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# Systemic insecticides effective against poplar tentmaker in cottonwood plantations

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In late 1970, the poplar tentmaker, *Ichthyura inclusa* Hiibner, became very abundant in succulent rapid-growing eastern cottonwood plantations along the Brazos River in Burleson County, Tex. The larvae construct characteristic nests by webbing individual leaves together (fig. 1). In Texas, each leaf nest contained 10-30 larvae. The caterpillars emerge from the nests and feed on the foliage, leaving only the midribs and major veins of the leaves. Open-grown trees are favored by the insects (2).

Tests were already underway in the infested areas to evaluate several systemic insecticides against the cottonwood twig borer, *Gypsonoma haimbachiana* Kearfott (3), on the same plots where extensive poplar tentmaker defoliation was observed. No previous reports of the effectiveness of systemic insecticides against the poplar tentmaker are known, although quassia, a botanical insecticide, showed systemic activity against these insects (1).

## Methods

Test plots were situated on the Texas A&M University farm where

the soils are Norwood silt loams and Miller clays. Test trees were propagated from 20-inch cottonwood cuttings planted at a spacing of 5 x 14 feet in April, 1970. A total of 480 trees were arranged in a split-plot design consisting of three blocks of 160 trees; each block contained 16 plots. Three dosages of four insecticides were tested.

Insecticide applications were made May 14 and August 14, 1970.

The insecticides used were 10 percent granular formulations of aldicarb, carbofuran, disulfoton, and xiphorate. Each chemical was tested at rates of 0, 1/2, 1, and 2 ounces of granules were placed in four holes equidistant around the tree made with a tree-planting bar. The specified dosage was placed in the holes to a depth of 6-8 inches and covered with soil.

Figure 1.—Nests constructed by poplar tentmaker larvae on eastern cottonwood



1 Field work was done while the author was employed by the Texas Agricultural Extension Service. The participation of R. G. Merrifield (Texas A & M University) and R. A. Woessner (Texas Forest Service) in establishing the original cottonwood twig borer study is acknowledged.

**TABLE 1.—Defoliation of eastern cottonwood by the poplar tentmaker in test plots (November, 1970).**

Treatment	Total No. Trees	Defoliation Rating Class			Total for Treatments
		1-10%	11-60%	61-100%	
		—Percent of total—			
Carbofuran .....	90	0	0	0	0
Phorate .....	90	2.2	0	0	2.2
Aldicarb .....	90	0	1.1	1.1	2.2
Disulfoton .....	90	2.2	3.3	2.2	7.7
Control .....	120	2.5	11.7	7.5	21.7

The plots were cultivated three times during the season but received no irrigation or fertilization. Rainfall from April to September totalled about 16 inches. However, 14.5 inches occurred during April, May, and September. June, July, and August were extremely dry.

### Results

Although the poplar tentmaker is reported to have two generations per year (2), defoliation attributable to the insect was not observed in the early spring generation. During October and November, however, the insects were numerous on cottonwoods throughout the area surrounding the plots. In November, plots were examined and rated as to the extent of defoliation by tentmakers. The rating classes used were: No defoliation; 1-10 percent defoliation; 11-60 percent defoliation; and 61-100 percent defoliation.

Due to the low number of defoliated trees, there were no clear correlations between extent of damage and rate of application of any of the systemics. Therefore, the data for the three rates of application were combined. About 15 percent of the trees in the 1 and 2 ounce aldicarb plots exhibited marginal leaf burning during June and July.

In the systemic plots, defoliation ranged from 7.7 percent of the trees in the disulfoton plots, to none in the carbofuran treatments (table 1). With the four insecticides combined, only 3.0 percent of the treated trees were defoliated. On the other hand, 21.7 percent of the untreated controls were defoliated. The degree of attack on the controls is comparable to that on older adjacent plantations where about 30 percent of the trees sustained some degree of defoliation. Of the trees attacked in the systemic plots, 19 percent were in the

1-10 percent defoliation class, 49 percent were in the medium defoliation class, and 32 percent had more than 60 percent of the foliage destroyed.

### Discussion and Conclusions

Relatively little is known of the poplar tentmaker's biology. Although it now appears to be a minor pest, intensive cottonwood culture in Texas has not progressed to the point where all limiting factors of cottonwood growth are identified or understood. These studies indicate that certain systemic insecticides used at the rates necessary for control of the more important cottonwood twig borer (3), will also markedly reduce defoliation caused by the poplar tentmaker.

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