

South Dakota Department of Agriculture

Division of Ag Services

Office of Agronomy Services



Adulticides

Mosquito Management for West Nile Virus

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INSECTICIDES FOR USE AS THERMAL FOGS FOR ADULT MOSQUITO CONTROL

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Insecticide	Formulations	Remarks
chlorpyrifos	One ULV, 1.5	Apply a 300 foot swath with a vehicle speed of 5 mph. Product is applied in No. 2 fuel oil, diesel, or kerosene-type fuel.
malathion	96.8% ULV	Deliver 40 gallons per hour at a vehicle speed of 5 mph to treat a swath width of 300-400 feet. Variation in fuel oils means testing solubility and sludge to prevent clogging valves of the thermal fog machine. Large droplets of undiluted Fyfanon will permanently damage car finishes.
naled	87.4% C	Deliver 40 gallons per hour at a vehicle speed of 5 mph to treat a swath of 300 to 400 feet. Faster speeds with greater delivery rates are labeled. Apply in No. 2 diesel fuel or diesel oil. If applied wrong, naled concentrate will damage car finishes.
sumithrin	2+2 ULV 10+10 ULV	Apply product diluted in diesel fuel using vehicle mounted, thermal ULV equipment. Rate of application and dilution will vary with formulation choice.

* ULV = ultra low volume; C = concentrate

MIST SPRAY WITH SOME RESIDUAL ACTION FOR ADULT MOSQUITO CONTROL ([back to top](#))



Insecticide	Formulations	Remarks
carbaryl (Sevin)	4L, 4F, XLR, 50 WP, 80 WSP, 80 S	Treat when adult mosquitoes are active in the early morning or at dusk. Do not allow public use of treated areas during application or until sprays have dried.
cyfluthrin (Tempo)	2 EC, 20 WP	Spray solution is applied to damp areas beneath shrubs, in areas of tall grass or weeds and on other surfaces where mosquitoes rest outdoors. Do not apply to food crops or fish inhabiting waters.
deltamethrin (Suspend)	4.75% SC	Spray solution is applied to surfaces where adult mosquitoes rest. It may be used on walls in areas such as garages, storage sheds, horse stables, dog kennels. Lawn and ornamental application is permitted. Do not apply this product to edible crops.
malathion	50% EC, 57% EC	Application is made to surfaces where mosquitoes rest during the day. Car finishes may be damaged. Wash exposed surfaces immediately.
permethrin (Permethrin)	RTU formulations	Treatments may be made as mist or surface applications. Mist treatments may be applied in structures and livestock facilities. For indoor treatments, vacate treated areas after application and ventilate prior to re-entering. Outdoor surface treatments should be applied to the point of run-off. Treat no more than once every two weeks.
pyrethrins	many formulations	Diluted sprays and RTU formulations may be used indoors to treat walls, ceilings and other areas where mosquitoes may rest. When spraying outdoors, direct sprays into tall grass, shrubbery and around lawns where mosquitoes rest. Apply while the air is still and avoid wetting foliage. Applications should be made prior to use of treated area.

* WP = wettable powders; EC = emulsifiable concentrate; LC = liquid concentrate; SC = suspended concentrate; S = sprayable; RTU = ready to use; F = flowable; L = liquid; XLR = extra long residual

COLD AEROSOLS FOR USE IN ULV GROUND EQUIPMENT FOR ADULT MOSQUITO CONTROL

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Insecticide	Formulations	Remarks
chlorpyrifos	1 ULV, 1.5 ULV, 2 ULV	Applications to residential, recreational and non-cropland sites are made during the cool hours of the night or early morning while mosquitoes are active. Application rate will depend on formulation chosen.
malathion	96.8% ULV	Deliver 1 to 4 gallons per hours at vehicle speeds ranging from 5-20 mph to treat a swath width of 300 feet. At 5 mph the flow rate of Fyfanon is 1 to 2 fluid ounces per minute. Refer to the label for additional rates and ground speeds.
naled (Dibrom, Trumpet)	87% EC 78% EC	Product is for mosquito control in residential areas, municipalities, woodlands, agricultural areas, and livestock pastures including dairy cattle. It is not necessary to avoid farm buildings, dairy barns, feed or forage areas. Treat shrubbery and vegetation where mosquitoes may rest. Apply using vehicle mounted, non-thermal ULV equipment. Rate of application will vary with formulation selected.
permethrin + piperonyl butoxide (Aqua-Reslin, Biomist, Permanone)	20% EC, 1.5% S, 4% S, 3% S, 12% S, 30% S, 10% EC, 31-66EC, RTU	Apply using vehicle mounted, non-thermal ULV equipment. Apply when there is a light breeze. Apply early morning and evening. This product is not to be used within 100 feet of lakes and streams. Do not apply directly to water or wetlands. Allow 24 hours before retreating.
pyrethrins (Pyrenone)	100 EC	Apply the undiluted product using vehicle mounted, non-thermal ULV equipment. Apply when there is a light breeze. Apply early in the morning and evening.
resmethrin + piperonyl butoxide (Scourge)	4%, 12%, 18%, 54%	Spray parks, campsites, woodlands, athletic fields, golf courses, residential areas and municipalities. For use with non-thermal truck or backpack equipment designed to deliver fog particles. Do not spray cropland or feed. Avoid applications over lakes or ponds. The 18% and 54% formulations may be mixed with refined soybean oil, light mineral oil or other suitable solvents.
sumithrin + piperonyl butoxide (Anvil)	2+2 ULV 10+10 ULV	Apply product using vehicle mounted, non-thermal ULV equipment.

* ULV = ultra low volume; EC = emulsifiable concentrate; S = sprayable; RTU = ready to use

ADULT MOSQUITO CONTROL USING AERIAL EQUIPMENT ([back to top](#))



Insecticide	Formulations	Remarks
chlorpyrifos (Mosquitomist)	1 ULV 1.5 ULV 2 ULV	Aerial applications are made at an altitude of 300 feet. Rates per acre will depend on formulation selected. Applications to residential, recreational, and non-cropland sites are made during the cool hours of the night or early morning while mosquitoes are active.
malathion (Fyfanon)	96.8%	Apply at a rate of 2.6 to 3.0 fluid ounces per acre over cities, towns, and other areas where cars, trailers, trucks, and boats are present. Large droplets or undiluted Fyfanon ULV will permanently damage car finishes by leaving spots.
naled (Dibrom, Trumpet)	87% 78%	Aerial application must be made with closed cockpit aircraft. Air speed should be in excess of 100 mph. Rate of application will vary with formulation selected. Product is for use in mosquito control in residential areas, municipalities, woodlands, agricultural areas, livestock pastures, feed lots and pastures including dairy cattle. It is not necessary to avoid farm buildings, dairy barns, or feed or forage areas. Treat shrubbery and vegetation where mosquitoes may rest. If applied incorrectly, naled concentrate will spot certain car finishes.
permethrin + piperonyl butoxide (Aqua-Reslin, Permanone, Biomist)	20% EC, 31-66% EC, 1.5%, 3%, 4%, 12% S, 305S	Apply at an altitude of 165 feet when there is a light breeze. Apply early morning and evening. This product is not to be used within 100 feet of lakes and streams. Do not apply directly to water or wetlands. Allow 24 hours before retreating. Rate of application will vary with formulation selected.
resmethrin + piperonyl buoxide (Scourge)	4% + 12% 18% + 54%	This product is used in specially designed aircraft capable of applying ULV spray formulations. Spray parks, campsites, woodlands, athletic fields, golf courses, residential areas and municipalities. Do not spray cropland or feed. Avoid application over lakes, ponds and streams. The 18% + 54% may be mixed with refined soybean oil, mineral oil or other suitable solvent or diluent.

* ULV = ultra low volume; EC = emulsifiable concentrate; S = sprayable

The Department of Agriculture does not endorse or promote any of the above products. Rather this list is meant as a reference those involved with mosquito control.

CONTACT:

For more information or further assistance, please feel free to contact the South Dakota Department of Agriculture at (605) 773-4432 or [email us](#).

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