THE CRANBERRY GIRDLER IN CONIFER NURSERIES OF WESTERN WASHINGTON AND OREGON[1]

Mark E. Triebwasser and David L. Overhulser[2]

ABSTRACT

The cranberry girdler (Chrysoteuchia topiaria, Zeller) has been identified as an insect problem in some conifer nurseries. The life history of this insect and means for control are discussed.

The cranberry girdler (Chrysoteuchia topiaria, Zeller), a sod webworm, is,becoming a problem in several conifer nurseries in Washington and Oregon. A sod webworm larvae was first suspected of causing damage to tree seedlings at Weyerhaeuser's Jefferson Nursery near Salem, Oregon, in 1974. In 1975 a severe outbreak occurred at the Weyerhaeuser Mima Nursery near Olympia, Washington, and has been endemic at that nursery since. The insect was positively identified in 1979 as the cranberry girdler. The larval damage has also been identified at several additional nurseries in Washington and Oregon (Table 1), although there has been some confusion concerning the casual agent. The damage now assumed to be from the cranberry girdler has been attributed to strawberry root weevil, cutworm and mice.

The damage generally occurs in scattered patches where almost all seedlings are injured. In severe infestations, losses can exceed 25 percent of the seedlings in a bed. Generally little evidence of damage from the girdler is found until the time of lifting. Then the damage is readily apparent as bark feeding on the main root at or just below ground line.

The reason for lack of early evidence of larval feeding is apparent after examining the life cycle of the-cranberry girdler. The adults emerge during late June and early July. The moths can be seen flying in the trees in quick, jerky movements, especially during the morning hours. After emergence, the moths mate and the female begins laying eggs on the second day (Kamm, 1973). Egg laying continues for about one week. The eggs hatch in 12 days and begin feeding (McDonough & Kamm, 1979). The larvae are small and it is not until late August and September that they are very actively feeding. It is then that most damage occurs. During October, feeding stops and the larvae form hybernacula in which they spend the winter before forming pupae in the spring (Kamm, 1973).

[1]Intermountain Nurseryman's Association, Western Forest Nursery Council, Joint Meeting, Boise, Idaho, August 12/13/14, 1980.

[2]Nursery Technologist, Weyerhaeuser Washington Forest Nursery, Olympia, WA 98502, and Entomologist, Weyerhaeuser Western Forestry Research Center, Centralia, WA 98531.

Table 1.--Status of cranberry girdler at selected nurseries.

Nursery	Level Outbreak	Year First Reported	Surrounding Habitat
Greeley[1] Olympia, WA	Moderate	1979	Grassland/Pasture
I.F.A.[1] Canby, OR	None	-	Farmland
I.F.A.[1] Toledo, WA	Minor	1979	Woodland
D. L. Phipps Elkton, OR	Severe	1979	Grass/Woodland
Webster[2] Olympia, WA	Minor	1975 ?	Forest
Weyerhaeuser - Aurora Aurora, OR	Minor	1979	Farmland
Weyerhaeuser - Oregon Jefferson, OR	Minor	1974	Farmland/Grass
Weyerhaeuser - Washington Olympia, WA	Severe	1975	Grassland/Pasture
Wind River[3] Carson, WA	None	-	Forest

[1]Pers. Comm., Sally Johnson
[2]Pers. Comm., Bill Fagen
[3]Pers. Comm., Stan Meso

Movement of the moth and laying of eggs is highly dependent on type of vegetation. The moths will not move into areas where there is not suitable habitat for larvae. At the Mima Nursery most insect damage is found in 2+0 beds with a very small amount of damage in transplant beds located adjacent to 2+0 seedlings or in fields that were in 2+0 seedlings the previous year. Damage has been found in Douglas-fir (Pseudotsuga menziesii (Mirb.) Franco), Noble fir (Abies procera Rehd.) and white fir (Abies concolor (Gord. & Glend.) Lindl.).

In mid July 1979, we had the opportunity to test a pheromone sex attractant trap specific to the cranberry girdler. By counting the number of male moths caught in the traps, a good indication of the moth population is obtained. The trap used was the Pherocon 2 trap which consists of a waterproof liner board hood over a sticky paper floor. A small rubber septa, containing the sex attractant, is attached to the center of the trap. The traps call male moths by releasing a snythetic substitute for a chemical found in extracts of the abdomen of virgin female moths.

In our test the attractant traps were placed in the following four habitats: 1) grass field, 2) 2+0 DF seedlings, 3) 1+0 DF seedlings, 4) fallow ground. Results confirmed the strong relationship between habitat and population level (Table 2). The very high population levels in grassland surrounding the nursery probably act as an infection source.

Table 2.--Male moth count by habitat type (7/12 - 7/19/79).

Habitat Type	No. Males/Trap	Mean	S.D.
Grassland	26		
	60	41	17.2
	38		
2+0 Seedlings	6		
	10	6	3.5
	3		
1+0 Seedlings	0		
	0	0	0
Fallow	0		
	1	.5	.5

Several methods for control of the insect have been used or are being tested. At the Mima Nursery, we have been using an insecticide program directed, it the larvae. This last season we made three directed spray applications of Dursban [3] at 1#AI/A. The spray was applied with a between the row applicator directed towards the stem of 2+0 seedlings. Sprays were applied in late July, late August and mid September. Results were encouraging. A control plot left unsprayed had 7 percent of seedlings damaged while sprayed seedlings in the same bed had only 0.5 percent.

The use of a directed spray is not the most desirable control method. The spray operation is slow and thus costly. Work on control of the cranberry girdler in grasses has also found that control of the larvae is the least effective method because of the difficulty in getting good penetration of the insecticide to the larvae location (Kamm, 1973). An alternative to larvae control is a spray program directed at the adult moth.

A cooperative test to find effective adult control is being conducted this year at the Phipps Nursery in Oregon and the Weyerhaeuser Washington Forest Nursery, with Jim Kamm, and Les McDonough, Agricultural Research Service, USDA. Three insecticides, Diazinon [4], Sevin [5], and Pydrin, are being tested for effectiveness. Large plots, approximately 5 acres each in Washington, have been sprayed with each chemical.

[3] Common name: Chlorpyrifos
[4] Common name: Diazinon
[5] Common name: Carbaryl

This publication reports research involving pesticides. It does not contain recommendations for their use, nor does it imply that the uses discussed here have been registered. All uses of pesticides must be registered by appropriate State and/or Federal agencies before they can be recommended.

The moth population is being monitored within each chemical plot with pheromone traps. Plots will be resprayed when population levels build up.

It is interesting to note that several of the nurseries, which have little or no problem with the cranberry girdler, have other insect pests which require the use of insecticides during the critical period of June and July. For example, at Auror we know we have cranberry girdler adults but not larvae damage. At Aurora, Diazinon R is used to control the obliquebanded leaf roller (Choristoneura rosaceana, Harris) during June and July.

With the availability of a sex attractant specific to the cranberry girdler, another type of control is feasible; namely, mating disruption. The cooperative is also testing this technique. A large quantity of rubber septa containing a high dosage of the sex attractant have been placed in a field. With the very high level of attractant, the male moths have difficulty in locating and mating with females. Pheromone traps have been placed in the mating disruption plot to assess its effects.

PUBLICATIONS CITED

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