

Insect Control in Alfalfa (Pure Stands Only) – 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 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 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.

OLF = Other labeled formulations

Alfalfa Weevil

1. Sampling: Alfalfa weevil eggs begin hatching around 200 growing degree days (base 48°F). This typically occurs at the beginning of April. 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. 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

A recent model accounting for value of the crop and control costs per acre may help refine decision making. Below are thresholds for the number of weevil larvae per 30 stems.

Value of Hay (\$/ton)	Plants 12-18 inches AND Control costs (\$/acre)				Plants 18-24 inches AND Control costs (\$/acre)				Plants 24-30 inches AND Control costs (\$/acre)			
	\$12	\$14	\$16	\$20	\$12	\$14	\$16	\$20	\$12	\$14	\$16	\$20
	\$120	68	79	91	114	75	87	100	124	78	91	105
\$140	59	68	77	99	64	75	86	107	67	78	90	112
\$160	51	60	68	86	56	65	75	93	58	68	79	98
\$180	45	52	60	77	50	58	67	84	52	61	70	87
\$200	41	48	54	69	45	52	60	76	47	55	63	79
\$220	37	43	49	63	41	47	55	69	42	50	57	72
\$240	34	40	45	58	37	43	50	63	39	46	53	66
\$260	31	37	42	54	35	40	46	59	36	43	49	61
\$280	29	34	39	50	32	37	43	55	33	40	45	56
\$300	27	32	36	47	30	35	40	51	31	37	42	53
\$320	26	30	34	44	28	33	38	48	29	35	40	49
\$340	24	28	32	41	26	31	36	45	27	33	37	46
\$360	23	26	30	39	25	29	34	43	26	31	35	44
\$380	22	25	28	37	24	27	32	41	24	29	33	42
\$400	20	24	27	35	22	26	30	39	23	28	32	39

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

Insecticides Labeled for Control of Alfalfa Weevil					
Insecticide (Formulation)	MOA Group	Amount active ingredient per acre	Amount product per acre	PHI (days)	Remarks
methomyl (Lannate LV)	1A	0.9 lb.	3.0 pt.	7	RESTRICTED USE
carbaryl (Carbaryl 4L)	1A		1.5 qt	7	GENERAL USE May cause temporary bleaching, does not control adults
chlorpyrifos (Lorsban 4E)	1B	0.5 to 1.0 lb	1.0 to 2.0 pt	1 pt: 14 >1 pt: 21	RESTRICTED USE Some temporary yellowing may occur but should disappear within a week and not affect yield.

phosmet (Imidan 70-W)	1B	0.7 to 1.0 lb.	1.0 to 1.3 lb.	7	RESTRICTED USE
beta-cyfluthrin (Baythroid XL)	3	0.0125 to 0.022 lb.	1.6 to 2.8 fl. oz.	7	RESTRICTED USE
cyfluthrin (Tombstone 2EC)	3	0.025 to 0.044 lb.	1.6 to 2.8 fl. oz.	7	RESTRICTED USE
lambda- cyhalothrin (Warrior II) or OLF	3	0.02 to 0.03 lb.	1.28 to 1.92 fl. oz.	Forage harvest: 1 Hay harvest: 7	RESTRICTED USE
permethrin (Perm-Up 3.2EC) or OLF	3	0.1 to 0.2 lb.	4.0 to 8.0 fl. oz.	≤ 0.1 lb. AI/A: 0 > 0.1 lb. AI/A: 14	RESTRICTED USE
zeta- cypermethrin (Mustang Maxx)	3	0.014 to 0.025 lb.	2.24 to 4.0 fl. oz.	3	RESTRICTED USE
indoxacarb (Steward EC)	22	0.065 to 0.11 lb.	6.7 to 11.3 fl. oz.	7	GENERAL USE

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.

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.

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

Value of Hay (\$/ton)	Plants 0 to 4 inches AND Control costs (\$/acre)				Plants 4 to 8 inches AND Control costs (\$/acre)				Plants 8 to 12 inches AND Control costs (\$/acre)			
	\$12	\$14	\$16	\$20	\$12	\$14	\$16	\$20	\$12	\$14	\$16	\$20
	\$120	34	37	38	50	50	53	69	85	142	173	210
\$140	30	32	35	43	43	45	57	70	121	149	178	208
\$160	27	29	30	38	38	38	49	60	105	131	155	177
\$180	25	26	27	33	33	34	42	52	93	116	137	154
\$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

Insecticides Labeled for Control of Potato Leafhopper					
Insecticide (Formulation)	MOA Group	Amount active ingredient per acre	Amount product per acre	PHI (days)	Remarks
dimethoate (Dimethoate 400)	1B	0.2 to 0.5 lb.	0.5 to 1.0 pt.	10	RESTRICTED USE
phosmet (Imidan 70-W)	1B	0.7 to 1.0 lb.	1.0 to 1.3 lb.	7	RESTRICTED USE
beta-cyfluthrin (Baythroid XL)	3	0.0065 to 0.0125 lb.	0.8 to 1.6 fl. oz.	7	RESTRICTED USE
cyfluthrin (Tombstone 2EC)	3	0.013 to 0.025 lb.	0.8 to 1.6 fl. oz.	7	RESTRICTED USE
lambda-cyhalothrin (Warrior II) or OLF	3	0.015 to 0.025 lb.	0.96 to 1.60 fl. oz.	Forage harvest: 1 Hay harvest: 7	RESTRICTED USE
permethrin (Perm-Up 3.2EC) or OLF	3	0.1 to 0.2 lb.	4.0 to 8.0 fl. oz.	≤ 0.1 lb. AI/A: 0 > 0.1 lb. AI/A: 14	RESTRICTED USE
zeta-cypermethrin (Mustang Maxx)	3	0.014 to 0.025 lb.	2.24 to 4.0 fl. oz.	3	RESTRICTED USE

Grasshoppers

Insecticides Labeled for Control of Grasshoppers					
Insecticide (Formulation)	MOA Group	Amount active ingredient per acre	Amount product per acre	PHI (days)	Remarks
malathion (Malathion 57 EC)	1B	0.94 to 1.25 lb.	1.5 to 2.0 pt.	0	GENERAL USE
beta-cyfluthrin (Baythroid XL)	3	0.0155 or 0.022 lb.	2.0 to 2.8 fl. oz.	7	RESTRICTED USE
cyfluthrin (Tombstone)	3	0.031 to 0.044 lb.	2.0 to 2.8 fl. oz.	7	RESTRICTED USE
lambda-cyhalothrin (Warrior II) or OLF	3	0.02 to 0.03 lb.	1.28 to 1.92 fl. oz.	Forage harvest: 1 Hay harvest: 7	RESTRICTED USE
zeta-cypermethrin (Mustang Maxx)	3	0.0175 to 0.025 lb.	2.8 to 4.0 fl. oz.	3	RESTRICTED USE

Insecticides Labeled for Control of Armyworms and Cutworms					
Insecticide (Formulation)	MOA Group	Amount active ingredient per acre	Amount product per acre	PHI (days)	Remarks
beta-cyfluthrin (Baythroid XL)	3	0.0125 to 0.022 lb.	1.6 to 2.8 fl. oz.	7	RESTRICTED USE Effective against small armyworm larvae up to 2 nd instar
cyfluthrin (Tombstone)	3	0.025 to 0.044 lb.	1.6 to 2.8 fl. oz.	7	RESTRICTED USE Effective against small armyworm larvae up to 2 nd instar
lambda-cyhalothrin (Warrior II) or OLF	3	0.02 to 0.03 lb.	1.28 to 1.92 fl. oz.	Forage harvest: 1 Hay harvest: 7	RESTRICTED USE
permethrin (Perm-Up) or OLF	3	0.05 to 0.20 lb.	2.0 to 8.0 fl. oz.	≤ 0.1 lb. AI/A: 0 > 0.1 lb. AI/A: 14	RESTRICTED USE
zeta-cypermethrin (Mustang Maxx)	3	0.0175 to 0.025 lb.	2.8 to 4.0 fl. oz.	3	RESTRICTED USE

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 Aphids					
Insecticide (Formulation)	MOA Group	Amount active ingredient per acre	Amount product per acre	PHI (days)	Remarks
methomyl (Lannate LV)	1A	0.45 to 0.9 lb.	1.5 to 3.0 pt.	7	RESTRICTED USE
dimethoate (Dimethoate 400) or OLF	3	0.25 to 0.5 lb.	0.5 to 1.0 pt.	10	RESTRICTED USE
malathion (Malathion 57EC)	1B	0.94 to 1.25 lb.	1.5 to 2.0 pt.	0	GENERAL USE
beta-cyfluthrin (Baythroid XL)	3	0.022 lb.	2.8 fl. oz.	7	RESTRICTED USE
cyfluthrin (Tombstone)	3	0.044 lb.	2.8 fl. oz.	7	RESTRICTED USE
lambda-cyhalothrin (Warrior II) or OLF	3	0.02 to 0.03 lb.	1.28 to 1.92 fl. oz.	Forage harvest: 1 Hay harvest: 7	RESTRICTED USE
permethrin (Perm-Up 3.2EC) or OLF	3	0.1 to 0.2 lb.	4.0 to 8.0 fl. oz.	≤ 0.1 lb. AI/A: 0 > 0.1 lb. AI/A: 14	RESTRICTED USE
zeta-cypermethrin (Mustang Maxx)	3	0.014-0.025 lb.	2.24 to 4.0 fl. oz.	3	RESTRICTED USE