Insect Management in Soybeans – 2023

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NOTE: The label is the law. Be sure to read the label before making any pesticide applications and observe all label restrictions including but not limited to days from last application to harvest.

OLF= Other-labeled formulations; see table at end of guide

Chlorpyrifos tolerances were revoked in 2022. Applying chlorpyrifos containing products on soybean is illegal.

Products with an * are Restricted Use Pesticides

Slugs

Slugs can be significant stand reducing pests in no-till fields with high residue cover, especially when cool, wet conditions persist after planting that slow bean growth. Slugs feed heavily on the cotyledon, resulting in large holes or craters and can destroy the growing point.

The best time to scout is in the early morning hours before the sun warms the soil surface. Look under soil residue, underneath plants, and under loose soil. There are no thresholds for slugs, but 1-3 slugs per ft^2 represent a population to keep a close eye on. There are two common species of slug in fields: gray garden slugs and marsh slugs. Both can cause enough damage to warrant replanting. Marsh slugs are black and present year round, gray garden slugs are a pale, brownish gray in color. Slugs seem to favor soybean and legume or brassica cover crops over other plants. Slugs are not affected by insecticides. However, important natural enemies, such as ground beetles and spiders, are. Pre-plant insecticide use can increase the risk of slug feeding. Application does not always save a stand, but may help reduce slug populations that would impact a replant. Once soybean unifoliates are fully expanded, slug feeding is much less likely to reduce the stand. In fields with gray garden slugs, bait applications before gray garden slug egg hatch (typically beginning late March - mid April) will not be effective.

Molluscicides Labeled for Control of Bean Leaf Beetle, Mexican Bean Beetle, and Green Cloverworm					
Molluscicide (Formulation)	**Active ingredient**	**Amount product per acre**	**Pre-harvest Interval (days) (grain/seed only)**	**Re-entry interval (hours)**	**Remarks**
Deadline M-Ps	metaldehyde	10 lbs	0	12	GENERAL USE; CAUTION Spreader must be calibrated to deliver at least 5 pellets/sq. ft. Slug mortality is achieved after 2 to 3 days.
Ferrox AQ	iron phosphate	10-15 lbs	0	4	
Sluggo	iron phosphate	20 to 44 lbs	0	0	GENERAL USE; CAUTION OMRI approved

Metaldehyde causes slugs to dehydrate. Thus, it is best to apply after moisture when slugs are active but with dry weather in the forecast so they cannot rehydrate.

Bean Leaf Beetle, Mexican Bean Beetle, Japanese Beetle, and Green Cloverworm

Mexican Bean Beetles have become fairly uncommon in Delaware. They typically cause a lace-like skeletonizing defoliation in the mid-late summer months, similar to Japanese beetles. Bean leaf beetle feeding appears as round holes on the leaves, while green cloverworm feeding is more blocky. Seedlings can be defoliated by bean leaf beetles.

A seedling treatment may be warranted if defoliation reaches 40% with 2 – 3 beetles per plant. Thresholds decrease to 15% defoliation during R3 (beginning pod)-R6 (full seed) and increase again until harvest. When scouting for defoliation, it is important to estimate whole-canopy defoliation, not just the most obvious defoliation on the upper leaves. Green cloverworms may be present in large numbers but cause fairly low levels of defoliation; numerous predators, parasitoids, and fungal pathogens generally keep cloverworm populations in check. Large populations sometimes crash before causing yield-impacting defoliation.

Bean Leaf Beetles can feed on pods; when scouting, examine pods on several plants. Populations typically peak in early September. Pod damage looks like windowpaning scarring that does not reach the seed. Thresholds from Purdue Extension are as follows:

Pod Injury Level	# beetles / sweep, 30” rows (7-inch rows)		
	<4 (3)	4-7 (3-5)	7+ (5+)
0-8%	No treatment necessary	resample in 5-7 days	control if pods are green
8-12%	resample in 5-7 days	control if pods are green	control if pods are green to yellow
12+%	Control if pods are green and beetles are present	Control unless pods are dry	Control unless pods are dry

Insecticides Labeled for Control of Bean Leaf Beetle, Mexican Bean Beetle, Japanese Beetle and Green Cloverworm						
Insecticide (Formulation)	**IRAC MOA**	**Active Ingredient**	**Amount product per acre**	**Pre-harvest Interval (days) (grain/seed only)**	**Re-entry Interval (hours)**	**Remarks**
Sevin XLR	1A	carbaryl	0.5 to 1 qt.	21	12	
Lannate LV*	1A	methomyl	0.75 to 1.0 pt.	14	48	DANGER Not labeled for Japanese Beetle
Orthene 97 or OLF	1B	acephate.	0.75 to 1.0 lb.	14	24	CAUTION
Dimethoate 4E	1B	dimethoate	1.0 pt.	21	48	CAUTION Not labeled for Japanese Beetle
Fastac*	3	alpha-cypermethrin	2.8 to 3.8 fl. oz.	21	12	CAUTION
Renestra*	3 + 9D	alpha-cypermethrin + Afidopyropen	6.8 fl. oz.	21	12	WARNING
Baythroid XL*	3	beta-cyfluthrin	1.6 to 2.8 fl. oz. (0.8 to 1.6 GCW)	21	12	WARNING
Brigade 2EC* or OLF	3	bifenthrin	2.1 to 6.4 fl. oz.	18	12	WARNING
Tombstone* or	3	cyfluthrin	1.6 to 2.8 fl. oz.	45	12	DANGER

OLF			(0.8 – 1.6 GCW)			
Asana XL*	3	esfenvalerate	5.8 to 9.6 fl. oz.	21	12	WARNING
Declare*	3	gamma-cyhalothrin	0.77 to 1.28 fl. oz. (1.28 to 1.54 fl. oz for JB)	45	24	CAUTION
Leverage 360*	3 + 4A	imidacloprid + beta-cyfluthrin	2.8 fl. oz.	21	12	CAUTION 
Elevest*	3 + 28	bifenthrin + chlorantraniliprole	4.8 to 9.6 fl. oz.	18	12	CAUTION
Besiege*	3 + 28	lambda-cyhalothrin + chlorantraniliprole	5.0 to 8.0 fl. oz. (8.0 to 10.0 fl. oz. for JB)	30	24	WARNING
Warrior II* or OLF	3	lambda-cyhalothrin	0.96 to 1.60 fl. oz. (1.60 to 1.92 for JB)	30	24	WARNING
Endigo ZC*	3 + 4A	lambda-cyhalothrin + thiamethoxam	3.5 to 4.0 fl. oz. (4.0 to 4.5 fl. oz. for JB)	30	24	WARNING 
Mustang Maxx*	3	zeta-cypermethrin	2.8 to 4.0 fl. oz.	21	12	WARNING
Hero*	3	zeta-cypermethrin + bifenthrin	10.3 fl. oz.	21	12	CAUTION
Insecticides Labeled for Green Cloverworm Only						
Radiant SC	5	spinetoram	2.0 to 4.0 fl. oz.	28	4	CAUTION
Blackhawk	5	spinosad	1.1 to 2.2 oz.	28	4	CAUTION
Intrepid Edge	5 + 18	methoxyfenozide + spinetoram	4.0 to 6.4	28	4	CAUTION
Intrepid 2F	18	methoxyfenozide	4.0 to 8.0 fl. oz.	14	4	CAUTION
Steward EC	22	indoxacarb	4.6 to 11.3 fl. oz.	21	12	CAUTION
Coragen 1.67 SC Prevathon Vantacor	28	chlorantraniliprole	3.5 to 7.5 fl. oz. 14.0 to 20.0 fl. oz. 1.2 to 2.5 fl. oz	1	4	CAUTION

Thrips

Thrips **rarely require treatment**; however, early season injury to drought-stressed plants may occasionally reduce yields. Both nymphs and adults feed on the undersides of the leaves, causing small, silvery streaks and whitish or yellowish discoloration. Treatment may be required when injury appears on drought-stressed plants and more than eight thrips per leaflet are found.

Foliar Insecticides Labeled for Control of Thrips						
Insecticide (Formulation)	**Mode of Action Group**	**Active ingredient**	**Amount product per acre**	**Pre-harvest Interval (days) (grain/seed only)**	**Re-entry Interval (hours)**	**Remarks**
Lannate LV*	1A	methomyl	0.75 to 1.0 pt.	14	48	DANGER
Orthene or	1B	acephate	0.25 to 0.5 lb.	14	24	CAUTION

OLF						
Baythroid XL*	3	beta-cyfluthrin	0.8 to 1.6 fl. oz.	21	12	WARNING
Brigade 2EC* or OLF	3	bifenthrin	2.1 to 6.4 fl. oz.	18	12	WARNING
Tombstone* or OLF	3	cyfluthrin	0.8 to 1.6 fl. oz.	45	12	DANGER
Warrior II* or OLF	3	lambda-cyhalothrin	0.96 to 1.60 fl. oz.	30	24	WARNING
Endigo ZC* Endigo ZCX*	3 + 4A	lambda-cyhalothrin + thiamethoxam	3.5 to 4.0 fl. oz.	30	24	WARNING 
Mustang Maxx*	3	zeta-cypermethrin	3.2 to 4.0 fl. oz.	21	12	WARNING

Potato Leafhopper

Leafhoppers attack soybeans during late June through July **but rarely reach population levels that affect yields.** Use a sweep net to take ten sweeps in each of ten locations in the field and count the number of leafhoppers. As a general guideline, a treatment may be needed when injury appears and infestations exceed four leafhoppers per sweep in stressed beans or eight leafhoppers per sweep in normal growing fields.

Insecticides Labeled for Control of Leafhoppers

Insecticide (Formulation)	Mode of Action Group	Active ingredient	Amount product per acre	Pre-harvest Interval (days) (grain/seed only)	Re-entry Interval (hours)	Remarks
Orthene or OLF	1A	acephate	0.5 to 1.0 lb.	14	24	CAUTION
Baythroid XL* or OLF	3	beta-cyfluthrin	0.8 to 1.6 fl. oz.	21	12	WARNING
Brigade 2EC* or OLF	3	bifenthrin	2.1 to 6.4 fl. oz.	18	12	WARNING
Tombstone*	3	cyfluthrin	0.8 to 1.6 fl. oz.	45	12	DANGER
Asana XL*	3	esfenvalerate	2.9 to 5.8 fl. oz.	21	12	WARNING
Warrior II* or OLF	3	lambda-cyhalothrin	0.96 to 1.60 fl. oz.	30	24	WARNING
Mustang Maxx*	3	zeta-cypermethrin	2.8 to 4.0 fl. oz.	21	12	WARNING
Endigo ZC* Endigo ZCX*	3 + 4A	lambda-cyhalothrin + thiamethoxam	3.5 to 4.0 fl. oz.	30	24	WARNING  .

Spider Mites

Mite outbreaks usually are associated with hot, dry weather, which accelerates reproduction and development. During periods of high humidity and field moisture, a fungal disease can reduce populations but high temperatures can nullify these effects. Check weekly for mites, starting in late June through August, especially during a hot, dry season. Concentrate on the field borders and look for the early signs of white stippling at the bases of the leaves. Determine the extent of the infestation and assess the level of injury by examining 20 to 30 plants in the infested area. If isolated spots of mite activity are confined to the perimeter of the field, spot-treatment using ground equipment is recommended to prevent further spread of mites into the field. If the infestation is distributed throughout the interior of the field, treatment of the entire field is suggested if live mites are numerous (20 or more per leaflet) and more than 50 percent of the plants show stippling, yellowing, or

defoliation over more than one-third of the leaves. If rains come, mite development and survival will decrease but may not drop to economic levels if heavy populations are developing under high temperatures. Mite populations often, but now always, crash by the third week of August.

Use greater water volume and higher pressure to ensure thorough coverage. Be sure to scout the field a few days after treatment. Zeal and Agri-Mek both have translaminar activity with long residual activity. Dimethoate requires plants to be actively photosynthesizing to be absorbed (there needs to be soil moisture); otherwise it breaks down in sunlight quickly. Dimethoate also breaks down in alkaline water and high mineral content, especially iron.

Insecticides Labeled For Mite Control						
Insecticide (Formulation)	**Mode of Action Group**	**Active ingredient**	**Amount product per acre**	**Pre-harvest Interval (days) (grain/seed only)**	**Re-entry Interval (hours)**	**Remarks**
Dimethoate 4 EC or OLF	1B	dimethoate	1.0 pt	21	48	WARNING
Agri-Mek 0.7 SC*	6	abamectin	1.75 to 3.5 fl. oz.	28	12	WARNING ***NOTE – only labeled formulation- see label for adjuvant requirements for efficacy and to avoid illegal residues*** 
Zeal 2.88 SC Zeal Pro or OLF	10B	etoxazole	2.0 to 6.0 fl. oz. 11.5 to 34.6 fl. oz.	Do Not Apply after R-5 stage R5 = Beginning seed - seed is 1/8 inch long in the pod at one of the four uppermost nodes on the main stem	12	CAUTION

Corn Earworm

1. Sampling: Outbreaks often follow a midsummer drought, which causes the corn to ripen earlier and become less attractive to the moths. Female moths prefer to lay eggs in open-canopied, late-blooming soybean fields. Drought conditions also delay soybean maturity and prevent normal canopy growth, so peak moth activity is more coincidental with blooming of open-canopied fields.

Sampling for corn earworm should be done on a weekly basis from mid-August through September using a sweep net.

Each sample should consist of 15 net sweeps with a 15-inch diameter sweep net done continuously one after the other. Each sweep consists of swinging the net in one direction through the foliage so that the top of the net passes 2 or 3 inches below the tops of plants. Fifteen consecutive sweeps are done from one side to the other while walking down a middle row. Swing the net with enough force to dislodge insects into the net. If some leaves are not broken off and in the net after the sample, the sampler is not using enough force. After each sample, stop and count how many earworms are in the net. Thresholds are based on the number of earworms per sample.

2. Decision Making: As a general guideline, thresholds are presented at the end of this chapter. Visit the website https://www.ces.ncsu.edu/wp-content/uploads/2017/08/CEW-calculator-v0.006.html for access to the new threshold calculator based on your estimated cost of control (product cost plus application cost) and today's bushel value. Corn earworm are partially resistant to pyrethroid insecticides. Control is less consistent, recent spray trials have achieved between 40 and 90% efficacy in various field crops. Relying on pyrethroids ALONE is STRONGLY DISCOURAGED.

NOTE - *If other defoliating pests are present when pod damage is first evident, then adjustments should be made in the treatment thresholds for earworms. For example, if green cloverworms are actively feeding and have already caused 15 percent defoliation, then insecticide treatment would be justified at lower earworm infestations, about one-half the normal threshold. However, treatment may not be necessary if the majority of worms are infected with the fungus disease. This white to greenish-white fungus can have a significant impact on earworm populations.*

Insecticides Labeled for Corn Earworm Control

Insecticide (Formulation)	Mode of Action Group	Active ingredient	Amount product per acre	Pre-harvest Interval (days) (grain/seed only)	Re-entry Interval (hours)	Remarks
Lannate LV*	1A	methomyl	0.4 to 0.75 pt.	14	48	DANGER
Baythroid XL*	3	beta-cyfluthrin	2.8 fl. oz.	21	12	WARNING
Brigade 2EC* or OLF	3	bifenthrin	6.4 fl. oz.	18	12	WARNING
Hero*	3	zeta-cypermethrin + bifenthrin	10.3 fl. oz.	21	12	CAUTION
Elevest*	3 + 28	bifenthrin + chlorantraniliprole	4.8 to 9.6 fl. oz.	18	12	CAUTION
Besiege*	3 + 28	lambda-cyhalothrin + chlorantraniliprole	5.0 to 8.0 fl. oz.	30	24	WARNING
Radiant SC	5	spinetoram	2.0 to 4.0 fl. oz.	28	4	CAUTION
Blackhawk	5	spinosad	1.7 to 2.2 oz.	28	4	CAUTION
Denim*	6	emamectin benzoate	8 to 12 fl. oz.	28	48	DANGER
Intrepid Edge	18 + 5	methoxyfenozide + spinetoram	4.0 to 6.4 fl. oz.	28	4	CAUTION

Steward EC	22	indoxacarb	4.6 to 11.3 fl. oz.	21	12	CAUTION
Prevathon Vantacor	28	chlorantraniliprole	14.0 to 20.0 fl. oz. 1.2 to 2.5 fl oz.	1	4	CAUTION

Grasshopper

Insecticides Labeled for Control of Grasshoppers						
Insecticide (Formulation)	**Mode of Action Group**	**Active ingredient**	**Amount product per acre**	**Pre-harvest Interval (days) (grain/seed only)**	**Re-entry Interval (hours)**	**Remarks**
Sevin XLR Plus	1A	carbaryl	0.5 to 1 qt.	21	12	CAUTION
Orthene or OLF	1B	acephate	0.25 to 0.5 lb.	14	24	CAUTION
Dimethoate 400* or OLF	1B	dimethoate	1.0 pt.	21	48	WARNING
Fastac*	3	alpha-cypermethrin	2.8 to 3.8 fl. oz.	21	12	CAUTION
Renestra*	3 + 9D	alpha-cypermethrin + Afidopyropen	6.8 fl. oz.	21	12	WARNING
Baythroid XL*	3	beta-cyfluthrin	2.0 to 2.8 fl. oz.	21	12	WARNING
Leverage 360*	3 + 4A	beta-cyfluthrin + imidacloprid	2.8 fl. oz.	21	12	CAUTION 
Brigade 2EC* or OLF	3	bifenthrin	2.1 to 6.4 fl. oz.	18	12	WARNING
Elevest*	3 + 28	bifenthrin + chlorantraniliprole	4.8 to 9.6 fl. oz.	18	12	CAUTION
Besiege*	3 + 28	lambda-cyhalothrin + chlorantraniliprole	8.0 to 10.0 fl. oz.	30	24	WARNING
Tombstone* or OLF	3	cyfluthrin	2.0 to 2.8 fl. oz.	45	12	DANGER
Asana XL*	3	esfenvalerate	5.8 to 9.6 fl. oz.	21	12	WARNING
Warrior II* or OLF	3	lambda-cyhalothrin	1.60 to 1.92 fl. oz.	30	24	WARNING
Endigo ZC* Endigo ZCX*	3 + 4A	lambda-cyhalothrin + thiamethoxam	4.0 to 4.5 fl. oz.	30	24	WARNING 
Mustang Maxx*	3	zeta-cypermethrin	3.2 to 4.0 fl. oz.	21	12	WARNING
Prevathon Vantacor	28	chlorantraniliprole	8.0.0 to 20.0 fl. oz. 0.7 to 1.7 fl. oz.	1	4	CAUTION MSO may improve efficacy

Beet Armyworm (BAW), Fall Armyworm (FAW), and Yellow Striped Armyworm (YSW)

Note: Beet armyworm is resistant to pyrethroids and is reflected in the below tables.

Insecticide (Formulation)	Mode of Action Group	Active ingredient	Amount product per acre	Pre-harvest Interval (days) (grain/seed only)	Re-entry Interval (hours)	Remarks
Insecticides Labeled for FAW and YSW Control						
Orthene or OLF	1B	acephate	0.75 to 1.0 lb.	14	24	FAW and YSW only CAUTION
Baythroid XL*	3	beta-cyfluthrin	1.6 to 2.8 fl. oz.	21	12	***first and second instar only*** WARNING
Brigade 2EC* or OLF	3	bifenthrin	2.1 to 6.4 fl. oz.	18	12	WARNING
Warrior II [2.08]* or OLF	3	lambda-cyhalothrin	1.6 to 1.92 fl. oz.	30	24	WARNING
Insecticides Labeled for BAW, FAW and YSW Control						
Lannate*	1A	methomyl	0.75 to 1.5 pts.	14	48	DANGER
Elevest*	3 + 28	bifenthrin + chlorantraniliprole	4.8 to 9.6 fl. oz.	12	12	CAUTION
Besiege*	3 + 28	lambda-cyhalothrin + chlorantraniliprole	10.0 fl. oz	30	24	WARNING
Radiant SC	5	spinetoram.	2.0 to 4.0 fl. oz.	28	4	CAUTION ***BAW AND FAW ONLY***
Blackhawk	5	spinosad	1.7 to 2.2 oz.	28	4	CAUTION
Intrepid Edge	18 + 5	methoxyfenozide + spinetoram	4.0 to 6.4 fl. oz.	28	4	CAUTION
Intrepid 2F	18	methoxyfenozide	4.0 to 8.0 fl. oz.	14	4	CAUTION
Steward EC	22	indoxacarb	4.6 to 11.3 fl. oz.	21	12	CAUTION
Coragen 1.67 SC Prevathon Vantacor	28	chlorantraniliprole	3.5 to 7.5 fl. oz. 14.0 to 20.0 fl. oz. 0.7 to 1.7 fl. oz	1	4	***BAW and FAW only*** CAUTION

Stink Bugs

Stink bugs begin moving into fields during the early reproductive stages and can often be found in aggregations in distinct sections of fields. Green stink bugs usually come in from surrounding wooded areas. Brown stink bugs are often associated with other grain crops. Brown stink bugs are more difficult to control with pyrethroid insecticides (MOA 3) and higher rates are advised. Brown marmorated stink bugs are most susceptible to bifenthrin; higher rates are advised. Southern green stink bug was found within a couple of miles of the southern Delaware border in 2021. It shares similar susceptibilities as green stink bug. Thresholds in the mid-Atlantic are 5 per 15 sweeps. Lower thresholds may be justifiable in Plenish soybean.

Insecticides Labeled for Stink Bugs						
Insecticide (Formulation)	**Mode of Action Group**	**Active ingredient**	**Amount product per acre**	**Pre-harvest Interval (days) (grain/seed only)**	**Re-entry Interval (hours)**	**Remarks**
Orthene or OLF	1B	acephate	0.5 to 1.0 lb.	14	24	CAUTION
Fastac*	3	alpha-cypermethrin	2.8 to 3.8 fl. oz.	21	12	CAUTION
Renestra*	3 + 9D	alpha-cypermethrin + Afidopyropen	6.8 fl. oz.	21	12	WARNING
Baythroid XL*	3	beta-cyfluthrin	2.8 fl. oz.	21	12	WARNING
Leverage 360*	3 + 4A	beta-cyfluthrin + imidacloprid	2.8 fl. oz.	21	12	CAUTION 
Brigade 2EC*	3	bifenthrin	6.4 fl. oz.	18	12	WARNING
Declare*	3	gamma-cyhalothrin	1.28 to 1.54 fl. oz.	45	24	CAUTION
Warrior II* or OLF	3	lambda-cyhalothrin.	1.92 fl. oz.	30	24	CAUTION
Endigo ZC* Endigo ZCX*	3 + 4A	lambda-cyhalothrin + thiamethoxam	4.5 fl. oz.	30	24	WARNING 
Mustang Maxx*	3	zeta-cypermethrin	4.0 fl. oz.	21	12	CAUTION
Hero*	3	zeta-cypermethrin + bifenthrin	10.3 fl. oz.	21	12	CAUTION
Belay	4A	clothianidin	3.0 to 6.0 fl. oz.	21	12	CAUTION 

Soybean Looper

Soybean looper move into the area in August. Soybean loopers can cause significant defoliation during reproductive stages. Defoliation threshold between R2 and R5 is 15%; At R6, the threshold rises to 50% defoliation, and beans are safe from yield loss from defoliation at R7. Significant defoliation can occur quickly with large numbers (1 looper per sweep). Be sure not to confuse them with green cloverworm. Soybean looper do not wiggle violently when disturbed and only have two pairs of abdominal prolegs. The last abdominal segments tend to be wider than the first abdominal segments. Soybean loopers tend to defoliate in the middle of a canopy first before moving upwards. Large larvae are hard to control, and large larvae eat more leaf material in the last three days of larval development than during the rest of their development.

Both Virginia and North Carolina report the most consistent products contain indoxacarb or methoxyfenozide. Chlorantraniliprole-containing products are labeled but tend to provide only about 40-60% efficacy.

Insecticides Labeled for Soybean Looper						
Insecticide (Formulation)	**Mode of Action Group**	**Active ingredient**	**Amount product per acre**	**Pre-harvest Interval (days) (grain/seed only)**	**Re-entry Interval (hours)**	**Remarks**
Radiant SC	5	spinetoram	4.0 fl. oz.	28	4	CAUTION
Blackhawk	5	spinosad	2.2 oz.	28	4	CAUTION

Denim*	6	emamectin benzoate	8 to 12 fl. oz.	28	48	DANGER
Intrepid Edge	18 + 5	methoxyfenozide + spinetoram	4.0 to 8.0	28	4	CAUTION
Intrepid 2F	18	methoxyfenozide	4.0 to 8.0 fl. oz.	14	12	CAUTION
Steward EC	22	indoxacarb	4.6 to 11.3 fl. oz.	21	12	CAUTION

Soybean Aphid

Soybean aphids can be common, but rarely damaging in Delaware. Thresholds from the Midwest are 250 aphids per plant on 80% of plants, populations are increasing, and plants have not yet reached the R5 beginning seed stage. It is important to resample fields 5-7 days after observing a near-threshold population. This is because aphid populations can "crash" quickly due to heavy pressure by natural enemies like lady beetles, parasitic wasps, and fungal diseases. When scouting, choose a "Z" or "W" shaped pattern to cover the entire field and sample at least 30 plants per field by examining the entire plant, including stems and upper and lower leaf surfaces. Once plants reach the R5 growth stage (3 mm long seed in the pod at one of the four uppermost nodes on the main stem), soybean can tolerate 1,000+ aphids per plant.

Insecticides Labeled for Soybean Aphids

Insecticide (Formulation)	Mode of Action Group	Active ingredient	Amount product per acre	Pre-harvest Interval (days) (grain/seed only)	Re-entry Interval (hours)	Remarks
Orthene or OLF	1B	acephate	0.75 to 1.0 lb.	14	24	CAUTION
Renestra*	3 + 9D	alpha-cypermethrin + Afidopyropen	6.8 fl. oz.	21	12	WARNING
Baythroid XL*	3	beta-cyfluthrin	2.0 to 2.8 fl. oz.	21	12	WARNING
Asana XL*	3	esfenvalerate	5.8 to 9.6 fl. oz.	21	12	WARNING
Warrior II* or OLF	3	lambda-cyhalothrin	0.96 to1.6 fl. oz.	30	24	WARNING
Endigo ZC* Endigo ZCX*	3 + 4A	lambda-cyhalothrin + thiamethoxam	3.5 to 4.0 fl. oz.	30	24	WARNING 
Hero*	3	zeta-cypermethrin + bifenthrin	10.3 fl. oz.	21	12	CAUTION
Transform	4C	sulfoxaflor	0.75 to 1.0 oz.	7	24	DANGER
Sivanto	4D	flupyradifurone	7.0 to 14.0 fl. oz.	21	12	CAUTION
Sefina	9D	afidopyropen	3.0 fl. oz.	7	12	CAUTION

Other Soybean Insect Pest Thresholds

Pest species	# per row-foot rospacing		# per 15 sweeps rospacing		Other comments
	Row Spacing		Row Spacing		
	7"-21"	above 21"	7"-21"	above 21"	

Full-season plantings					
Mexican bean beetle	4	6	24	36	**Pre- Bloom**: 30 % defoliation **Pod-Fill** : 15% defoliation **Fully Developed Seeds**: 35% defoliation
Spider mite	Damage occurring and live mites present				.
Other defoliators[1]					**Pre- Bloom**: 30 % defoliation **Pod-Fill** : 15% defoliation **Fully Developed Seeds**: 35% defoliation
Double-crop plantings with poor growth					
Mexican bean beetle	2	4	12	24	**Pre-Bloom**:20% defoliation – **Pod-Fill**: 10% defoliation **Fully Developed Seeds**: 15% defoliation seeds.
Spider mite	Damage occurring and live mites present				
Other defoliators[1]					**Pre-Bloom:20% defoliation – Pod-Fill: 10% defoliation Fully Developed Seeds: 15% defoliation seeds**

[1]Other defoliators include any combinations of green cloverworm, bean leaf beetle, blister beetle, Japanese beetle, soybean looper, yellowstriped armyworm, grasshoppers, or fall armyworm.

Revised Stink Bug Thresholds for Soybean (all stink bug species combined): Apply from R3-4 to R7, double after R7

	# per row foot		**# per 15 sweeps**	
Row spacing	7-21” rows	Above 21”	7-21” rows	Above 21”
Soybeans for Grain	1-2	1-2	5	5
Soybeans for Seed	0.5	0.5	2.5	2.5

Other Labeled Formulations of Commonly Used Insecticides Include But Not Restricted To:

Insecticide *	**OLF trade name**	
Beta-cyfluthrin	Sultrus	
Bifenthrin	Annex LFR (Tenkoz) Bi-Dash 2 E (Sharda USA) Bifen 2AG Gold (Direct AG Source) Bifender FC (Vive Crop Protection) Bifenture 2 EC and LFC (United Phosphorous) Bifenthrin 2 EC (Aceto) Discipline 2 EC (Amvac) Fanfare 2 EC (Adama)	Frenzy Veloz (Real Farm) Ruckus LFR (Helena) Slugbug (Real Farm) Sniper (Loveland) Sniper LFR (Loveland) Tundra 2 EC (Winfield) Xpedient Plus (Amvac)

Esfenvalerate	Zyrate	
Etoxazole	Inntervene SC Stifle SC	Suremite SC Zara SC
Methoxyfenozide	Inspirato Invertid	, Troubadour Turnstyle
Lambda-cyhalothrin	Grizzly Too and Grizzly Z (WinField United) Kendo 22.8 CS (Helm Agro US) L-C Insecticide (Drexel) Lambda T (Helena) Lambda-Cy Ag (WinField United) Lambda-Cy EC Insecticide RUP (UPL) LambdaStar (LG Life Sciences) Nufarm Lambda-cyhaolothrin 1EC (Nufarm)	Paradigm (Adama) Paradigm VC (WinField United) Province II (Tenkoz) Ravage (Innvictis Crop Care) Silencer (Adama) (Willowood Lambda-Cy (Willowood)
Lambda-cyhalothrin + imidacloprid	Kilter	
Acephate	Acephate 97 WDG (Adama) Bracket 97 (WinField United) Tide Acephate 90 WDG (Tide Interntational)	Acephate 90 WDG (Loveland Products) Acephate 97 UP (UPL)
Dimethoate	Dimate 4E (WinField United) Dimethoate 400 (Loveland Products)	Dimethoate 400 EC (FMC) Dimethoate 4EC (Drexel)
Methomyl	Nudrin	

***OLF label rates and restrictions may differ from those listed in this guide. Consult label carefully before making application.**

Insecticidal Seed Treatments Labeled for Soybean

Company	Seed Trt Brand	Category	Active Ingredient	Group
Albaugh	BioST Insecticide 100	Biological Insecticide	*Burkholderia spp.* strain *A396*	
Syngenta	Clariva pn	Biological Nematicide	*Pasteuria nishizawae* – Pn1	
Valent	Nipsit INSIDE	Insecticide	clothianidin	I: 4a
Corventa	Lumisure	Insecticide	clothianidin	I: 4a
Bayer	Acceleron IX-409	Insecticide	imidacloprid	I: 4a
Bayer	Gaucho 600 Flowable	Insecticide	imidacloprid	I: 4a
NuFarm	Senator 600 FS	Insecticide	imidacloprid	I: 4a
UPL	STartUP	Insecticide	imidacloprid	I: 4a
BASF	AXCESS	Insecticide	imidacloprid	I: 4a
Loveland	Dyna-Shield Imidacloprid 5	Insecticide	imidacloprid	I: 4a
Winfield	Nitro Shield IV	Insecticide	imidacloprid	I: 4a
Albaugh	Resonate 480 ST	Insecticide	imidacloprid	I: 4a
Albaugh	Resonate 600 ST	Insecticide	imidacloprid	I: 4a
Innvictis	Revise Imida ST	Insecticide	imidacloprid	I: 4a
Nufarm	Senator 600 FS	Insecticide	imidacloprid	I: 4a
Sharda	Sharda Imidacloprid 5SC	Insecticide	imidacloprid	I: 4a
UPL	Attendant 480 and 600	Insecticide	imidacloprid	I: 4a
Syngenta	Cruiser 5FS	Insecticide	thiamethoxam	I: 4a
Syngenta	Fortenza	Insecticide	cyantraniliprole	I: 28

BASF	Poncho/Votivo	Insecticide Biological Nematicide	clothianidin, *Bacillus firmus* I-1582	I: 4a
Syngenta	Clariva Elite Beans	Insecticide Biological Nematicide Fungicide	thiamethoxam, mefenoxam, fludioxonil, sedaxane, *Pasteuria nishizawae* - Pn1	I: 4a; F: 4, 12, 7
Helena	Seed Shield MAX Beans	Insecticide Fungicide	azoxystrobin, fludioxonil, fludioxonil, mefenoxam, thabendazole, thiamethoxam	I: 4a; F: 11, 12, 4, 7
Valent	Intego Suite	Insecticide Fungicide	clothianidin, ethaboxam, ipconazole, metalaxyl	I: 4a; F: 3, 22, 4
Valent	Inovate Pro Seed Protectant	Insecticide Fungicide	clothianidin, ipconazole, metalaxyl	I: 4a; F: 3, 4
NuFarm	Spirato IMTM 348 FS	Insecticide Fungicide	imidacloprid, metalaxyl, thiophanate-methyl, fludioxonil	I: 4a; F: 4, 1, 12
Syngenta	CruiserMaxx	Insecticide Fungicide	thiamethoxam, mefenoxam, fludioxonil	I: 4a; F: 4, 12
Syngenta	CruiserMaxx Advanced, CruiserMaxx Plus	Insecticide Fungicide	thiamethoxam, mefenoxam, fludioxonil	I: 4a; F: 4, 12
Syngenta	CruiserMaxx EZ	Insecticide Fungicide	thiamethoxam, mefenoxam, fludioxonil	I: 4a; F: 4, 12
FMC	Upshot	Insecticide Fungicide	thiamethoxam, mefenoxam, fludioxonil	I: 4a; F: 4, 12
Syngenta	Adage ST	Insecticide Fungicide	thiamethoxam, mefenoxam, fludioxonil	I: 4a; F: 4, 12
Helena	Seed Shield	Insecticide Fungicide	thiamethoxam, mefenoxam, fludioxonil, azoxystrobin	I: 4a; F: 4, 12, 11
Syngenta	CruiserMaxx Vibrance	Insecticide Fungicide	thiamethoxam, mefenoxam, fludioxonil, sedaxane	I: 4a; F: 4, 12, 7
Winfield	Warden CX	Insecticide Fungicide	thiamethoxam, mefenoxam, fludioxonil, sedaxane	I: 4a; F: 4, 12, 7
Loveland	Equity VIP	Insecticide Fungicide	thiamethoxam, mefenoxam, thiabendazole, fludioxonil, sedaxane	I: 4a; F: 4, I, 12, 7
Syngenta	Avicta 500 FS	Insecticide Nematicide	abamectin	I: 6
Syngenta	Avicta Complete Beans 500	Insecticide Nematicide Fungicide	abamectin, thiamethoxam, mefenoxam,	I: 6, 4a; F: 4, 12

			fludioxonil	
Syngenta	Avicta Complete Beans 500 Vibrance	Insecticide Nematicide Fungicide	abamectin, thiamethoxam, mefenoxam, fludioxonil, sedaxane	I: 6, 4a; F: 4, 12, 7
BASF	ILeVO	Nematicide	fluopyram	F: 7
Bayer	Acceleron NemaStrike ST	Nematicide	tioxazafen	