

Sugar Beet Insect Pests

Aphids – foliar

Although aphids are common, they rarely cause damage.

Description: Small oval to pear shaped soft-bodied insects. Color varies from bright green to pink to brown. Have conspicuous tail-pipe like structures called cornicles.

Life cycle: Aphids present during the field season are all female, and give live birth without mating with males. Multiple overlapping generations each season.

Type of damage: Sucking pest. Removes plant sap from leaves and stems; heavy infestation may lead to stunting, curling of new leaves, and general weakening of plants.

Conditions favoring damage: Hot, dry weather enhances aphid damage.

Sampling/ scouting: Check 5 groups of 20 plants per field.

Management: Biological – natural enemies (ladybugs, lacewings, wasps) and diseases generally keep aphids in check.

Threshold: 1 colony (30 or more aphids) per plant.

List of registered insecticides, *RUP (rate per acre):

Diazinon 50W* (0.75 to 1 lb) or AG500* (0.75 to 1 pt) Lannate LV* (0.75 to 3 pt) or SP* (0.25 to 1 lb)

Aphids - Sugar Beet Root Aphid

Localized pest in hot, dry years.

Description: Small, oval to pear shaped, pale yellow soft-bodied insects.

Life cycle: Females overwinter in soil or on roots of lambsquarter, and move to beets later in the season. During the field season, aphids are all female, and give birth to live offspring without mating. Multiple generations.

Type of damage: Sucking pest; secretes a distinctive white, waxy substance which inhibits water and nutrient uptake by beets.

Conditions favoring damage: Dry weather.

Sampling/ scouting: Scout fields for aphids or wax on roots, particularly in areas with wilted beets.

Notes: Application of Counter to control another pest may aid in control of SRA. However, application of Counter specifically to control SRA is not recommended. Check with your company representative for more detailed information on Counter.

List of registered insecticides, *RUP (rate per acre):

Counter CR* (3 to 6 oz per 1,000 feet of row, suppression only)

Armyworms

Armyworm outbreaks occasionally occur in multiple crops, in years with heavy flights north into Michigan

Type of damage: Defoliation (chewing). Larvae often feed at night.

Conditions favoring damage: Female moths are attracted to grassy or weedy fields early in the season for egg laying; in midsummer, true armyworms may move from surrounding fields (small grain, pasture, sod) into beets.

Sampling/ scouting: Check several areas of the field for larvae. For true armyworm, edges of fields are at greater risk.

Management: Biological - insects, rodents, and birds feed on armyworms. Cultural – good weed control can reduce infestation from true armyworm

Threshold: 25% or more of foliage damaged by armyworms.

List of registered insecticides, *RUP (rate per acre):

Agree WG (0.5 to 2lb)

Chlorpyrifos 4E* (1.5 to 2 pt broadcast)

Dipel ES (2 to 4 pt), DF (1.0 to 2.0 lb)

Javelin WG (0.25 to 1.5 lb)

Lannate LV* (0.75 to 3 pt) or SP* (0.25 to 1 lb)

Lorsban 4E* (1 to 2 pt broadcast, 0.66 to 1.33 pt banded)

Lorsban Advanced* (1 to 2 pt broadcast, 0.66 to 1.33 pt banded)

Mustang Max EW* (2.4 to 4 oz)

Pyganic EC 1.4 II (16 to 64 oz) or 5.0 II (4.5 to 18 oz)

Sevin 4F or XLR Plus (1 to 1.5 qt)

Sevin 80S or 80WSP (1.25 to 1.875 lb)

Xentari (0.5 to 2 lb)

Beet Webworm (beet and alfalfa webworms)

CDD has never seen large numbers of beet webworms in Michigan.

Description: Larvae are slender, greenish-black or pink. Alfalfa WW - 6 dark spots on each body segment; beet WW – black stripe down back bordered by a white line on each side.

Type of damage: Spin webs and feed on beet leaves, usually near the leaf base.

Conditions favoring damage: Weedy fields, because females deposit eggs on some weed species.

Management: Biological – many parasites and predators. Insecticides – generally not needed.

Threshold: Rough guideline - 25% or more of leaves with feeding + larvae present OR small larvae present on 50-75% of leaves.

List of registered insecticides, *RUP (rate per acre):

Asana XL* (5.8 to 9.6 oz)

Pyganic EC 1.4 II (16 to 64 oz)

Dipel DF (0.5 to 1lb)

Pyganic EC 5.0 II (4.5 to 18 oz)

Lannate* LV (0.75 to 3 pt) or SP (0.25 to 1 lb)

Sevin 4F or XLR Plus (1 to 1.5 qt)

Lorsban 4E* (1 to 2 pt broadcast, 0.66 to 1.33 pt banded)

Sevin 80S or 80WSP (1.25 to 1.875 lb)

Lorsban Advanced* (1 to 2 pt broadcast, 0.66 to 1.33 pt banded)

Mustang Max EW* (2.4 to 4 oz)

Cutworms

Cutworm outbreaks occasionally occur in years with heavy flights north into Michigan

Description: Light gray / black caterpillar with 4 bumps on the top of each segment, and a narrow light stripe down the back.

Life cycle: Adult moths migrate to Michigan from southern states. Females lay eggs primarily on weeds. Young larvae feed above ground on weeds and beets, larger larvae feed below the surface on the stem.

Type of damage: Young larvae feed on leaves. Extensive damage by older larvae cutting plants at or below soil surface, leading to wilting and death of plants.

Conditions favoring damage: Weeds – favor egg laying; dry conditions – drive larvae down into the soil, increasing cutting damage.

Sampling/scouting: After beet emergence, check 5 groups of 20 plants, particularly in low areas of the field. Look for cut or wilted plants. Dig around base of cut plants to find larvae.

Management: Biological – ground-dwelling predators (beetles); Cultural – good weed control.

Threshold: 5% of plants cut.

For more information: MSU bulletin E-2274.

List of registered insecticides, *RUP (rate per acre):

Asana XL* (5.8 to 9.6 oz)

Mustang Max EW* (2.4 to 4 oz)

Chlorpyrifos 4E* (2 pt foliar, 1 pt banded at planting)

Sevin 4 F or XLR Plus (1.5 qt)

Dipel DF (0.5 to 1lb) and ES (1 to 2 pts)

Sevin 80 S or 80 WSP (1.875 lb)

Lorsban 4E* (2 pt broadcast, 1.33 pt banded)

Xentari (0.5 to 2 lb)

Lorsban Advanced* (2 pt broadcast, 1.33 pt banded)

Lorsban 15G (6.6 to 9 oz per 1,000 row ft)

Flea Beetles (includes potato, corn, red-headed, and striped FB)

Flea beetle feeding is noticeable, but rarely enough to cause concern.

Description: All species have large hind legs and jump when disturbed. Potato and corn FB - small, shiny, round, black. Striped FB - dark, elongate, with 2 pale stripes running lengthwise down back.

Life cycle: Adults overwinter in crop residue or field borders, emerge in spring and begin feeding.

Type of damage: Small holes chewed in leaves by adults (shot-holing).

Conditions favoring damage: Weedy fields and borders

Management: Cultural - good weed control.

Sampling/scouting: Check 5 groups of 20 seedlings for feeding damage; newly emerged plants are most vulnerable, generally not a problem in mature beets.

Threshold: 25% of seedlings with feeding damage.

List of registered insecticides, *RUP (rate per acre):

Asana XL* (5.8 to 9.6 oz)

Pyganic EC 1.4 II (16 to 64 oz) or 5.0 II (4.5 to 18 oz)

Lannate LV* (0.75 to 3 pt) or SP* (0.25 to 1 lb)

Sevin 4F or XLR Plus (1 to 1.5 qt)

Lorsban 4E* (2 pt broadcast, 1.33 pt banded)

Sevin 80S or 80WSP (1.25 to 1.875 lb)

Lorsban Advanced* (2 pt broadcast, 1.33 pt banded)

Mustang Max EW* (2.4 to 4 oz)

Grasshoppers

Grasshoppers are common in agricultural fields, but cause damage only during occasional outbreak years.

Life cycle: Eggs overwinter in the soil, and nymphs hatch in June. Nymphs molt as they grow, and feeding increases with size. Females lay eggs in the soil in late summer.

Type of damage: Defoliation (chewing) by nymphs and adults.

Conditions favoring damage: Unplowed or fallow areas next to fields are preferred egg-laying sites, and may contribute to populations in a field. Dry, warm weather often enhances survival of nymphs. Damage to sugarbeets can occur late in season when other crops are scarce.

Sampling/scouting: Check 5 groups of 20 plants for damage.

Management: Cultural- plowing and cultivation to destroy eggs. Biological – a fungal pathogen can kill many eggs and nymphs under wet spring conditions. Natural enemies include animals (birds, rodents, amphibians), parasitic wasps, and ground beetles.

Threshold: 25% or more leaves damaged.

List of registered insecticides, *RUP (rate per acre):

Asana XL* (5.8 to 9.6 oz)

Chlorpyrifos 4E* (0.5 to 1 pt)

Diazinon 50W* (1 lb)

Lorsban 4E* or Lorsban Advanced* (0.5 to 1 pt)

Mustang Max EW* (2.4 to 4 oz)

Sevin 4F or XLR Plus (0.5 to 1.5 qt)

Sevin 80S or 80WSP (0.62 to 1.875 lb)

Leafhoppers

CDD has never seen damaging numbers of leafhoppers in Michigan.

Description: Small, fast moving, torpedo-shaped insects. Nymphs resemble adults but are much smaller and lack wings.

Life cycle: Several species occur in beets. Multiple generations.

Type of damage: Sucking pest. Both adults and nymphs remove plant sap as they feed. Symptoms include leaf curling and yellowing.

Threshold: Leafhoppers are not usually a problem in beets. A rough guideline is to treat when large numbers of leafhoppers are seen and leaf curling is present.

List of registered insecticides, *RUP (rate per acre):

Asana XL* (5.8 to 9.6 oz)

Diazinon 50W* (0.75 to 1 lb)

Dibrom 8E* (1 pt)

Lorsban 4E* or Lorsban Advanced* (0.5 to 1 pt)

Mustang Max EW* (2.4 to 4 oz)

Pyganic EC 1.4 II (16 to 64 oz) or 5.0 II (4.5 to 18 oz)

Sevin 4F or XLR Plus (1 to 1.5 qt)

Sevin 80S or 80WSP (1.25 to 1.875 lb)

Plant Bugs - including tarnished plant bug

Plant bugs are common, but damage to sugarbeets has been difficult to recreate and quantify.

Description: Oval “true bugs”; Tarnished plant bug is dark brown with a yellow V-shaped mark on the back. Other plant bugs are green. Both have a large piercing sucking mouthpart. Nymphs resemble adults, but lack wings.

Life cycle: Adults overwinter in weeds or crop debris. Eggs are laid into plant tissue. Multiple generations, wide host range.

Type of damage: Sucking pest. Adults and nymphs remove plant sap and inject toxic saliva. Affected leaves turn yellow to brown at tips and edges. Injured plants wilt more easily.

Conditions favoring damage: Adult movement into beet fields may coincide with cutting of alfalfa.

Sampling/ scouting: Check 5 sets of 20 plants for yellowing leaves and TPB

Threshold: Rough guideline is to treat when significant yellowing from feeding occurs and new leaves are being affected.

List of registered insecticides, *RUP (rate per acre):

Asana XL* (5.8 to 9.6 oz)

Lorsban 4E* or Lorsban Advanced* (1 pt)

Mustang Max EW* (2.4 to 4 oz)

Spinach leaf miner

Leaf miner mining is noticeable, but rarely enough to cause concern.

Description: Adult is a slender gray fly with white area between eyes. The larvae feed inside leaf mines.

Life cycle: Females lay white, oval eggs in groups of 3 to 8 on undersides of beet leaves. Larvae (maggots) move inside the leaf and feed on tissue between the upper and lower surface. Larvae drop out of the leaf, pupate in the soil. Multiple generations, but only the first attacks beets.

Type of damage: Larvae create distinctive, winding mines as they feed internally on the leaf.

Conditions favoring damage: Seedling beets are more susceptible to damage than older beets.

Sampling/ scouting: Check 5 sets of 20 plants for egg masses or small mines.

Management: Scouting is crucial - insecticides are most effective if applied just before or at egg hatch.

Threshold: Treat if 50% or more of plants have egg masses and small mines are present.

List of registered insecticides, *RUP (rate per acre):

Diazinon 50WP* (0.75 to 1 lb)

Lorsban Advanced* (1 pt broadcast, 0.66 pt banded)

Lorsban 4E* (1 pt broadcast, 0.66 pt banded)

Mustang Max EW* (2.4 to 4 oz)

Springtails

Springtail are very common decomposers and generally beneficial. Damage is rare unless populations are very high.

Description: Tiny soil insects that spring when disturbed. Normally feed on decaying plant material, fungi or bacteria, breaking down residue and improving soil structure.

Type of damage: If populations are very high, springtails begin to feed on living plant tissue. Feeding results in leaves with a scraped or scarred appearance. Feeding may reduce stand under heavy population pressure.

Conditions favoring damage: Slow emergence in moist soil. High residue, particularly corn stalks.

Thresholds: None established

No insecticides list springtails on beets on the label. The following products are registered on beets and may provide some control. Note that the manufacturer is not responsible for poor performance. *RUP (rate per acre):

Asana XL* (5.8 to 9.6 oz/acre)

Lannate 90SP* (0.25 to 1 lb/acre)

Lannate 2.4LV* (0.75 to 3 pints/acre)

Mustang Max EW* (2.4 to 4 oz)

White Grubs

White grubs are a localized problem, often depending on soil type.

Description: White, C-shaped larvae of May and June beetles.

Life cycle: Grubs can live for several years in undisturbed grassy areas.

Type of damage: Larvae prune small roots, damage larger roots and may sever taproots.

Conditions favoring damage: Beets following an established grass sod or fallow.

Management: Spring and fall plowing of established sod is recommended before planting. Soil insecticide generally not required.

List of registered insecticides, *RUP (rate per acre):

Counter CR* (3 to 6 oz per 1,000 row ft, in furrow or banded)

Mustang Max EW* (4 oz per acre; apply in-furrow or in a 3-4 inch T-band over the open furrow, min 3-5 gals water/ acre)

Wireworms

Wireworms are a localized problem, often depending on previous crop.

Description: Slender, shiny, brown larvae with wiry segmented body, up to 1.5 inches long.

Life cycle: Immature form of the click beetle; found in grasslands, sod, or fallow fields. Wireworms can spend several years in the immature stage during which they feed on newly-planted seeds as well as developing beets.

Type of damage: Feeds on germinating seed, seedlings, and larger roots.

Conditions favoring damage: Cool, wet weather. Beets following an established grass sod

Sampling/ scouting: Scout for wireworms with a bait trap (see web site below) at least one week before planting.

Management: Cultural – spring and fall plowing of established sod and a season of clean fallow before a crop is planted is recommended, where practical.

Threshold: One or more wireworms per bait trap.

List of registered insecticides, *RUP (rate per acre):

Counter CR* (3 to 6 oz per 1,000 row ft)

Diazinon 50 W (6 to 8 lb)

Lorsban 15G (6.5 to 9 oz banded per 1,000 row ft.

Suppression only)

Mustang Max EW* (4 oz per acre; apply in-furrow or in a 3-4 inch T-band over the open furrow, min 3-5 gals water/ acre)

Insecticides registered for Sugar Beets

Trade name	Common name	Class	Recommended for:	PHI days	REI hrs	Precautions and Remarks
Asana XL (RUP)	esfenvalerate	Pyr	Beet webworm, cutworms, flea beetles, grasshoppers, leaf hoppers	21	12	Maximum 29 oz per acre.
Bt [Agree, Dipel, Javelin, Xentari]	<i>Bacillus thuringiensis</i>	Biol	armyworm, beet webworm, cutworms	0	4	Use only to control small armyworms when populations are light. Full spray coverage is important.
Chlorpyrifos 4E (RUP)			See Lorsban	30	24	Do not exceed 6 pt per acre per season. Retreatment interval = 10 days. Do not mix with Headline or Quadris.
Counter CR (RUP)	terbufos	OP	wireworms, grubs, root aphid suppression	110	48	Maximum 5 applications per season. Do not place granules in direct contact with the seed as crop injury may occur. Maximum 1 application per season.
Diazinon 50W (RUP)	diazinon	OP	aphids (foliar), grasshoppers, leaf hoppers, spinach leaf miner, wireworms	14	24	Maximum 5 applications per season.
Dibrom 8E (RUP)	naled	OP	leafhoppers	2	48	
Lannate LV, SP (RUP)	methomyl	Carb	aphids (foliar), armyworm, beet webworm, flea beetles, variegated cutworm	7	48	
Lorsban 4E and Advanced (RUP)	chlorpyrifos	OP	armyworm, beet webworm, cutworms, flea beetles, grasshoppers, spinach leafminer	30	24	Do not exceed 6 pt per acre per season. Retreatment interval = 10 days. Do not mix with Headline or Quadris.
Lorsban 15G	chlorpyrifos	OP	Cutworms, wireworms	--	24	At planting, banded before or after the press wheel (T-band or band). Maximum 1 application per year. Do not allow granules to contact seed.
Mustang Max EW (RUP)	zeta cypermethrin	Pyr	Armyworm, webworm, cutworm, flea beetle, hoppers, leafhopper, plant bugs, leafminer, grubs, wireworm	50	12	Max 12 oz per acre per season.
Pyganic EC	pyrethrin	Bio	aphids (foliar), armyworm, beet webworm, flea beetles, leaf hoppers	0	12	Listed by the Organic Materials Review Institute (OMRI) for use in organic production.
Sevin 4F, XLR, 80S, 80WSP	carbaryl	Carb	armyworm, beet webworm, cutworms, flea beetles, grasshoppers, leafhoppers	28	12	Maximum 4 lb active per season. Not recommended for tank mixing with herbicide due to potential crop injury.
Temik 15G (RUP)	aldicarb	Carb	spinach leafminer	90	48	At planting, drill granules 1-3 inches below seed line. Post-emergence, apply granules on both sides of row and work into soil.
Thimet/ Phorate 20G (RUP)	phorate	OP	leafhoppers, spinach leafminer	30	48	Do not place banded application in direct contact with seed. Do not broadcast if leaves are wet. Maximum 7.4 lb/acre. Do not feed tops.