

RANGELAND and NON-CROP SITES GRASSHOPPER MANAGEMENT

Summary of North Dakota Law Regarding Grasshopper Control Along Roadsides

Townships and Counties

They are authorized to control grasshoppers infesting road rights of way under their authority (1991 law).

● **Requirements**

- Pesticides **must be labeled** for use on forage crops so they **may be hayed**
- Written notice to all landowners or tenants 3 days prior to treatment
 - Date of treatment
 - Name of pesticide and restrictions on harvest and use of forage
 - Must exclude areas opposed by adjacent landowner or occupant

State Highway Rights of Way

Counties may enter into agreement with DOT to control grasshoppers in state highway system rights of way. (Contact DOT district office)

● **North Dakota Department of Agriculture must approve plan when state funds involved**

(Contact North Dakota Department of Agriculture at 701.328.4765)

- Request for approval form is submitted by County Pest Coordinator
- Plan must include county or township roads
- Scouting to verify economic infestation
- Treatments must be made prior to adult stage

Financing Summary

Counties

Governing body may use county emergency fund (57-15-28) to pay for control costs in county road system rights of way and for cost share with townships.

Maximum balance

- 5 mills for large counties (Burleigh, Cass, Grand Forks, Ward)
- 10 mills for small counties

Tax limitation for emergency purposes (57-15-06.7)

- Tax for emergency purposes not to exceed 2 mills.

Townships

Electors may appropriate funds (57-15-19) for controlling grasshoppers in township rights of way. Total annual tax levy (for all purposes) in a civil township may not exceed 18 mills.

Roadside Right of Way Grasshopper Spray Program Considerations

Treatment of grasshoppers when they are young, concentrated in hatching areas, and highly susceptible to lower rates of insecticide is a long standing management strategy.

Roadside rights of way are sometimes major hatching areas for grasshoppers. Infestations are often variable and not all roadsides are likely to be infested. Roadsides that were weedy or had enough green vegetation to attract adult grasshoppers during the previous year's egg-laying period are more likely to be infested with eggs. Roadsides adjacent to late-season crops that are themselves attractive egg-laying sites are also more heavily infested.

Numerous other areas on the farm can also be hatching areas, including:

Fencerows	Fields planted to a late-season crop last year especially
Shelterbelts	when summer fallowed this year, such as:
Rock piles	Sunflower
Grass waterways	Safflower
Weedy waste areas	Flax
Some CRP	Soybean
Alfalfa and haylands	
Last year's weedy fallow	
Last year's weedy fields	

Treatment timing can be difficult. Egg hatch normally occurs over a 4 - 6 week period and the developing grasshoppers gradually move out from their hatching areas. Spraying too early can miss later hatching grasshoppers while spraying too late allows early hatching hoppers to move into crops and escape treatment and perhaps cause serious crop damage.

What are Reasonable Expectations

1. Roadside programs conducted when roadsides are generally infested and a major contributor as hatching areas can reduce but not eliminate the threat of grasshopper damage.
2. Farmers may be disappointed if they do not make efforts to identify, monitor, and manage other hatching areas.
3. Roadside programs may reduce, but are unlikely to eliminate, the need for additional crop protection measures in years favorable for grasshoppers.
4. Roadside programs may contribute to, but are unlikely to be responsible for, preventing grasshoppers from laying eggs and creating the potential for problems next year.

Roadside Programs should:

1. Include scouting to determine if a sufficient percentage of roadsides are infested to warrant a roadside program. Roadside infestations are frequently spotty and other areas frequently contribute to the grasshopper problem.
2. Treatments should generally be applied prior to significant movement of grasshoppers into fields. Movement normally begins as hoppers approach the 3rd instar. Treatments after adults appear are not effective.
3. Farmers should be encouraged to scout and if necessary treat other hatching areas with threatening populations.

GRASSHOPPERS

Grasshopper Thresholds: Infestation Ratings: The threatening rating is considered the action threshold for grasshoppers. Since it is difficult to estimate the number of grasshoppers per square yard when population densities are high, pest managers can use four 180-degree sweeps with a 15-inch sweep net, which is equivalent to the number of adult (or nymph) grasshoppers per square yard.

Rating	Nymphs (young hoppers) per square yard		Adults per square yard	
	Margin	Field	Margin	Field
Light	25-35	15-23	10-20	3-7
Threatening	50-75	30-45	21-40	8-14
Severe	100-150	60-90	41-80	15-28
Very Severe	200+	120	80+	28+

Insecticides for Rangeland and Non-Crop Areas - **grazed or cut for hay**

INSECTICIDE	DOSAGE IN LB AI/ACRE	PRODUCT PER ACRE	RESTRICTIONS ON USE
carbaryl Sevin	0.5 - 1.5	rate varies by formulation	Pastures: PHI = 0 days for aerial application. Rangeland: PHI = 0 days for aerial application. The lower rate (0.5 lb) is suggested for nymphs on small plants or sparse vegetation. The higher rate (1.5 lb) is suggested for mature grasshoppers or when material is applied to crops requiring greater coverage.
diflubenzuron Dimilin 2L <i>RUP</i>	0.008 - 0.032	0.5 - 2.0 fl oz	Dimilin (diflubenzuron) is an insect growth regulator. Applications should be timed when the majority of nymphs are 2nd to 3rd instar. This treatment is NOT effective in controlling adult grasshoppers. Allow at least 1 day after treatment before cutting grass.
malathion Malathion 57EC	1.0 - 1.33	1.5 - 2.0 pts	No time limitation on grazing or cutting.
malathion Malathion ULV	0.6	8 oz/acre	Aerial application. Applied alone or dissolved in diesel oil at 1 pt/A. No time limitation on grazing or cutting.
zeta-cypermethrin Mustang Max EC <i>RUP</i>	0.0175 - 0.025	2.8 - 4.0	PHI = 0 days for forage and hay, PHI = 7 days for straw. Do not make applications less than 7 day apart for forage and hay and not less than 17 days for straw. A maximum of 0.025 lb ai per acre may be applied per cutting. For hay, a maximum of 0.10 lb ai per acre per season may be applied. For forage and straw, a maximum of 0.125 lb ai per acre per season may be applied.

RUP - Restricted use pesticide

GRASSHOPPERS

Insecticides for non-crop areas - **NOT grazed or cut for hay**

INSECTICIDE	DOSAGE IN LB AI/ACRE	PRODUCT PER ACRE	RESTRICTIONS ON USE
acephate Acephate E 75 WP Acephate 75% Orthene, Address, Acephate 97UP	0.25	0.33 lb	Use for early to mid-season application. Use high volumes when spraying dense foliage. DO NOT GRAZE OR FEED vegetation cut from treated area.
acephate Orthene 97		0.25 lb (4 fl oz) (1.5 - 2 fl oz for wasteland only)	DO NOT GRAZE OR FEED TREATED VEGETATION cut from treated area. Do not make more than one application per season. Use higher volumes when spraying dense foliage. Use 10 to 20 GPA by ground and 1-5 GPA by air.
esfenvalerate Asana XL <i>RUP</i>	0.015 - 0.03	2.9 - 5.8 fl oz	Labeled for use on non-cropland adjacent to tilled areas to control migrating insects, including armyworms. DO NOT FEED TREATED CROP to livestock.
gamma-cyhalothrin Proaxis <i>RUP</i>	0.01 - 0.015	2.56 - 3.84 fl oz	DO NOT GRAZE livestock in treated areas. Apply in minimum of 2 gals per acre by air or 10 gals per acre by ground.
lambda-cyhalothrin Warrior II <i>RUP</i>	0.02 - 0.03	1.28 - 1.92 fl oz	Labeled for control of grasshoppers on non-cropland adjacent to crops registered for the use of Warrior II. FEEDING HAY OR GRAZING LIVESTOCK in treated areas is PROHIBITED.

RUP - Restricted use pesticide