

Oviposition Preference of *Diaprepes abbreviatus* (Coleoptera: Curculionidae) on Various Ornamental Foliage Plants¹

*E. Abreu-Rodríguez and M. Pérez Escolar*²

ABSTRACT

The ornamental plants *Ficus elastica*, *Yucca gloriosa*, *Dracaena deremensis* 'Warneckii', *Codiaeum variegatum* and *Dracaena surculosa* 'Florida Beauty' were not used for oviposition by *Diaprepes abbreviatus*. All the other *Dracaena* spp. tested were used in addition to other plants. This paper discusses the importance of these ornamental plants as hosts of *Diaprepes abbreviatus*.

INTRODUCTION

The production of ornamental foliage plants for the export and local markets has increased since the fiscal year 1960-61. Their farm value was \$3.7 millions in 1971-72 (4). Recent estimates almost double that amount. Eighty five percent of the exports go to the U.S., especially to Florida (40.3%), Texas (8.4%), Pennsylvania (8.0%) and California (5.8%). The greatest demand has been for *Dracaenas* (3).

This blooming industry has been affected by *Diaprepes abbreviatus*, one of the most harmful insect pests in Puerto Rico (6). Egg clusters of the insect were intercepted in 10 nurseries (1, 2) by the U.S. and Florida Quarantine inspectors during the fall of 1977. All the eggs were on *Dracaena* spp. The potential damage from this pest to other crops of economic importance forced the quarantine authorities to take different measures for preventing its spread.

The Agricultural Experiment Station has started a series of experiments designed to determine the ornamental foliage plants that are potential host or carriers of egg masses of *D. abbreviatus*. The information obtained will help our nurserymen because the strict regulatory measures might be reduced for ornamental plants which are not used by this pest.

MATERIALS AND METHODS

Fifteen different ornamental plants were infested with *Diaprepes abbreviatus* for the purpose of determining their potential as hosts for the egg masses of this insect. All the ornamental plants to be infested were placed in a Saran Screen cage (1.8 × 1.2 × 0.9 m.). Two specimens of

¹ Manuscript submitted to Editorial Board February 25, 1982.

² Research Assistant in Entomology and Entomologist, Agricultural Experiment Station, University of Puerto Rico, Mayagüez Campus, Río Piedras, P.R.

each variety were included, making a total of 30 plants in the cage. The cage containing the plants was infested with 324 weevils (sex ratio 1:1).

Simultaneously, an additional trial was conducted, but, in this case each variety was placed alone in a screen cage ($0.6 \times 1.2 \times 0.9$ m.) and each cage was infested with 27 weevils at the same sex ratio as mentioned above.

Tender avocado foliage was always included in the trials to feed the weevils. The plants were checked for several days and the final observation was made 6 days after the weevil infestation.

Another trial was conducted to compare oviposition on wax paper.

TABLE 1.—Summary of oviposition preference tests with *D. abbreviatus* on fifteen different ornamental foliage plants—1978

Ornamental plants	Egg masses observed
	Number
<i>Dracaena deremensis</i> Engl. cv. 'Warneckii'	0
<i>Dracaena fragrans</i> (L.) Ker-Gawl. cv. 'Compacta'	3
<i>Dracaena fragrans</i> cv. 'Massangeana'	1
<i>Dracaena marginata</i> Lam.	1
<i>Dracaena marginata</i> cv. 'Tricolor'	5
<i>Dracaena sanderana</i> Hort. Sander ex T. Mast.	3
<i>Dracaena sanderana</i> cv. 'Borinquensis'	5
<i>Dracaena sanderana</i> cv. 'Celes'	3
<i>Dracaena surculosa</i> Lindl. cv. 'Florida Beauty' ¹	0
<i>Dracaena surculosa</i> cv. 'Kelleri'	4
<i>Dracaena reflexa</i> Lam. ²	6
<i>Dracaena thalioides</i> Hort. Makoy ex E. Morr. ²	1
<i>Codiaeum variegatum</i> (L.) Blume	0
<i>Ficus elastica</i> Roxb. ex Hornem	0
<i>Yucca gloriosa</i> L.	0

¹ Formerly known as *Dracaena godseffiana* Hort. ex Bak.

² These plants were formerly known as *Pleomele reflexa* (Lam.) N.E. Brown, and *Pleomele thalioides* (Hort. Makoy ex E. Morr.) N.E. Brown, respectively.

Uniform wax paper strips were fixed to the ceiling and walls of the screen cages containing the plants and the weevils. Each ornamental variety was evaluated separately with the paper strips. The observation on the ovipositional behavior of the weevil was recorded at 3 and 5 days later after infestation.

Forty seven females that did not oviposit on non-preferred plants were dissected to determine whether eggs were present in their oviducts.

RESULTS AND DISCUSSION

Tables 1, 2, and 3 show the results obtained after exposing 15 different species and cultivars of ornamental foliage plants to a high density of adults of *D. abbreviatus*.

Table 1 presents the results of the first two trials and shows that all but five species of plants were used for ovipositing.

Table 2 shows the ability of these adults to oviposit when the adequate substrate is provided. The female insects preferred the wax paper to the plants.

Sixty percent of the 47 females that were dissected had egg masses in their ovaries. It was concluded that they did not oviposit because the plants were not an acceptable substrate.

Table 3 shows that when some of the susceptible plants together with

TABLE 2.—Summary of *Diaprepes oviposition tests in the presence of "Nonpreferred" foliage ornamentals and waxed paper strips 1978*

Ornamental plant	Egg masses on	
	Plant	Waxed paper strip
	Number	
<i>Ficus elastica</i>	0	8
<i>Yucca gloriosa</i>	0	5
<i>Dracaena deremensis</i>	0	6
<i>Codiaeum variegatum</i>	0	9
<i>Dracaena surculosa</i> 'Florida Beauty' ¹	0	11
TOTALS	0	39

¹ See table 1.

TABLE 3.—Summary of *Diaprepes oviposition tests on preferred ornamental plant in the presence of wax paper 1978*

Ornamental plant	Egg masses	
	Plant	Waxed paper
	Number	
<i>Dracaena sanderana</i>	0	4
<i>Dracaena sanderana</i> 'Borinquensis'	0	4
<i>Dracaena sanderana</i> 'Celes'	1	4
<i>Dracaena sanderana</i> 'Compacta'	0	4
<i>Dracaena thalioides</i>	0	6
<i>Dracaena marginata</i>	1	2
<i>Dracaena marginata</i> 'Tricolor'	0	3
Totals	2	27

wax paper strips were exposed to oviposition the female weevils preferred the wax paper strips for oviposition.

Other observations revealed that *D. abbreviatus* oviposited on *Dieffenbachia* spp. and *Gladiolus*.

Data obtained so far seem to indicate that preference for oviposition is probably a response to the quality (flexibility) of the substrate and the females' ability to stick two surfaces together and fix the egg mass to those surfaces. Any substrate that meets these specifications will permit oviposition by *Diaprepes abbreviatus*.

Schroeder et al. (5) reported that *C. variegatum* can support larval development of *D. abbreviatus*. It is the only non-oviposited ornamental plant not used for oviposition that can be a potential host for this insect. They also reported that *Dracaena marginata*, *D. sanderana*, *D. fragrans*, *Dieffenbachia* 'Exotica,' *D. maculata* and *Ficus elastica* can not support larval development. However, care should be taken because all these plants, with the exception of *F. elastica*, are potential hosts for the egg mass of *D. abbreviatus*.

RESUMEN

La vaquita de la caña de azúcar, *Diaprepes abbreviatus* no ovipositó en las plantas ornamentales *Ficus elastica*, *Yucca gloriosa*, *Codiaeum variegatum*, *Dracaena deremensis* 'Warnecki' and *D. surculosa* 'Florida Beauty.' Sin embargo, en otras especies de *Dracaena*, en adición a otras plantas evaluadas, el insecto ovipositó. Se discute la importancia de estas plantas ornamentales como hospedantes de *D. abbreviatus*.

LITERATURE CITED

1. Anonymous, 1977. Concern over *Diaprepes* prompts action in Puerto Rico, Nurserymen's Digest 4 (6): 5.
2. Anonymous, 1977. Plants importations into Florida, Nurserymen's Digest, 11 (12): 21.
3. Espinet, G. R. y E. González Villafañe, 1977 Plantas ornamentales y flores. Análisis de las importaciones y exportaciones en 1977, Publ. 131. Esta. Exp. Agric. Univ. P.R.
4. González Villafañe, E. y M. Cucalón, 1979. Análisis de las exportaciones de plantas ornamentales y flores en Puerto Rico, Bol. 235 Esta. Exp. Agric. Univ. P.R.
5. Schroeder, W. J., R. A. Hamlen and J. B. Beavers, 1979. Survival of *Diaprepes abbreviatus* larvae on selected native and ornamental Florida plants, Entomol. 62 (4): 309-12.
6. Wolcott, G. N., 1955. Entomología económica puertorriqueña, Bol. 125 Esta. Exp. Agric. Univ. P.R.