

Insect Control in Alfalfa (Pure Stands Only) – 2026

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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 days from last application to harvest which varies for forage, hay and grazing. Also, to avoid injury to honey bees, do not apply insecticides during bloom.*

Chlorpyrifos is no longer registered for use on alfalfa.

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

Products mentioned do not constitute an endorsement by the University of Delaware and serve as examples of a given active ingredient only.

NOTE: *this guide is for pure stands only. Some products might not be registered for use in mixed stands. Thresholds in mixed stands are greater than pure stand alfalfa. It is generally not economical to treat an alfalfa pest if the percentage of alfalfa in a mixed stand is 50% or less.*

Alfalfa Weevil

1. Sampling: Alfalfa weevil eggs begin hatching around 100 growing degree days (base 48°F). This typically occurs in mid-March, but may be earlier following mild winters. Continue sampling weekly until first cutting. Fields should also be checked within one week of the first cutting for both larval and adult damage to the re-growth. During the first visit, examine 5-10 stems for damage and larvae. A full stem sample is not needed until damage or larvae are found on the plants. If leaf feeding is present, randomly collect 30 stems from throughout the field. Grasp stems at the base and place each stem upside down in a bucket. After collecting the stems, separate them into 3 or 4 bundles and beat them against the inside of the bucket to dislodge larvae from the stems. Count and record all larvae found per 30 stems. If the weather is cold or small larvae are present, they may be sheltering deep in terminals and difficult to dislodge. Measure 10 of the 30 stems and record the average stem height. Also, note if buds or flowers are present to determine the percentage of plants in the bud or flower stage.

2. Decision Making: As a general guideline, the following thresholds can be used to make a treatment decision:

Average Stem Height (inches)	# Weevil Larvae per Stem
0-11	0.7
12	1.0
13-15	1.5
16	2.0
17-18	2.5

Alfalfa weevil should be treated if alfalfa is less than 6" tall and 50% of stems exhibit signs of fresh leaf feeding.

Below are thresholds for the number of weevil **larvae per 30 stems. Pure Stand Alfalfa**

		Plants 2-18 inches AND Control costs (/acre)				Plants 18-24 inches AND Control costs (\$/acre)				Plants 24-30 inches AND Control costs (\$/acre)			
		\$14	\$	\$	\$25	\$14	\$16	\$20	\$25	\$14	\$16	\$20	\$25
Value of Hay (\$/ton)	\$300	32	36	47	59	35	40	51	64	37	42	53	66
	\$320	30	34	44	55	32	38	48	61	35	40	49	62
	\$340	28	32	41	52	31	36	45	57	33	37	47	58
	\$360	26	30	39	49	29	34	43	54	31	35	44	55
	\$380	25	28	37	47	27	32	41	51	29	33	42	52
	\$400	24	27	35	44	26	30	39	49	28	32	40	50
	\$420	23	26	34	42	25	29	37	47	27	30	38	47
	\$440	22	25	32	40	24	28	35	45	25	29	36	45
	\$460	21	23	31	39	23	26	34	43	24	28	34	43
	\$480	20	22	29	37	22	25	33	41	23	26	33	41
	\$500	19	22	28	36	21	24	31	40	22	25	32	40
	\$520	18	21	27	34	20	23	30	38	22	24	31	38
	\$540	18	20	26	33	19	23	29	37	21	24	29	37
	\$560	17	19	25	32	19	22	28	36	20	23	28	36
	\$580	16	19	24	31	18	21	27	34	19	22	27	34
	\$600	16	18	24	30	17	20	26	33	19	21	26	33
	\$620	15	17	23	29	17	20	25	32	18	21	26	32
	\$640	15	17	22	28	16	19	25	31	18	20	25	31
	\$660	14	16	22	27	16	18	24	31	17	19	24	30

If alfalfa is in the full-bud stage and economic levels are present, early harvest is an alternative to spraying. If harvest is not possible within 3 days and populations are increasing, use a short residual insecticide. If economic levels of alfalfa weevil are present before harvest and you decide to cut instead of spray, be sure to check fields within one week of cutting for damage to the re-growth. If temperatures remain cool after cutting, there is often not enough "stubble heat" to control populations with early cutting. In some cases, damage to re-growth can be significant. As a general guideline, a stubble treatment may be needed if you find 2 or more weevils per stem and the population levels remain steady.

Notes: Under drought stress, thresholds should be lowered by about 0.5 weevils per stem.

For mixed stand alfalfa, treatment is not recommended if the proportion of alfalfa in a stand is below 50%. Adjust thresholds for the alfalfa proportion of the stand accordingly. For more guidance and an additional threshold table, see our Alfalfa Weevil fact sheet.

Early harvest should only be done once during the growing season to avoid reducing stand or longevity.

NOTE: Based upon efficacy trials targeting high populations in southern Delaware and southern Maryland, MOA Group 1A, 1B, and 3 should be tank mixed with each other. Use of those products ALONE is **NOT RECOMMENDED**. Steward at mid rates has provided consistent, good control. Initial populations may be high enough though to warrant a second application. Most products may only be used once per cutting. See label for product use restrictions.

Insecticides Labeled for Alfalfa Weevil						
Product * = Restricted Use	MOA Group	Active ingredient	Rate/ acre	PHI (days)	REI (hrs)	Remarks

Carbaryl 4L or OLF	1A	carbaryl	1.5 qt.	7	12	CAUTION May cause temporary, non yield-limiting bleaching, does not control adults.
Lannate LV* or OLF	1A	methomyl	3.0 pt.	7	48	DANGER; Do not apply when temps >50F
Imidan 70-W	1B	phosmet	1.0-1.3 lb.	7	120	WARNING; Do not use stickers, extenders or latex, pineolene based adjuvant
Malathion 57 C	1B	malathion	2.0 pt	0	12	CAUTION
Fastac*	3	alpha-cypermethrin	2.2 - 3.8 fl. oz.	Cutting/ grazing: 3	12	DANGER
Baythroid XL or OLF	3	beta-cyfluthrin	1.6 - 2.8 fl. oz.	7	12	WARNING
Tombstone 2C *	3	cyfluthrin	1.6 -2.8 fl. oz.	7	12	DANGER
Declare*	3	gamma-cyhalothrin	1.02 - 1.54 fl. oz.	Forage: 1 Hay: 7	24	CAUTION
Warrior II* or LF	3	lambda-cyhalothrin	1.28 - 1.92 fl. oz.	Forage: 1 Hay: 7	24	WARNING
Pounce 25WP or OLF	3	permethrin	6.4 - 12.8 oz.	≤6.4 fl oz: 0 d > 6.4 fl oz: 14 d	12	CAUTION; A maximum of 12.8 fl oz may be applied per cutting DO NOT apply to mixed forage
Mustang Max* or OLF	3	zeta-cypermethrin	2.24 - 4.0 fl. oz.	3	12	WARNING
Steward EC OLF	22	indoxacarb	6.7 - 11.3 fl. oz.	7	12	GENERAL USE; A maximum of 11.3 fl oz may be applied per cutting

*Restricted Use Pesticide

Notes: Dimethoate is also labeled for alfalfa weevil suppression. It is inconsistent by itself. FMC has a 2ee recommendation tank mixing with Mustang Maxx. Use with caution or tank-mix with a pyrethroid. Besiege (chlorantraniliprole + lambda cyhalothrin) is also labeled BUT chlorantraniliprole is not effective on alfalfa weevil, only the lambda cyhalothrin component is, thus there is no extra benefit for alfalfa weevil control over using a lambda-cyhalothrin containing product by itself.

Steward has been the most consistent, effective product for controlling large populations of alfalfa weevil.

Resample the field 7 days after initial application. Large populations might not be adequately knocked down.

If temperatures are less than 48 F, delay application until weather warms.

Potato Leafhopper

1. Sampling: On new spring plantings, begin sampling by mid-May, or as soon as plants are 3 inches tall. On established stands, begin sampling within a week after the first cutting and continue on a weekly basis until the final harvest. Take sweep net samples any time during the day as long as the foliage is dry. Take 10 sweeps in each of 10 locations to determine the number of leafhoppers per 100 sweeps. Examine 20 random stems to determine the plant height and plant growth stage.

2. Decision Making: As a general guideline, the following thresholds can be used to make a leafhopper control decision. Keep in mind that fields may vary considerably in plant response to the leafhopper feeding depending on soil moisture, fertility, and cultivar.

3. Resistant Varieties: Cultivars with leafhopper resistance have glandular trichomes that trap nymphs. The most recently released varieties have as much as 75% resistance to leafhopper. Sprays may still be warranted during the seeding year, but could prevent the need to treat once stands are established. Leafhopper resistant varieties are not the same as non-yellowing varieties. Non-yellowing varieties still suffer damage.

For more information on insect and disease resistant alfalfa varieties:

[https://www.alfalfa.org/pdf/2025 Alfalfa Variety Leaflet.pdf](https://www.alfalfa.org/pdf/2025%20Alfalfa%20Variety%20Leaflet.pdf)

If alfalfa is more than 60 percent bud or flowering, consider harvesting in the next 7 days to avoid spraying. In this situation, the field should be re-sampled soon after harvest to determine the need for control. If the field cannot be harvested in 7 days and economic population levels are present, apply a short residual insecticide. If the alfalfa has experienced "hopper burn," significant yield loss has already occurred and the field should be cut instead of sprayed. Leafhopper applications are rarely economical if plants are taller than 12 inches. Harvesting kills most nymphs and many adults. Adults that are not killed tend to disperse away from the field. Thus, stubble sprays are rarely necessary.

There are two thresholds in extension literature. Midwestern states use a threshold of 0.2/sweep on 3" alfalfa, 0.5/sweep on 6" alfalfa, 1.0/sweep on 8-11 inch alfalfa and 2.0/sweep on 12" alfalfa.

The below table is modified from John Tooker at Penn State. Note that the numbers are a bit different.

Economic threshold for potato leafhopper, average number of leafhoppers **per 100 sweeps**

(NOTE: if the variety is resistant to PLH, thresholds should be increased 8-10x)

		Plants 0 to 4 inches A				Plants 4 to 8 inches AND				Plants 8 to 12 inches AND			
		Control costs (\$/re)				Control costs (\$/acre)				Control costs (\$/acre)			
		\$12	\$14	\$16	\$20	\$12	\$14	\$16	\$20	\$12	\$14	\$16	\$20
Value of Hay (\$/ton)	\$200	23	24	25	30	30	30	37	46	84	105	123	136
	\$220	21	22	23	27	27	27	33	41	76	96	111	122
	\$240	20	20	21	25	25	26	30	37	69	88	101	110
	\$260	19	19	20	23	23	24	27	34	64	81	93	100
	\$280	18	18	19	21	21	22	25	31	59	76	86	92
	\$300	17	17	18	20	20	21	23	29	55	71	80	84
	\$320	16	16	17	19	19	20	21	27	51	66	75	78
	\$340	15	15	16	17	17	18	19	25	48	63	70	73
	\$360	14	14	15	17	17	17	18	23	45	59	66	68
	\$380	14	14	15	16	16	16	17	22	43	56	62	64
	\$400	13	13	14	15	15	15	16	20	41	53	59	60
	\$420	13	13	13	14	14	15	15	19	39	51	56	57
	\$440	13	12	13	14	14	14	14	18	37	49	53	54
	\$460	12	12	12	13	13	13	14	17	35	46	51	51

	\$480	12	11	12	12	12	13	13	17	34	45	49	48
	\$500	11	11	12	12	12	12	12	16	32	43	47	46
	\$520	11	10	11	12	12	12	12	15	31	41	45	44
	\$540	11	10	11	11	11	11	11	14	30	40	43	42
	\$560	10	10	11	11	11	11	11	14	29	38	41	40
	\$580	10	10	10	10	10	11	10	13	28	37	40	39
	\$600	10	9	10	10	10	10	10	13	27	36	39	37

Insecticides Labeled for Control of Potato Leafhopper						
Product * = Restricted Use	MOA Group	Active ingredient	Rate/ acre	PHI (d)	REI (hr)	Remarks
Dimethoate 400 or OLF	1B	dimethoate	0.5 to 1.0 pt.	10	48	NING
Imidan 70-W	1B	phosmet	1.0 to 1.3 lb.	7	120	WARNING Do not apply to blooming alfalfa
Fastac*	3	alpha-cypermethrin	2.2 to 3.8 fl. oz.	Cutting/ grazing: 3 Harvest seed: 7	12	NGER
Baythroid XL* or OLF	3	beta-cyfluthrin	0.8 to 1.6 fl. oz.	7	12	NING
Tombstone 2EC*	3	cyfluthrin	0.8 to 1.6 fl. oz.	7	12	NGER
Declare*	3	gamma-cyhalothrin	0.77 to 1.28 fl. oz.	Forage: 1 Hay harvest: 7	24	UTION
Warrior II* or OLF	3	lambda-cyhalothrin	0.96 to 1.60 fl. oz.	Forage harvest: 1 Hay harvest: 7	24	NING
Pounce 25WP* or OLF	3	permethrin	6.4 to 12.8 oz.	≤6.4 oz: 0 d > 6.4 oz: 14 d	12	UTION
Mustang Maxx* or OLF	3	zeta-cypermethrin	2.24 to 4.0 fl. oz.	3	12	NING
Sivanto Prime	4D	flupyradifurone	7 to 14 fl. oz.	7	4	CAUTION
Sefina	9D	afidopyropen	3.0 to 6.0 fl oz	0	12	UTION

Note: All of the insecticides listed above are highly toxic to pollinators except Sefina.

Grasshoppers

Insecticides Labeled for Control of Grasshoppers						
Product * = Restricted Use	MOA Group	Active ingredient	Rate/ acre	PHI (d)	REI (hr)	Remarks
Malathion 57 EC or OLF	1B	malathion	1.5 - 2.0 pt.	0	12	UTION
Baythroid XL* or OLF	3	beta-cyfluthrin	2.0 - 2.8 fl. oz.	7	12	NING
Tombstone*	3	cyfluthrin	2.0 - 2.8 fl. oz.	7	12	NGER
Fastac*	3	alpha-cypermethrin	2.8 - 3.8 fl. oz.	Cutting/ grazing: 3	12	NGER
Warrior II* or OLF	3	lambda-cyhalothrin	1.28 - 1.92 fl. oz.	Forage: 1 Hay: 7	24	NING

Mustang Maxx* or OLF	3	zeta-cypermethrin	2.8 - 4.0 fl. oz.	3	12	WARNING
Coragen Coragen eVo (Vantacor) Prevathon or OLF	28	chlorantraniliprole	2 - 5 fl. oz. 0.7 - 1.7 fl.oz. 14 - 20 fl. oz	0	4	CAUTION use with MSO 1% v/v to improve efficacy
Besiege*	28 + 3	chlorantraniliprole + lambda-cyhalothrin	6.0 - 10.0 fl oz	1 d Forage 7 d Hay	24	WARNING

Armyworms and Cutworms – These insects may impact stand establishment. Beet armyworm is resistant to pyrethroids and chlorantraniliprole.

Insecticides Labeled for Control of Armyworms and Cutworms						
Product * = Restricted Use	MOA Group	Active ingredient	Rate/ acre	PHI (d)	REI (hr)	Remarks
Baythroid XL* or OLF	3	beta-cyfluthrin	1.6 - 2.8 fl. oz.	7	12	WARNING 1 st and 2 nd instar only
Tombstone*	3	cyfluthrin	0.8 - 1.6 fl. oz.	7	12	DANGER 1 st and 2 nd instar only
Fastac*	3	alpha-cypermethrin	2.2 - 3.8 fl. oz.	Cutting/ grazing: 3	12	NGER
Declare*	3	gamma-cyhalothrin	0.77 - 1.54 fl. oz.	Forage: 1 Hay: 7	24	UTION
Warrior II* or OLF	3	lambda-cyhalothrin	1.28 - 1.92 fl. oz.	Forage: 1 Hay: 7	24	NING
Pounce 25WP* or OLF	3	permethrin	3.2 - 12.8 oz.	≤6.4 oz: 0 d > 6.4 oz: 14 d	12	UTION
Mustang Maxx* or OLF	3	zeta-cypermethrin	2.8 - 4.0 fl. oz.	3	12	NING
Besiege*	28 + 3	chlorantraniliprole + lambda cyhalothrin	5.0 - 10.0 fl oz	1 d Forage 7 d Hay	24	NING
Coragen eVo (Vantacor) Coragen Prevathon or OLF	28	chlorantraniliprole	1.2 - 2.5 fl. oz. 2 - 5 fl. oz. 14 - 20 fl. oz	0	4	UTION

Other Defoliating Worms

Other worm species may occasionally build up in alfalfa and cause significant defoliation during the summer months. These include but are not limited to green cloverworm, loopers, alfalfa webworm, and various armyworm species. **Beet armyworm and corn earworm are resistant to pyrethroids. Beet armyworm is resistant to chlorantraniliprole.** Thresholds for worms vary, but in general 25% infested stems, 25-30% defoliation, or

Insecticides Labeled for Control of Various Lepidopteran Worm Species						
Product * = Restricted Use	MOA Group	Active ingredient	Rate/ acre	PHI (d)	REI (hr)	Remarks
DiPel or OLF	11	Bacillus thuringiensis kurstaki	0.5 - 2.0 lbs	0	4	UTION OMRI approved

Baythroid XL* or OLF	3	beta-cyfluthrin	1.6 -2.8 fl. oz.	7	12	WARNING Only 1 st and 2 nd instars
Tombstone*	3	cyfluthrin	0.8 - 2.8 fl. oz.	7	12	DANGER Only 1 st and 2 nd instars
Fastac*	3	alpha-cypermethrin	2.2 - 3.8 fl. oz.	Cutting/ grazing: 3	12	DANGER
Declare*	3	gamma- cyhalothrin	0.77 - 1.54 fl. oz.	Forage: 1 Hay: 7	24	CAUTION
Warrior II* or OLF	3	lambda-cyhalothrin	0.96 - 1.92 fl. oz.	Forage: 1 Hay: 7	24	WARNING
Pounce 25WP* or OLF	3	permethrin	3.2 - 12.8 oz.	≤ 6.4 oz: 0 > 6.4: 14	12	CAUTION
Mustang Maxx* or OLF	3	zeta-cypermethrin	2.4 - 4.8 fl oz.	3	12	WARNING
Intrepid 2F or OLF	18	methoxyfenozide	4.0 - 10.0 fl oz	7 (mixed stand) 0 d Forage 3 d (<8 fl oz, alfalfa only)	4	CAUTION
Coragen eVo (Vantacor) Coragen Prevathon or OLF	28	chlorantraniliprole	1.2 - 2.5 fl. oz. 2 - 5 fl. oz. 14 - 20 fl. oz	0	4	CAUTION
Besiege*	28 + 3	Chlorantraniliprole + lambda-cyhalothrin	5.0 to 10.0 fl oz	1 d Forage 7 d Hay	24	WARNING

Pea Aphid

- 1. Sampling/Decision Making:** The need to treat for pea aphids is rare (1 year in 10) in the Mid-Atlantic because lady bird beetles, wasp parasites, and other beneficial insects usually control this pest. The best sampling technique requires the same 15-inch sweep net used for potato leafhoppers. Ten sweeps at 10 random locations should be used to sample both the aphids and beneficials. If 50 or more aphids per sweep are collected and no beneficials are present, it is recommended that the field be cut early. Avoid spraying first crop because sprays will kill alfalfa weevil parasites.

Insecticides Labeled for Control of Pea Aphid						
Product * = Restricted Use	MOA Group	Active ingredient	Rate/ acre	PHI (days)	REI (hours)	Remarks
Lannate LV* or OLF	1A	methomyl	1.5 - 3.0 pt.	7	48	NGER
Dimethoate 400 or OLF	3	dimethoate	0.5 - 1.0 pt.	10	48	CAUTION
Malathion 57EC or OLF	1B	malathion	1.5 - 2.0 pt.	0	12	UTION
Transform WG	4C	sulfoxaflor	0.75 - 1.0 oz	7	24	DANGER

Sivanto Prime	4D	fupyradifurone	7.0 - 14.0 fl oz	7	4	CAUTION
Sefina	9D	idopyropen	3.0 - 6.0 fl oz	0	12	CAUTION

Please note that numerous pyrethroid (group 3) insecticides are labeled for pea aphid control but are not recommended based upon UD spray trial results after aphid populations were flared by pyrethroid use targeting alfalfa weevil.

Blister Beetles

Pay attention to flowering alfalfa for blister beetles. There are a couple of species that are commonly found in alfalfa. All are cigar shaped and with a prothorax that is narrower than both the head and the abdomen giving them a distinctive 'neck'. Blister beetles can be highly toxic to horses and should be avoided when cutting hay. There are no thresholds for blister beetles. Insecticides can reduce live blister beetles, but if the dead insect does not fall completely out of the canopy, it could still cause problems in the cut forage. Nebraska's Gary Stone writes that 'haying equipment without conditioners has shown to reduce the number of dead beetles. If hay is harvested in this manner and allowed to dry in windrows, the majority of beetles can move out and leave the field. Sicklebar mowers however will crush the beetles. Avoid driving on freshly cut alfalfa. Cutting without crimpers will help prevent crushing beetles, giving them the chance to leave the field. Blister beetles tend to be more concentrated near field edges. Harvesting before bloom is an option, especially if early harvest was not done for alfalfa weevil or potato leafhopper.

Other Labeled Formulations

OLF's include but are not limited to the following products. Rates and use patterns may not be the same as the brand name. Read labels thoroughly.

Active Ingredient	OLF (Manufacturer)	OLF (Manufacturer)
Methomyl	Lanveer LV (Innervictis Crop Care) Lannate LV (NovaSource)	Nudrin LV (Albaugh)
Permethrin	Arctic 3.2 EC (WinField United) Permanone 30-30 (Environmental Sci) Perm-Up 3.2 EC (UPL)	Permethrin (Loveland) PermaStar (LG Life Sci)
Lambda Cyhalothrin	Province II (Tenkoz) Crusader (Albaugh) Kendo (Helm Agro) Lambda-Cy EC (UPL) Lambda-Cy Ag (WinField) LambdaT (Helena) Province II (Tenkoz) Willowood Lambda-Cy 1 EC (Willowood) Provincell (Tenkoz) Ravage (Innervictis) Serpent (Atticus)	Cavalry II (Growmark) Grizzly Too (WinField United) L-C Insecticide (Drexel) LambdaStar (LG Life Science) Silencer (Adama) Paradigm VC (WinField United) Lunge (UPL) Nufarm Lambda-cyhalothrin (Nufarm)

Dimethoate	Dimethoate 400 (Drexel and Loveland) Dimethoate 4 EC (Drexel)	Dimethoate 2.67 EC (Drexel and Loveland) Dimethoate LV-4 (Drexel)
Methoxyfide	Invertid 2F (Loveland) Invicar 2SC (Albaugh) GCS Methoxy 2F (Generic Crop Sci) Vexer (Innvictis)	Thwartex (AgSurf) Turnstyle (UPL) Zylo (UPL)
Malathion	Fyfanon 57 EC (FMC) Malathion 5 (WinField United)	Malathion 8 F (Gowan) Malathion 5 EC (Drexel)
B.t.	Crymax Deliver Dipel	Javelin Leptotec Agree
Zeta-cyperhrin	Cortes Maxx (Atticus)	
Chlorantranliprole	Exceliprole (Albaugh)	Shenzi (UPL)
Indoxacarb	Host EC (Sharda)	Sedaire EC (Atticus)