerate (Ectrin) 10% WDL SP, ME | Mix 1 qt of 10% WDL in 10 or 25 gals of water (longer residual results from higher concentrations) | For spraying horse barns. Spray to point of runoff (approximately 1 gal of finished spray per 500 to 1,000 feet.) Repeat in 14-30 days, if needed. Spray ceilings, walls and walkways. Do not treat horse barns of horses intended for slaughter. |
| malathion (Cythion) 5 lbs a.i. per gal premium grade 57% EC, OP, LE | Mix 1 qt EC in 12 gals water | Same as methods of application and safety restrictions for dimethoate above. Remove all animals less than 1 month of age before treating. |
| methoxychlor 2 lbs a.i. per gal (25%) EC or 50% WP CH, LE | 2.5% to 5% spray. Mix 1 gal EC or 4 lbs WP in 10 gals water | Same as methods of application and safety restrictions for dimethoate above. Remove animals before spraying. When spray dries, animals can be returned. |
| permethrin (Atroban, Ectiban, Insectrin, Overkill, Permaban, Permetcin) 5.7% EC, 11% EC or 25% WP SP, ME | 5.7% EC is ready-to-use as a mist spray OR mix 1 qt 5.7% EC in 12½ gals water OR mix 6 ozs 25% WP in 11 gals water OR mix 1 pt 11% EC in 10 gals water | Apply as a residual surface spray to fly resting areas. Do not spray manure or litter. Do not apply directly to horses. Apply 5.7% EC undiluted at 4 ozs. per 1,000 sq ft of surface area or apply diluted WP and EC mixtures at 1 gal/750 sq ft. Do not apply more often than once every two weeks. |
| tetrachlorvinphos, stirofos (Rabon) 50% WP, OP, LE | 1% or 2% spray. Mix 4 or 8 lbs WP in 25 gals water | Same as methods of application and safety restrictions for dimethoate above. |
| tetrachlorvinphos, stirofos (Rabon) 2 lbs a.i. per gal (23%) + dichlorvos (Vapona) 0.5 lb a.i. per gal (Ravap) (5.7%) EC, OP, ME | 1.25% to 2.5% spray. Mix 1 gal or 2 gals EC in 25 gals water | Same as methods application and safety restrictions for dimethoate above. |

¹ Residual spray can be applied as spot sprays to control maggots in manure accumulations.

² ME - more effective, LE - less effective or effectiveness not established, OP - organophosphate, CR - carbamate, SP - synthetic pyrethroid, NP - natural pyrethrum, CH - organochlorine, chlorinated hydrocarbon

Fly Control in Horse Facilities - Space Sprays (Fogs or Mists) and Baits¹

Horse

| Insecticide | Spray Concentration/ Mixing Instructions | Methods of Application & Safety Precautions |
|---|---|---|
| Space sprays², fogs or mists | | |
| dichlorvos (Vapona or DDVP) 1% Ready-to-use Animal Spray Solution (Stable & Horse Fly Spray) OR 2 lbs a.i. per gal (23.4%) EC OP, LE | 0.5% or 1% Ready-to-use fogging solution or mix 1 pt EC in 3 gals or 6 gals water | Apply 1 pt of 1% solution or 1 qt of 0.5% solution per 8,000 cu ft as a fog or mist. Repeated applications will provide adult fly suppression. Do not use more often than once every 24 hours. Do not use if animals have been treated with other insecticides within 8 hours. Do not apply directly to animals. Close all doors and windows when fogging. Do not contaminate feed or water. |
| naled (Dibrom) 1% Ready-to-use spray OP, LE | 1% Ready-to-use | Apply 1 fl oz per 3,000 cubic feet as fine atomized spray. Safety restrictions same as for dichlorvos above. |
| permethrin 5.7% EC SP, ME | Mix 1 pt of 5.7% EC in 6.25 gals diesel or mineral oil | Apply fog at 4 fl ozs per 1,000 cubic feet of air space in confined facility. Repeat as needed. |
| Pyrethrin (0.1 to 0.75%) + Synergist (0.5 to 3.75%) NP, ME | Ready-to-use | Apply fogs or spray mists at 1 fl oz per 1,000 cubic feet as fine atomized spray. Repeat as needed. |
| Baits | | |
| methomyl 1.0% Fly Bait (Apache, Blue Streak, Golden Malrin, Purina Tailspin Fly Bait) CR, ME | Ready-to-use | Scatter on floors, walkways, etc., throughout operation but away from animals. Apply lightly (about 1/4 lb per 500 to 1000 sq ft) until flies are suppressed. Wear rubber gloves when applying baits. Do not allow workers on treated floors without shoes. Do not allow animals to come in contact with baits. |
| trichlorfon (Sugarcide) OP, LE | Ready-to-use | Apply and follow precautions as for methomyl above. |

¹ ME - Most effective, LE - less effective or effectiveness not established; OP - organophosphate; CR - carbamate; SP - synthetic pyrethroid, NP = natural pyrethrum; CH - organochlorine, chlorinated hydrocarbon.

² Space sprays are designed to kill adult flies that are present when the fog or mist is applied. There is little or no residual insecticide deposit remaining after the application unless synthetic pyrethroids are applied. Fogs or mists must come in contact with the fly. These materials are especially effective in enclosed areas where air movement is minimal. Heavy mists can offer some adult house fly kill in open areas.

Sheep and Goats -- External Parasite Control ¹

Gene Burgess

Sheep and Goats

| Insecticide and Formulation | Final Strength in Water & Method of Application | Mixing Instructions & Amount of Insecticide Mixture to add to Water | Amount Per Mature Animal | Days From Last Application Until Slaughter | Application Instructions and Restrictions |
|---|---|---|--|--|--|
| Lice, Horn Flies, House Flies and Stable Flies | | | | | |
| 1. Co-Ral Fly and Tick Spray (coumaphos OP) | | | | | Apply specified dosage for a complete wetting to run-off. Treat no more than six times per year. Do not make applications less than 10 days apart. Do not apply as a spray at rates above 1 quart of Co-Ral Fly and Tick Spray per 50 gallons of water to lactating dairy goats or non-lactating dairy goats within 14 days of freshening. If freshening should occur within the interval after spraying, do not use milk for human food for balance of 14 day interval. Do not apply to sick, convalescent or stressed livestock or to animals less than 3 months old. Do not spray animals for 10 days before or after shipping or weaning or after exposure to contagious and infecting diseases. Do not spray in confined, non-ventilated area. Co-Ral is a cholinesterase inhibitor. Do not use this product on animals simultaneously or within a few days before or after treatment or exposure to cholinesterase-inhibiting drugs or pesticides. Atropine by injection is antidotal. Consult veterinarian at the first sign of adverse reaction. |
| 2. Malathion* (Cythion) OP 57% EC 25% WP | 0.5% EC Spray or dip | Mix 16 lb of 25% WP OR mix 1 gal of 57% EC in 100 gals of water | Wet to point of runoff or immerse entire animal. | 0 | Do not use on emaciated animals. Repeat application after 2 or 3 weeks if needed. Do not treat milk goats. Do not treat animals under 1 month of age. |
| 3. Methoxychlor* OCL 50% WP | 0.5% WP spray or dip | Mix 8 lb of 50% WP in 100 gals of water. | Wet to point of runoff or immerse entire animal. | 0 | Repeat application after 2 or 3 weeks, if needed. Do not treat milk goats. |

Sheep and Goats

| Insecticide and Formulation | Final Strength in Water & Method of Application | Mixing Instructions & Amount of Insecticide Mixture to add to Water | Amount Per Mature Animal | Days From Last Application Until Slaughter | Application Instructions and Restrictions |
|--|--|--|--|--|--|
| 4. Permethrin* Gardstar 40% EC) PY | 0.013-0.05% | High pressure spray Mix 30-118ml in 25 gals of water | Apply 1 to 2 qts of coarse spray per animal over the entire body. | 0 | Repeat application in 10-14 days for mites and lice. See No. 1. See label. |
| | | 0.5% low pressure spray (hand pump sprayer) Mix 118 ml in 2.5 gals of water. | Apply 1.5 fl. oz. of spray to midline from fact to tailhead to point of runoff, but do not let runoff occur. | 0 | See No. 1. See label. |
| 5. Permethrin* (Atroban 11%EC Permethrin II 10%) PY | 0.05% spray | Mix 1 pt. of 11% EC in 25 gals. of water OR mix 8 ozs. of 10% EC in 25 gals. of water | Apply 1 to 2 qts. of coarse spray per animal to thoroughly wet the animal. | 0 | Repeat the application in 10-14 days for mites. |
| 6. Permethrin* (Atroban 42.5% EC) PY | 0.054% spray | Mix 1 pt. of 42.5% EC in 100 gals. of water. | Apply sufficient spray (Approximately 2 qts. / animal to thoroughly wet animals to ensure complete coverage. | 0 | Repeat the application as needed but not more often than once every two weeks. |
| Lice, Ticks, Sheep Keds and Fleeceworms | | | | | |
| 7. Co-Ral* OP 25% WP | 0.12% EC spray or dip | Mix 4 lb of 25% WP in 100 gals of water | Wet to point of runoff or immerse entire animal. | 15 | Same as for Co-Ral listed in No. 1 above. |
| 8. Fenvalerate (Ectrin) PY | Use according to instructions and safety restrictions given under lice control. See label. | | | | |

Sheep and Goats

| Insecticide and Formulation | Final Strength in Water & Method of Application | Mixing Instructions & Amount of Insecticide Mixture to add to Water | Amount Per Mature Animal | Days From Last Application Until Slaughter | Application Instructions and Restrictions |
|--|---|---|---|--|--|
| 9. Malathion* OP | Use according to instructions and safety restrictions given under lice control in No. 2. See label. | | | | |
| 10. Permethrin* Gardstar, OP | See No. 4 above. See label. | | | | |
| Wound-Infesting Maggots | | | | | |
| 11. Co-Ral (coumaphos) OP 25% WP | 0.24% WP Spray or dip | Mix 8 lb of 25% WP in 100 gals of water | Treat all wounds and injuries thoroughly. | 15 | Same as for Co-Ral in No. 1. |
| SHEEP "TICKS" (KEDS), AND LICE ON SHEEP | | | | | |
| 12. Diazinon* (Dryzon) OP 50% WP | 0.06% to 0.12% SP spray or sprinkle | <p>For use as a high gallonage, high pressure spray: Mix 1/2 lb WP in 100 gals of water and apply at the rate of 1 gal per animal.</p> <p>For use as a low gallonage, low pressures spray: Mix 1 lb WP in 100 gals of water and apply at the rate of 1 qt per animal</p> <p>For use by sprinkler can: Mix 1 oz WP in 6 gals of water. Crowd sheep into a small pen and sprinkle 1 quart of this mixture over the head, neck, top and side of each sheep.</p> | | 14 | Repeat applications as necessary. Stir or agitate spray mixtures frequently. Do not treat goats. |

Sheep and Goats

| Insecticide and Formulation | Final Strength in Water & Method of Application | Mixing Instructions & Amount of Insecticide Mixture to add to Water | Amount Per Mature Animal | Days From Last Application Until Slaughter | Application Instructions and Restrictions |
|--|--|---|--|--|--|
| 13. Permethrin* (Atroban, Delice, Expar, Permethrin, Synergized Delice) PY 1% Solution | No mixing required. Ready-to-use when purchased. | Pour along back. Apply 0.25 fl oz (7.5 cc) per 50 lbs body weight of animal, up to a max. of 3 fl ozs for any one animal. | | 0 | Do not treat goats. For optimum control all animals in the flock should be treated after shearing. Repeat treatment as needed, but not more often than once every 14 days. For optimum control, two treatments at a 14-day interval are recommended. |
| 14. Permethrin* (Gardstar) PY | See No. 4 above. | | | | |
| 15. Permethrin* (Boss) 5% PY | No mixing required. Ready-to-use when purchased. Pour-on | Pour-on. No mixing required | Pour along the back. Apply 1.5 ml per 50 lbs of body weight of animal up to a maximum of 18 ml for any one animal. | 0 | Repeat treated as needed, but not more often than once every two (2) weeks. For optimum lice control, two (2) treatments at 14 day intervals are recommended. |

¹ - Do not treat sick, convalescent or stressed animals. Do not spray in a confined, non-ventilated area.

* - Do not apply to milk goats.

Pesticide Key:

OP - organophosphate

OCL - organochlorine

PY - pyrethroid