

## Insect Management in Soybeans – 2020

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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 might not be legal in your state, check with your state's Department of Agriculture for registration status of chlorpyrifos products. Corteva will not be manufacturing Lorsban after 2020; other generic formulations may still be available after 2020. Combo chlorpyrifos products are available but not listed below.**

### 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 3 slugs per ft<sup>2</sup> 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.

| <b>Molluscicides Labeled for Control of Bean Leaf Beetle, Mexican Bean Beetle, and Green Cloverworm</b> |  |                                |  |  |
|---|--|--------------------------------|--|--|
| <b>Molluscicide (Formulation)</b>   | <b>Amount active ingredient per acre</b> | <b>Amount product per acre</b> | <b>Pre-harvest Interval (days) (grain/seed only)</b> | <b>Remarks</b>   |
| metaldehyde (Deadline M-Ps)   | 0.4 lb                                   | 10.0 lb                        | 0  | GENERAL USE; CAUTION Spreader must be calibrated to deliver at least 5 pellets/sq. ft. Slug mortality is achieved after 2 to 3 days. |
| iron phosphate (Sluggo)   | 0.2 to 0.44 lb                           | 20 to 44 lbs                   | 0  | GENERAL USE; CAUTION OMRI approved   |

### Bean Leaf Beetle, Mexican Bean 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 beetle. 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 the reproductive stages. 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.

| <b>Insecticides Labeled for Control of Bean Leaf Beetle, Mexican Bean Beetle, and Green Cloverworm</b> |                 |  |  |  |                         |
|--|-----------------|--|--|--|-------------------------|
| <b>Insecticide (Formulation)</b>   | <b>IRAC MOA</b> | <b>Amount active ingredient per acre</b> | <b>Amount product per acre</b>             | <b>Pre-harvest Interval (days) (grain/seed only)</b> | <b>Remarks</b>          |
| methomyl (Lannate LV)  | 1A              | 0.225 to 0.3 lb.                         | 0.75 to 1.0 pt.                            | 14   | RESTRICTED USE; DANGER  |
| acephate (Orthene 97) or OLF   | 1B              | 0.73 to 0.97 lb.                         | 0.75 to 1.0 lb.                            | 14   | GENERAL USE; CAUTION    |
| chlorpyrifos (Lorsban 4E) or OLF   | 1B              | 0.25 to 1.0 lb                           | 0.5 to 2.0 pt (see label)                  | 28<br>(determinate soybean not after R4)             | RESTRICTED USE; WARNING |
| beta-cyfluthrin (Baythroid XL)   | 3               | 0.013 to 0.022 lb.                       | 1.6 to 2.8 fl. oz. (0.8 to 1.6 GCW)        | 21   | RESTRICTED USE; WARNING |
| bifenthrin (Brigade 2EC) or OLF  | 3               | 0.033 to 0.10 lb.                        | 2.1 to 6.4 fl. oz.                         | 18   | RESTRICTED USE; WARNING |
| cyfluthrin (Tombstone) or OLF  | 3               | 0.025 to 0.044                           | 1.6 to 2.8 fl. oz. (0.8 – 1.6 GCW)         | 45   | RESTRICTED USE; DANGER  |
| esfenvalerate (Asana XL)   | 3               | 0.03 to 0.05 lb.                         | 5.8 to 9.6 fl. oz.                         | 21   | RESTRICTED USE; WARNING |
| lambda-cyhalothrin+ chlorantraniliprole (Besiege)  | 3 + 28          | 0.016 +0.033lb. to 0.026 + 0.052 lb.     | 5.0 to 8.0 fl. oz.                         | 30   | RESTRICTED USE; WARNING |
| lambda-cyhalothrin (Warrior II) or OLF   | 3               | 0.015 to 0.025 lb.                       | 0.96 to 1.60 fl. oz.                       | 30   | RESTRICTED USE; WARNING |
| zeta-cypermethrin (Mustang Maxx)   | 3               | 0.0175 to 0.025 lb.                      | 2.8 to 4.0 fl. oz.                         | 21   | RESTRICTED USE; WARNING |
| <b>Insecticides Labeled for Green Cloverworm Only</b>  |                 |  |  |  |                         |
| spinetoram (Radiant SC)  | 5               | 0.016 to 0.031 lb.                       | 2.0 to 4.0 fl. oz.                         | 28   | GENERAL USE; CAUTION    |
| spinosad (Blackhawk)   | 5               | 0.025 to 0.05 lb.                        | 1.1 to 2.2 oz.                             | 28   | GENERAL USE; CAUTION    |
| methoxyfenozide + spinetoram (Intrepid Edge)   | 5 + 18          |  | 4.0 to 6.4                                 | 28   | GENERAL USE; CAUTION    |
| methoxyfenozide (Intrepid 2F)  | 18              | 0.06 to 0.12 lb.                         | 4.0 to 8.0 fl. oz.                         | 14   | GENERAL USE; CAUTION    |
| indoxacarb (Steward EC)  | 22              | 0.045 to 0.11 lb.                        | 4.6 to 11.3 fl. oz.                        | 21   | GENERAL USE; CAUTION    |
| chlorantraniliprole (Coragen 1.67 SC) (Prevathon)  | 28              | 0.045 to 0.098 lb.<br>0.047 to 0.067 lb. | 3.5 to 7.5 fl. oz.<br>14.0 to 20.0 fl. oz. | 1  | GENERAL USE; 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 | Amount active ingredient per acre | Amount product per acre | Pre-harvest Interval (days) (grain/seed only) | Remarks  |
| methomyl (Lannate LV)                             | 1A                   | 0.225 to 0.3 lb.                  | 0.75 to 1.0 pt.         | 14  | RESTRICTED USE; DANGER   |
| acephate (Orthene) or OLF                         | 1B                   | 0.24 to 0.49 lb.                  | 0.25 to 0.5 lb.         | 14  | GENERAL USE; CAUTION   |
| beta-cyfluthrin (Baythroid XL)                    | 3                    | 0.007 to 0.013 lb.                | 0.8 to 1.6 fl. oz.      | 21  | RESTRICTED USE; WARNING  |
| bifenthrin (Brigade 2EC) or OLF                   | 3                    | 0.033 to 0.10 lb.                 | 2.1 to 6.4 fl. oz.      | 18  | RESTRICTED USE; WARNING  |
| cyfluthrin (Tombstone) or OLF                     | 3                    | 0.013 to 0.025                    | 0.8 to 1.6 fl. oz.      | 45  | RESTRICTED USE; DANGER   |
| lambda-cyhalothrin (Warrior II) or OLF            | 3                    | 0.015 to 0.025 lb.                | 0.96 to 1.60 fl. oz.    | 30  | RESTRICTED USE; WARNING  |
| lambda-cyhalothrin+ thiamethoxam (Endigo ZC)      | 3 + 4A               | 0.024 + 0.032 to 0.028 + 0.037    | 3.5 to 4.0 fl. oz.      | 30  | RESTRICTED USE; WARNING<br> |
| zeta-cypermethrin (Mustang Maxx)                  | 3                    | 0.02 to 0.025 lb.                 | 3.2 to 4.0 fl. oz.      | 21  | RESTRICTED USE; 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 | Amount active ingredient per acre | Amount product per acre | Pre-harvest Interval (days) (grain/seed only) | Remarks                |
| acephate (Orthene) or OLF                       | 1A                   | 0.49 to 0.97 lb.                  | 0.5 to 1.0 lb.          | 14  | GENERAL USE CAUTION    |
| beta-cyfluthrin (Baythroid XL) or OLF           | 3                    | 0.007 to 0.013 lb.                | 0.8 to 1.6 fl. oz.      | 21  | RESTRICTED USE WARNING |
| bifenthrin (Brigade 2EC) or OLF                 | 3                    | 0.033 to 0.10 lb.                 | 2.1 to 6.4 fl. oz.      | 18  | RESTRICTED USE WARNING |
| cyfluthrin (Tombstone)                          | 3                    | 0.013 to 0.025                    | 0.8 to 1.6 fl. oz.      | 45  | RESTRICTED USE DANGER  |
| esfenvalerate (Asana XL)                        | 3                    | 0.015 to 0.03 lb.                 | 2.9 to 5.8 fl. oz.      | 21  | RESTRICTED USE WARNING |
| lambda-cyhalothrin (Warrior II) or OLF          | 3                    | 0.015 to 0.025 lb.                | 0.96 to 1.60 fl. oz.    | 30  | RESTRICTED USE WARNING |
| zeta-cypermethrin (Mustang Maxx)                | 3                    | 0.0175 to 0.025 lb.               | 2.8 to 4.0 fl. oz.      | 21  | RESTRICTED USE WARNING |

|   |        |                                |                    |    |  |
|---|--------|--------------------------------|--------------------|----|--|
| lambda-cyhalothrin + thiamethoxam (Endigo ZC) | 3 + 4A | 0.024 + 0.032 to 0.028 + 0.037 | 3.5 to 4.0 fl. oz. | 30 | RESTRICTED USE; WARNING<br> |
|---|--------|--------------------------------|--------------------|----|--|

## 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 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 | Amount active ingredient per acre | Amount product per acre | Pre-harvest Interval (days) (grain/seed only)  | Remarks   |
| chlorpyrifos (Lorsban 4E) or OLF      | 1B                   | 0.25 to 0.5 lb                    | 0.5 to 1.0 pt           | 28<br>(determinate soybean not after R4)   | RESTRICTED USE; WARNING<br>May need a second spray 4-5 days after initial treatment.<br>Vegetable oil may improve control during hot weather      |
| dimethoate (Dimethoate 4 EC) or OLF   | 1B                   | 0.5                               | 1.0 pt                  | 21   | GENERAL USE; WARNING  |
| bifenthrin (Brigade 2EC) or OLF       | 3                    | 0.08 to 0.1 lb.                   | 5.12 to 6.4 fl. oz.     | 18   | RESTRICTED USE; WARNING   |
| zeta-cypermethrin + bifenthrin (Hero) | 3                    | 0.10 lb.                          | 10.3 fl. oz.            | 21   | RESTRICTED USE; CAUTION   |
| abamectin (Agri-Mek 0.7 SC)           | 6                    | 0.0096 to 0.019                   | 1.75 to 3.5 fl. oz.     | 28   | RESTRICTED USE; WARNING<br><b>NOTE – only labeled formulation- see label for adjuvant requirements for efficacy and to avoid illegal residues</b> |
| etoxazole (Zeal 2.88 SC)              | 10B                  | 0.045 to 0.135 lb.                | 2.0 to 6.0 fl. oz.      | Do Not Apply after R-5 stage<br>R5 = Beginning seed - seed is 1/8 inch long in the pod at one of the four uppermost nodes on the main stem | GENERAL USE; CAUTION<br><b>NOTE – only labeled formulation</b>  |

## 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. Addition or use of other modes of action is advisable.

**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 | Amount active ingredient per acre     | Amount product per acre | Pre-harvest Interval (days) (grain/seed only) | Remarks                 |
| methomyl (Lannate LV)                              | 1A                   | 0.12 to 0.225 lb.                     | 0.4 to 0.75 pt.         | 14  | RESTRICTED USE; DANGER  |
| chlorpyrifos (Lorsban 4E) or OLF                   | 1B                   | 0.5 to 1.0 lb                         | 1.0 to 2.0 pt.          | 28  | RESTRICTED USE; WARNING |
| beta-cyfluthrin (Baythroid XL)                     | 3                    | 0.022 lb.                             | 2.8 fl. oz.             | 21  | RESTRICTED USE; WARNING |
| bifenthrin (Brigade 2EC) or OLF                    | 3                    | 0.10 lb.                              | 6.4 fl. oz.             | 18  | RESTRICTED USE; WARNING |
| esfenvalerate (Asana XL)                           | 3                    | 0.035 lb.                             | 9.6 fl. oz.             | 21  | RESTRICTED USE; WARNING |
| lambda-cyhalothrin (Warrior II) or OLF             | 3                    | 0.03lb.                               | 1.6 fl. oz.             | 30  | RESTRICTED USE; WARNING |
| zeta-cypermethrin + bifenthrin (Hero)              | 3                    | 0.10 lb.                              | 10.3 fl. oz.            | 21  | RESTRICTED USE; CAUTION |
| zeta-cypermethrin (Mustang Maxx)                   | 3                    | 0.025 lb.                             | 4.0 fl. oz.             | 21  | RESTRICTED USE; WARNING |
| lambda-cyhalothrin + chlorantraniliprole (Besiege) | 3 + 28               | 0.016 + 0.033 lb. to 0.026 + 0.052lb. | 5.0 to 8.0 fl. oz.      | 30  | RESTRICTED USE; WARNING |

|  |        |                                    |                         |    |                         |
|--|--------|------------------------------------|-------------------------|----|-------------------------|
| spinetoram<br>(Radiant SC)                         | 5      | 0.016 to 0.031<br>lb.              | 2.0 to 4.0 fl. oz.      | 28 | GENERAL USE<br>CAUTION  |
| spinosad<br>(Blackhawk)                            | 5      | 0.038 to 0.05 lb.                  | 1.7 to 2.2 oz.          | 28 | GENERAL USE<br>CAUTION  |
| methoxyfenozide +<br>spinetoram<br>(Intrepid Edge) | 18 + 5 | 0.078 + 0.015<br>0.125 + 0.025 lb. | 4.0 to 6.4 fl. oz.      | 28 | GENERAL USE<br>CAUTION  |
| indoxacarb<br>(Steward EC)                         | 22     | 0.045 to 0.11 lb.                  | 4.6 to 11.3 fl. oz.     | 21 | GENERAL USE<br>CAUTION  |
| chlorantraniliprole<br>(Prevathon)                 | 28     | 0.047 to 0.067<br>lb.              | 14.0 to 20.0 fl.<br>oz. | 1  | GENERAL USE;<br>CAUTION |

## Grasshopper

| Insecticides Labeled for Control of Grasshoppers    |                            |   |                               |   |   |
|---|----------------------------|---|-------------------------------|---|---|
| Insecticide<br>(Formulation)                        | Mode of<br>Action<br>Group | Amount active<br>ingredient per<br>acre | Amount<br>product per<br>acre | Pre-harvest<br>Interval (days)<br>(grain/seed only) | Remarks   |
| acephate<br>(Orthene) or OLF                        | 1B                         | 0.24 to 0.49 lb.                        | 0.25 to 0.5 lb.               | 14  | GENERAL USE<br>CAUTION  |
| chlorpyrifos<br>(Lorsban 4E) or<br>OLF              | 1B                         | 0.25 to 0.5 lb                          | 0.5 to 1.0 pt.                | 28  | RESTRICTED<br>USE; WARNING  |
| dimethoate<br>(Dimethoate 400)<br>or OLF            | 1B                         | 0.5 lb.                                 | 1.0 pt.                       | 21  | RESTRICTED<br>USE<br>WARNING  |
| beta-cyfluthrin<br>(Baythroid XL)                   | 3                          | 0.016 to 0.022<br>lb.                   | 2.0 to 2.8 fl.<br>oz.         | 21  | RESTRICTED USE<br>WARNING   |
| beta-cyfluthrin +<br>imidacloprid<br>(Leverage 360) | 3 + 4A                     | 0.02 + 0.04 lb.                         | 2.8 fl. oz.                   | 21  | RESTRICTED<br>USE; CAUTION<br> |
| bifenthrin<br>(Brigade 2EC) or<br>OLF               | 3                          | 0.033 to 0.10<br>lb.                    | 2.1 to 6.4 fl.<br>oz.         | 18  | RESTRICTED<br>USE<br>WARNING  |
| cyfluthrin<br>(Tombstone) or<br>OLF                 | 3                          | 0.031 to 0.044                          | 2.0 to 2.8 fl.<br>oz.         | 45  | RESTRICTED<br>USE<br>DANGER   |
| esfenvalerate<br>(Asana XL)                         | 3                          | 0.03 to 0.05 lb.                        | 5.8 to 9.6 fl.<br>oz.         | 21  | RESTRICTED<br>USE<br>WARNING  |
| lambda-cyhalothrin<br>(Warrior II) or OLF           | 3                          | 0.025 to 0.03<br>lb.                    | 1.60 to 1.92 fl.<br>oz.       | 30  | RESTRICTED<br>USE<br>WARNING  |
| lambda-cyhalothrin +<br>thiamethoxam<br>(Endigo ZC) | 3 + 4A                     | 0.031 + 0.041<br>lb.                    | 4.0 to 4.5 fl.<br>oz.         | 30  | RESTRICTED<br><br>USE; WARNING |
| zeta-cypermethrin<br>(Mustang Maxx)                 | 3                          | 0.02 to 0.025 lb.                       | 3.2 to 4.0 fl.<br>oz.         | 21  | RESTRICTED<br>USE<br>WARNING  |
| chlorantraniliprole<br>(Prevathon)                  | 28                         | 0.0027 to 0.067<br>lb.                  | 8.0.0 to 20.0<br>fl. oz.      | 1   | GENERAL USE;<br>CAUTION<br>MSO may<br>improve efficacy  |




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

| Insecticides Labeled for FAW and YSW Control       |                      |  |  |   |   |
|--|----------------------|--|--|---|---|
| Insecticide (Formulation)                          | Mode of Action Group | Amount active ingredient per acre        | Amount product per acre                    | Pre-harvest Interval (days) (grain/seed only) | Remarks   |
| acephate (Orthene) or OLF                          | 1B                   | 0.73 to 0.97 lb.                         | 0.75 to 1.0 lb.                            | 14  | GENERAL USE<br>FAW and YSW only                       |
| beta-cyfluthrin (Baythroid XL)                     | 3                    | 0.013 to 0.022 lb.                       | 1.6 to 2.8 fl. oz.                         | 21  | RESTRICTED USE<br><i>first and second instar only</i> |
| bifenthrin (Brigade 2EC) or OLF                    | 3                    | 0.033 to 0.10 lb.                        | 2.1 to 6.4 fl. oz.                         | 18  | RESTRICTED USE  |
| lambda-cyhalothrin (Warrior II [2.08]) or OLF      | 3                    | 0.025 to 0.03 lb.                        | 1.6 to 1.92 fl. oz.                        | 30  | RESTRICTED USE  |
| Insecticides Labeled for BAW, FAW and YSW Control  |                      |  |  |   |   |
| lambda-cyhalothrin + chlorantraniliprole (Besiege) | 3 + 28               | 0.033 + 0.065 lb.                        | 10.0 fl. oz.                               | 30  | RESTRICTED USE<br>WARNING                             |
| spinetoram (Radiant SC)                            | 5                    | 0.016 to 0.031 lb.                       | 2.0 to 4.0 fl. oz.                         | 28  | GENERAL USE<br>CAUTION<br><b>BAW AND FAW ONLY</b>     |
| spinosad (Blackhawk)                               | 5                    | 0.038 to 0.05 lb.                        | 1.7 to 2.2 oz.                             | 28  | GENERAL USE<br>CAUTION                                |
| methoxyfenozide + spinetoram (Intrepid Edge)       | 18 + 5               |  | 4.0 to 6.4 fl. oz.                         | 28  | GENERAL USE;<br>CAUTION                               |
| methoxyfenozide (Intrepid 2F)                      | 18                   | 0.06 to 0.12 lb.                         | 4.0 to 8.0 fl. oz.                         | 14  | GENERAL USE<br>CAUTION                                |
| indoxacarb (Steward EC)                            | 22                   | 0.045 to 0.11 lb.                        | 4.6 to 11.3 fl. oz.                        | 21  | GENERAL USE<br>CAUTION                                |
| chlorantraniliprole (Coragen 1.67 SC) (Prevathon)  | 28                   | 0.045 to 0.098 lb.<br>0.047 to 0.067 lb. | 3.5 to 7.5 fl. oz.<br>14.0 to 20.0 fl. oz. | 1   | GENERAL USE<br><b>BAW and FAW only</b><br>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).

| Insecticides Labeled for Stink Bugs |                      |                                   |                         |   |                            |
|-------------------------------------|----------------------|-----------------------------------|-------------------------|---|----------------------------|
| Insecticide (Formulation)           | Mode of Action Group | Amount active ingredient per acre | Amount product per acre | Pre-harvest Interval (days) (grain/seed only) | Remarks                    |
| acephate (Orthene) or OLF           | 1B                   | 0.49 to 0.97 lb.                  | 0.5 to 1.0 lb.          | 14  | GENERAL USE<br>CAUTION     |
| chlorpyrifos (Lorsban 4E) or OLF    | 1B                   | 1.0 lb.                           | 2.0 pt.                 | 28  | RESTRICTED USE;<br>WARNING |
| beta-cyfluthrin (Baythroid XL)      | 3                    | 0.022 lb.                         | 2.8 fl. oz.             | 21  | RESTRICTED USE<br>WARNING  |

|   |        |                   |                    |    |   |
|---|--------|-------------------|--------------------|----|---|
| beta-cyfluthrin + imidacloprid (Leverage 360) | 3 + 4A | 0.02 + 0.04 lb.   | 2.8 fl. oz.        | 21 | RESTRICTED USE;<br>CAUTION<br> |
| bifenthrin (Brigade 2EC)                      | 3      | 0.10 lb.          | 6.4 fl. oz.        | 18 | RESTRICTED USE<br>WARNING   |
| lambda-cyhalothrin (Warrior II) or OLF        | 3      | 0.03 lb.          | 1.92 fl. oz.       | 30 | RESTRICTED USE<br>CAUTION   |
| lambda-cyhalothrin + thiamethoxam (Endigo ZC) | 3 + 4A | 0.031 + 0.041 lb. | 4.5 fl. oz.        | 30 | RESTRICTED USE;<br>WARNING<br> |
| zeta-cypermethrin (Mustang Maxx)              | 3      | 0.025 lb.         | 4.0 fl. oz.        | 21 | RESTRICTED USE<br>CAUTION   |
| clothianidin (Belay)                          | 4A     | 0.05 to 0.1.0 lb. | 3.0 to 6.0 fl. oz. | 21 | GENERAL USE;<br>CAUTION<br>    |

## 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.


| Insecticides Labeled for Soybean Looper            |                      |  |  |   |                           |
|--|----------------------|--|--|---|---------------------------|
| Insecticide (Formulation)                          | Mode of Action Group | Amount active ingredient per acre        | Amount product per acre                    | Pre-harvest Interval (days) (grain/seed only) | Remarks                   |
| spinetoram (Radiant SC)                            | 5                    | 0.016 to 0.031 lb.                       | 2.0 to 4.0 fl. oz.                         | 28  | GENERAL USE<br>CAUTION    |
| spinosad (Blackhawk)                               | 5                    | 0.038 to 0.05 lb.                        | 2.2 oz.                                    | 28  | GENERAL USE<br>CAUTION    |
| methoxyfenozide + spinetoram (Intrepid Edge)       | 18 + 5               |  | 4.0 to 8.0                                 | 28  | GENERAL USE;<br>CAUTION   |
| methoxyfenozide (Intrepid 2F)                      | 18                   | 0.06 to 0.12 lb.                         | 4.0 to 8.0 fl. oz.                         | 14  | GENERAL USE<br>CAUTION    |
| indoxacarb (Steward EC)                            | 22                   | 0.055 to 0.11 lb.                        | 4.6 to 11.3 fl. oz.                        | 21  | GENERAL USE;<br>CAUTION   |
| lambda-cyhalothrin + chlorantraniliprole (Besiege) | 3 + 28               | 0.033 + 0.065 lb.                        | 10.0 fl. oz.                               | 30  | RESTRICTED USE<br>WARNING |
| chlorantraniliprole (Coragen 1.67 SC)(Prevathon)   | 28                   | 0.045 to 0.098 lb.<br>0.047 to 0.067 lb. | 3.5 to 7.5 fl. oz.<br>14.0 to 20.0 fl. oz. | 1   | GENERAL USE<br>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.

| <b>Insecticides Labeled for Soybean Aphids</b> |                             |  |                                |  |   |
|--|-----------------------------|--|--------------------------------|--|---|
| <b>Insecticide (Formulation)</b>               | <b>Mode of Action Group</b> | <b>Amount active ingredient per acre</b> | <b>Amount product per acre</b> | <b>Pre-harvest Interval (days) (grain/seed only)</b> | <b>Remarks</b>  |
| acephate (Orthene) or OLF                      | 1B                          | 0.73 to 0.97 lb.                         | 0.75 to 1.0 lb.                | 14   | GENERAL USE CAUTION   |
| beta-cyfluthrin (Baythroid XL)                 | 3                           | 0.016 to .022 lb.                        | 2.0 to 2.8 fl. oz.             | 21   | RESTRICTED USE WARNING  |
| esfenvalerate (Asana XL)                       | 3                           | 0.03 to 0.05 lb.                         | 5.8 to 9.6 fl. oz.             | 21   | RESTRICTED USE WARNING  |
| lambda-cyhalothrin (Warrior II) or OLF         | 3                           | 0.015 to 0.025 lb.                       | 0.96 to 1.6 fl. oz.            | 30   | RESTRICTED USE WARNING  |
| lambda-cyhalothrin + thiamethoxam (Endigo ZC)  | 3 + 4A                      | 0.024 + 0.032 to 0.028 + 0.037           | 3.5 to 4.0 fl. oz.             | 30   | RESTRICTED USE WARNING<br> |
| zeta-cypermethrin (Mustang Maxx)               | 3                           | 0.0175 to 0.025 lb.                      | 2.8 to 4.0 fl. oz.             | 21   | RESTRICTED USE WARNING  |
| sulfoxaflor (Transform)                        | 4C                          | 0.023 to 0.031 lb                        | 0.75 to 1.0 oz.                | 7  | GENERAL USE; DANGER   |
| Flupyradifurone (Sivanto)                      | 4D                          | 0.09 to 0.137 lb.                        | 7.0 to 14.0 fl. oz.            | 21   | GENERAL USE; CAUTION  |
| afidopyropen (Sefina)                          | 9D                          | 0.0098 lb.                               | 3.0 fl. oz.                    | 7  | GENERAL USE; CAUTION  |

### Other Soybean Insect Pest Thresholds

| Pest species                                  | # per row-foot                          |           | # per 15 sweeps |           | Other comments  |
|---|---|-----------|-----------------|-----------|---|
|   | Row Spacing                             |           | Row Spacing     |           |   |
|   | 7"-21"                                  | above 21" | 7"-21"          | above 21" |   |
| <b>Full-season plantings</b>                  |   |           |                 |           |   |
| Mexican bean beetle                           | 4                                       | 6         | 24              | 36        | <b>Pre- Bloom:</b> 30 % defoliation<br><b>Pod-Fill :</b> 15% defoliation<br><b>Fully Developed Seeds:</b> 35% defoliation       |
| Spider mite                                   | Damage occurring and live mites present |           |                 |           | .   |
| Other defoliators <sup>1</sup>                |   |           |                 |           | <b>Pre- Bloom:</b> 30 % defoliation<br><b>Pod-Fill :</b> 15% defoliation<br><b>Fully Developed Seeds:</b> 35% defoliation       |
| <b>Double-crop plantings with poor growth</b> |   |           |                 |           |   |
| Mexican bean beetle                           | 2                                       | 4         | 12              | 24        | <b>Pre-Bloom:</b> 20% defoliation –<br><b>Pod-Fill:</b> 10% defoliation<br><b>Fully Developed Seeds:</b> 15% defoliation seeds. |
| Spider mite                                   | Damage occurring and live mites present |           |                 |           |   |

Other defoliators<sup>1</sup>

**Pre-Bloom: 20% defoliation –  
Pod-Fill: 10% defoliation  
Fully Developed Seeds: 15%  
defoliation seeds**

<sup>1</sup>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  |   |
|--------------------|---|---|
| Bifenthrin         | Annex LFR (Tenkoz)<br>Bi-Dash 2 E (Sharda USA)<br>Bifen 2AG Gold (Direct AG Source)<br>Bifender FC (Vive Crop Protection)<br>Bifenture 2 EC and LFC (United Phosphorous)<br>Bifenthrin 2 EC (Aceto)<br>Discipline 2 EC (Amvac)<br>Fanfare 2 EC (Adama)                          | Frenzy Veloz (Real Farm)<br>Ruckus LFR (Helena)<br>Slugbug (Real Farm)<br>Sniper (Loveland)<br>Sniper LFR (Loveland)<br>Tundra 2 EC (Winfield)<br>Xpedient Plus (Amvac) |
| Lambda-cyhalothrin | Grizzly Too and Grizzly Z (WinField United)<br>Kendo 22.8 CS (Helm Agro US)<br>L-C Insecticide (Drexel)<br>Lambda T (Helena)<br>Lambda-Cy Ag (WinField United)<br>Lambda-Cy EC Insecticide RUP (UPL)<br>LambdaStar (LG Life Sciences)<br>Nufarm Lambda-cyhalothrin 1EC (Nufarm) | Paradigm (Adama)<br>Paradigm VC (WinField United)<br>Province II (Tenkoz)<br>Ravage (Innactivis Crop Care)<br>Silencer (Adama)<br>(Willowood Lambda-Cy (Willowood))     |
| Acephate           | Acephate 97 WDG (Adama)<br>Bracket 97 (WinField United)<br>Tide Acephate 90 WDG (Tide International)  | Acephate 90 WDG (Loveland Products)<br>Acephate 97 UP (UPL)   |
| Chlorpyrifos       | Govern 4E (Tenkoz)<br>Lorsban 75 WG (Gowan)<br>Saurus (Helena Agri-Enterprises)<br>Warhawk ClearForm (Loveland Products)<br>Chlorpyrifos 4E AG (Adama)<br>Hatchet Insecticide (Corteva)<br>Lorsban Advanced (Corteva)   | Vulcan (Adama)<br>Whirlwind (Helena Agri-Enterprises)<br>Chlorpyrifos 4E-AG (Drexel)<br>Warhawk (Loveland Products)<br>Yuma 4E (WinField United)                        |
| Dimethoate         | Dimate 4E (WinField United)<br>Dimethoate 400 (Loveland Products)   | Dimethoate 400 EC (FMC)<br>Dimethoate 4EC (Drexel)  |

**\*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                   |
|----------|---|---|--|-------------------------|
| Bayer    | Acceleron IX-409                          | Insecticide                                       | Imidacloprid   | I: 4a                   |
| Syngenta | Cruiser 5FS                               | Insecticide                                       | Thiamethoxam   | I: 4a                   |
| Bayer    | Gaucho 600 Flowable                       | Insecticide                                       | Imidacloprid   | I: 4a                   |
| NuFarm   | Senator 600 FS                            | Insecticide                                       | Imidacloprid   | I: 4a                   |
| UPL      | STartUP                                   | Insecticide                                       | Imidacloprid   | I: 4a                   |
| Bayer    | Acceleron NemaStrike ST                   | Nematicide  | Tioxazafen   |                         |
| Syngenta | Avicta 500 FS                             | Insecticide<br>Nematicide                         | Abamectin  | I: 6                    |
| BASF     | ILeVO                                     | Nematicide  | Fluopyram  | F: 7                    |
| BASF     | Poncho/Votivo                             | Insecticide Biological<br>Nematicide              | Clothianidin<br>Bacillus firmus I-1582   | I: 4a                   |
| Syngenta | Clariva pn                                | Biological<br>Nematicide                          | Pasteuria nishizawae<br>– Pn1  |                         |
| Syngenta | Avicta Complete Beans 500                 | Insecticide<br>Nematicide<br>Fungicide            | Abamectin,<br>Thiamethoxam,<br>Mefenoxam,<br>Fludioxonil                             | I: 4a, 6<br>F: 4, 12    |
|          |   |   |  |                         |
| Syngenta | Avicta Complete Beans 500 Vibrance        | Insecticide<br>Nematicide<br>Fungicide            | Abamectin,<br>Thiamethoxam,<br>Mefenoxam,<br>Fludioxonil,<br>Sedaxane                | I: 6, 4a<br>F: 4, 12, 7 |
| Syngenta | Clariva Elite Beans                       | Insecticide Biological<br>Nematicide<br>Fungicide | Thiamethoxam,<br>Mefenoxam,<br>Fludioxonil,<br>Sedaxane, Pasteuria<br>nishizawae-Pn1 | I: 4a<br>F: 4, 12, 7    |
| Syngenta | Adage ST                                  | Insecticide,<br>Fungicide                         | Thiamethoxam,<br>Mefenoxam,<br>Fludioxonil   | I: 4a, 6<br>F: 4, 12    |
| Syngenta | CruiserMaxx                               | Insecticide Fungicide                             | Thiamethoxam,<br>Mefenoxam,<br>Fludioxonil   | I: 4a<br>F: 4, 12       |
| Syngenta | CruiserMaxx Advanced,<br>CruiserMaxx Plus | Insecticide Fungicide                             | Thiamethoxam,<br>Mefenoxam,<br>Fludioxonil   | I: 4a<br>F: 4, 12       |
| Syngenta | CruiserMaxx EZ                            | Insecticide Fungicide                             | Thiamethoxam,<br>Mefenoxam,<br>Fludioxonil   | I: 4a<br>F: 4, 12       |
| Syngenta | CruiserMaxx Vibrance                      | Insecticide Fungicide                             | Thiamethoxam,<br>Mefenoxam,<br>Fludioxonil, Sedaxane                                 | I: 4a<br>F: 4, 12, 7    |
| Valent   | Inovate Pro Seed Protectant               | Insecticide Fungicide                             | Clothianidin,<br>Ipconazole, Metalaxyl   | I: 4a<br>F: 3, 4        |

|          |                        |                       |   |                       |
|----------|------------------------|-----------------------|---|-----------------------|
| Valent   | Intego Suite           | Insecticide Fungicide | Clothianidin,<br>Ethaboxam,<br>Ipconazole, Metalaxyl              | I: 4a<br>F: 3, 22, 4  |
| Helena   | Seed Shield            | Insecticide Fungicide | Thiamethoxam,<br>Mefenoxam,<br>Fludioxonil,<br>Azoxystrobin       | I: 4a<br>F: 4, 12, 11 |
| NuFarm   | Spirato IMTM 348<br>FS | Insecticide Fungicide | Imidacloprid,<br>Metalaxyl,<br>Thiophanate-Methyl,<br>Fludioxonil | I: 4a<br>F: 4, 1, 12  |
| FMC      | Upshot                 | Insecticide Fungicide | Thiamethoxam,<br>Mefenoxam,<br>Fludioxonil                        | I: 4a<br>F: 4, 12     |
| Winfield | Warden CX              | Insecticide Fungicide | Thiamethoxam,<br>Mefenoxam,<br>Fludioxonil, Sedaxane              | I: 4a<br>F: 4, 12, 7  |