

Insecticide Recommendations for Fraser Fir Seedbeds and Liner Beds

Eric R. Day, Extension Entomologist, Virginia Tech

Table 7.6 - Soil Insects^{1,2}

Insects	Insecticide	Rates	Timing and Comments
Root Aphids	Imidacloprid		Treat when aphids are first discovered and completely water in granular material. Treat only if damage such as yellowing is observed. Most of the time root aphids are not present in damaging numbers.
White Grubs	<i>Bacillus Popillae</i> (Milky spore disease) for Japanese beetle only; not effective on other grub species.		White grubs include several species of scarab beetle larvae. Japanese beetle grubs are the only species that will be controlled adequately by milky spore products. Follow label instructions for application. When using these products, be aware that control is not immediate. Milky spore is a slow-acting disease agent; grubs will take up to 30 days to die. However, when the disease is established in the turf, control can be effective for years without further application. After application, the disease perpetuates and spreads by infecting and being transported by grubs. If another grub treatment is applied to an area treated with milky spore, this will slow the spread of the disease and is therefore not desirable. White grubs can also be controlled by entomopathogenic nematodes. Not all nematode species (named on the product label under the "Active Ingredients" section) available commercially will provide adequate control. Products with <i>Steinernema carpocapsae</i> should not be used for grub control. Entomopathogenic nematode products should be applied only when the pest is present. Apply nematodes late in the day to avoid exposure to UV light damage. Irrigate the day before and immediately after application. Early spring treatments are usually not effective because soil temperatures should be at least 60° F.
	<i>Beauveria bassiana</i>	1.0	
	Carbaryl (Sevin 10G)	1.4-1.9 lb	
	Ethoprop (Mocap 10G)	1.125 lb	
	Entomopathogenic Nematodes	1 billion/A	
	Halofenozide (Mach 2)	2.2 fl oz	
	Imidacloprid (Merit 0.75 WSP)	1.6 oz packet/11,000.0 ft ²	
	Lambda-Cyhalothrin (Scimitar)	3.0-7.0 mL	
Trichlorfon (Dylox 6.2)	3.0 lb		

(continued next page)

¹After transplanting from the liner bed to the field, consult the information listed under Christmas trees.

²Generally most soil insects are controlled with fumigants used for weed control prior to planting. The following is remedial control for insects detected after the bed is established.

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Table 7.6 - Soil Insects^{1,2} (cont.)

Insects	Insecticide	Rates	Timing and Comments
White Grubs (cont.)			<i>Beauveria bassiana</i> (an entomopathogenic fungus) products also provide control. Follow label instructions and water 1/2 inch immediately after application. Avoid fungicide applications when using these products. Several chemical insecticides are available for grub management. These products should be applied at the labeled rate and watered in with 1/4-1/2 inch of water. Most insecticides provide the best control when used against early instar grubs that are present in early to mid-August. Populations high enough to warrant treatment are 6 to 10 grubs/sq ft. White grubs stop feeding in September or October, so control during fall may not prove successful. Spring treatments usually are not effective. Cultural management: Reducing thatch will increase penetration of any treatment applied to the turf.
Cutworms	Permethrin		Treat when cutworms are first discovered, avoid weedy growth as cutworm moths prefer to lay eggs in thick vegetation as well as low-lying places.

¹After transplanting from the liner bed to the field, consult the information listed under Christmas trees.

²Generally most soil insects are controlled with fumigants used for weed control prior to planting. The following is remedial control for insects detected after the bed is established.

Table 7.7 - Foliage And Stem Insects

Insects	Insecticide	Rates	Timing and Comments
Balsam Woolly Adelgid	Asana XL Horticultural Oil Provado Talstar Permethrin		Treat when found in June or May – October with Asana XL or Lorsban. Spray bark and foliage to runoff. Use horticultural oil in winter during dormant periods. Horticultural oil may give the foliage an oily appearance and burn some tips.
Balsam Twig Aphid	Asana XL Mavrik Talstar Provado Dormant oil		Treat in about the first week of May or just prior to buds opening in the spring. Severe cases only need be treated as this insect is generally a cosmetic pest. Use 1% rate for Dormant oil. Maintain temperature restrictions.
Spruce Spider Mite	Savey San Mite Kelthane Talstar Mavrik Insecticidal Soap Dormant oil		Treat in early May or late September or when mites are found. Dormant oil in late March will control mites in most situations.