

Grass Hay and Pasture

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The immature stage of white grubs (i.e., Japanese beetle grubs and other related species) and billbug grubs (i.e., bluegrass billbug, hunting billbug, etc.) are the most important root-feeding pests on grass hay and pasture fields in Virginia. With the exception of Karate and Warrior (billbug suppression), none of the insecticides labeled for grass hay and pasture include these insects on their labels. The products listed below target surface feeders and insects found in the thatch layer. Ongoing research in Virginia is working to address this problem for billbugs.

Table 4.8 - Grass Hay and Pasture

Pests	Insecticide (Formulation)	Amount active ingredient per acre	Amount product per acre	Time limits: days before harvest	Remarks
armyworms (1st & 2nd instar)	beta-cyfluthrin (Baythroid XL [1EC])	0.0125-0.015 lb	1.6-1.9 oz	grass for pasture, rangeland and seed: 0 grazing	RESTRICTED USE. For grass grown for hay, pasture, seed, or rangeland, the maximum Baythroid XL allowed per 5-day interval is 0.022 lb AI/A (2.8 oz/A). The maximum Baythroid XL allowed per crop season or cutting is 0.089 lb AI/A (11.3 oz/A)
fall armyworm (1st & 2nd instar)	beta-cyfluthrin (Baythroid XL [1EC])	0.0125-0.022 lb	1.6-2.8 oz	grass for hay: 0 harvest	
yellowstriped armyworm (1st & 2nd instar)				grass in mixed stands with alfalfa: 7 harvest	For grass in mixed stands with alfalfa, the maximum Baythroid XL allowed per cutting is 0.022 lb AI/A (2.8 oz/A). The maximum Baythroid XL allowed per crop season is 0.089 lb AI/A (11.3 oz/A). Check label for additional details.
Lygus bug, stink bugs, leafhoppers, Japanese beetle (adult), June beetle (adult), alfalfa weevil, tarnished plant bug				7 grazing	
cutworms, army cutworms	beta-cyfluthrin (Baythroid XL [1EC])	0.0065-0.0125 lb	0.8-1.6 oz		Same as above.
grasshoppers, grass thrips	beta-cyfluthrin (Baythroid XL [1EC])	0.02-0.022 lb	2.6-2.8 oz		Same as above.
pests suppressed: blue pea aphid, cowpea aphid, pea aphid (refer to label for additional pests)	beta-cyfluthrin (Baythroid XL [1EC])	0.022 lb	2.8 oz		Same as above.

¹ Label lists over 35 grass species in addition to bermudagrass, orchardgrass, and timothy.

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Table 4.8 - Grass Hay and Pasture (cont.)

Pests	Insecticide (Formulation)	Amount active ingredient per acre	Amount product per acre	Time limits: days before harvest	Remarks
armyworm, fall armyworm, striped grass looper, chinch bugs, thrips, range caterpillar, range crane fly, essex skipper, ticks	carbaryl (Sevin XLR Plus and Sevin SL)	1.0-1.5 lb	1.0-1.5 qt	14 harvest or grazing	Caution. Apply as needed by scouting. Up to 2 applications per year may be made but not more often than once every 14 days. Do not exceed a total of 3 qts/A/year.
	carbaryl (Sevin 80 WSP)	1.0-1.5 lb	1.25-1.875 lb	14 harvest or grazing	Caution. Up to 2 applications per year may be made but not more often than once every 14 days. Do not exceed a total of 3.75 lbs product/A/year.
army cutworm, cutworms, Essex skipper, range caterpillar, striped grasslooper	lambda-cyhalothrin (Karate [2.08EC]) (Warrior II [2.08EC])	0.015-0.025 lb	0.96-1.6 oz	0 grazing 0 cut for forage 7 harvest after last application	RESTRICTED USE. Apply as required by scouting. Timing and frequency of applications should be based on locally determined economic thresholds. Use sufficient water for full coverage. Use ≥ 2 gal by air and ≥ 7 gal by ground.
billbug species (suppression only), beet armyworm, blue stem midge, cereal leaf beetle, chinch bug, crickets, true armyworm, yellowstriped armyworm, fall armyworm, English grain aphid, bird cherry-oat aphid, Russian wheat aphid, sugarcane aphid, greenbug [aphid] (for aphid species best control is obtained before insects begin to roll leaves), flea beetles, leafhoppers, spittlebugs, stink bugs, thrips, grasshoppers, green June beetle (adult), Japanese beetle (adult), webworms	lambda-cyhalothrin (Karate [2.08EC]) (Warrior II [2.08EC])	0.02-0.03 lb	1.28-1.92 oz		Do not apply > 0.03 lb AI (1.92 oz product)/A/ cutting for pastures, rangeland, and grass grown for seed. A minimum retreatment interval of 30 days is required for pastures and rangeland receiving 0.03 lb AI/A which have not been cut between applications. Do not apply > 0.09 lb AI (5.76 oz product)/A/season. Check label for further details.

¹ Label lists over 35 grass species in addition to bermudagrass, orchardgrass, and timothy.

Table 4.8 - Grass Hay and Pasture (cont.)

Pests	Insecticide (Formulation)	Amount active ingredient per acre	Amount product per acre	Time limits: days before harvest	Remarks
armyworms	malathion (Malathion 5)	20.0-22.5 oz	2.0-2.25 pt	0 harvest or grazing	Warning. Repeat applications as necessary. When a dosage range is given, use the lower rate on small or young plants or with light insect infestations; use the higher rate on large or more mature plants or with heavy insect infestations. Note: If treating for aphids with malathion, use the full rate and, whenever possible, select a warm day and wait until the warmest part of the day to spray.
aphids, spider mites, grasshoppers, leafhoppers, spittlebug, lygus bugs		15.0-20.0 oz	1.5-2.0 pt		
range caterpillars	methyl parathion (Cheminova Methyl 4EC)	8.0 oz	1.0 pt	15 harvest or grazing	RESTRICTED USE. (Danger Poison) <i>This pesticide is extremely dangerous due to its very high acute toxicity to humans and birds. Refer to label for proper handling and application instructions.</i>
armyworms, grasshoppers, false chinch bugs, leafhoppers		8.0-12.0 oz	1.5 pt		
cutworms, flea beetles, meadow spittlebug, potato leafhopper, webworms, blue alfalfa aphid, green peach aphid (Refer to label for additional pests.)	zeta-cypermethrin (Mustang Max [0.8EC]) ¹	0.014-0.025 lb	2.24-4.0 oz	0 forage or hay	RESTRICTED USE. Apply minimum 2 gal/A by air or 10 gal/A by ground. Use sufficient water to ensure thorough coverage of foliage. Applications ≥7 days apart for hay and forage. Maximum of 0.025 lb AI/A/cutting. Maximum 0.10 lb AI/A/season.
armyworms, cereal leaf beetle, grasshoppers, plant bugs (including <i>Lygus</i> spp. and stinkbugs) (Refer to label for additional pests.)	zeta-cypermethrin (Mustang Max [0.8EC]) ¹	0.0175-0.025 lb	2.8-4.0 oz	0 forage or hay	RESTRICTED USE. Apply minimum 2 gal/A by air or 10 gal/A by ground. Use sufficient water to ensure thorough coverage of foliage. Applications ≥7 days apart for hay and forage. Maximum of 0.025 lb AI/A/cutting and Maximum 0.10 lb AI/A/season.

¹ Label lists over 35 grass species in addition to bermudagrass, orchardgrass, and timothy.

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Table 4.9 - Timothy Hay¹

Pests	Insecticide (Formulation)	Amount active ingredient per acre	Amount product per acre	Time limits: days before harvest	Remarks
cereal rust mite ²	carbaryl (Sevin XLR Plus)	1.0-1.5 lb	1.0-1.5 qt	14 harvest or grazing	Caution. Apply with ground equipment only with adequate water for complete coverage (10-50 gal by ground). <i>Apply at approximately 4 weeks after green-up in the spring.</i> Treatment is recommended in fields with a previous history of cereal rust mite and/or when 25% of the plant tillers exhibit curled tips of the new leaf blades within several weeks of green-up. In general, one application at 1.0-1.5 qt/A should provide control. If needed, a second application can be made at least 14 days after the first application. A maximum of 2 applications/year may be made. Do not exceed a total of 3.0 qt/A/cutting.

¹ Note: The following recommendation for timothy hay is made as permitted under FIFRA Section 2(ee).

² The cereal rust mite, *Abacarus hystrix*, is a very small eriophyid mite (approximate length of an adult mite is 0.008 inch) that infests several grass species, with timothy being a preferred host. The deeply grooved timothy blades seem to be preferred over the smoother leaf blades of orchardgrass and other forage grasses. In Maryland, populations of more than 3,220 cereal rust mites per square inch (i.e., 500 mites per square cm) have been reported. Initial damage symptoms include lengthwise curling-up (or 'piping-up') of the leaf blade followed by the distal ends of the grass blades turning yellow then brown with the lower leaves drying out.

Cultural control option: Maryland research has shown that cereal rust mite may be controlled culturally by removing most of the aboveground growth immediately before or after the first fall frost. This action removes potential egg-laying sites.

Table 4.10 - Bermudagrass Pasture

Pests	Insecticide (Formulation)	Amount active ingredient per acre	Amount product per acre	Time limits: days before harvest	Remarks
fall armyworm, armyworm, striped grass looper	methomyl (DuPont, Lannate LV)	3.6-14.4 oz	0.75-3.0 pt	7 grazing 3 cutting for hay	RESTRICTED USE. (Danger Poison) Refer to label for proper handling and application instructions. Do not apply more than 3 pt product/A/crop. Do not make more than 4 applications/crop.