

**LOSSES CAUSED TO SEED OF *TEPHROSIA VOGELII* HOOK F. BY THE
LIMA-BEAN POD BORER¹**

The lima-bean pod borer, *Etiella zinckenella* (Treit.), (Pyralidae: Phycitinae) is a small moth that lays its eggs on the surface of the seed pod on the host plant. The green to blue-green larvae bore into the pod and destroy the seed. The borers in some instances destroy only a few seeds in a pod; in others, most or all of them.

This insect pest attacks lima beans, string beans, peas, cowpeas, pigeon peas, crotalaria, vetch, *Tephrosia*, and locust trees. The species has been reported in Puerto Rico on a number of crops and wild plants. Several researchers have reported this insect on lima beans, beans, and *Crotalaria incana* L.^{2, 3, 4, 5} Leonard and Mills² reported it also on pigeon peas and cowpeas and noted it as more common on pigeon peas than lima beans. Scott³ lists string beans, native red and white beans, and *Tephrosia vogelii* Hook f. as additional hosts. Wolcott⁵ stated that *E. zinckenella* in 1933 and 1934 caused 90 to 100 percent infestation in *C. incana*, a wild crotalaria.

E. zinckenella has been noted during the past several seasons on *T. vogelii* plants grown in the breeding program at the Federal Experiment Station. Populations have been sufficiently high in several instances to affect seed yields seriously. In early 1969, Cruz⁶ surveyed plantings of *T. vogelii* and pigeon peas at the Isabela Substation of the Agricultural Experiment Station of the University of Puerto Rico, to study the extent of infestation by *E. zinckenella*. He found 72 to 93 percent pod infestation in *T. vogelii* on three different dates and reported seed losses of 37.6 to 71.2 percent.

In January 1970, three *T. vogelii* lines were sampled in the breeding nursery at Isabela and one line at Mayagüez to determine pod and seed damage (table 1). Percent of pod damage and percent of seed damage were calculated from the totals.

The pod infestation at Isabela in 1970 was considerably less than re-

¹ Manuscript submitted to the Editorial Board July 16, 1971.

² Leonard, M. D., and Mills, A. S., A preliminary report on the lima bean pod-borer and other legume pod-borers in Puerto Rico, *J. Econ. Entomol.* 24(2): 466-73, 1931.

³ Scott, L. B., The bean pod-borers of Puerto Rico, *J. Agr. Univ. P.R.* 24(2): 35-47, 1940.

⁴ Wolcott, G. N., An economic entomology of the West Indies, The Entomological Society of Puerto Rico, San Juan, 668 p., 1933.

⁵ Wolcott, G. N., Lima bean pod-borer caterpillars of Puerto Rico on their wild hosts, *J. Agr. Univ. P.R.* 18(3): 429-34, 1934.

⁶ Cruz, C., *Tephrosia* seed infestation and losses caused by the lima bean pod borer *Etiella zinckenella* (Treit.), *J. Agr. Univ. P.R.* 54(3): 585, 1970.

TABLE 1.—Seed losses from the lima-bean pod borer in *Tephrosia vogelii* at Isabela and Mayagüez in 1970

Line	Location	Pods examined	Pods damaged		Total seeds	Seeds damaged	
		<i>Number</i>	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Number</i>	<i>Percent</i>
6392	Isabela	289	86	29.8	1,711	380	22.2
63111	Isabela	46	12	26.1	309	46	14.8
11726	Isabela	368	73	19.8	2,583	907	35.0
6285	Mayagüez	100	0	.0	680	0	.0

ported by Cruz in 1969. The lines examined varied considerably in percent of damaged pods and seeds. The data suggests that *Tephrosia* line 63111 may have some resistant characters which provide a degree of protection from attack by the lima-bean pod borer.

The results of this study indicate that infestations by the lima bean pod borer are seasonal. That no infestations occurred at Mayagüez in 1970 indicates that occurrence of populations may be spotty. These pod borers have been noted at Mayagüez in previous seasons but infestations usually were late and efforts to calculate losses were not made.

Eric G. Stone
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