

A REVISION TO THE BIBLIOGRAPHY OF THE SUGARCANE  
ROOTSTALK BORER WEEVIL, *DIAPREPES ABBREVIATUS*  
(COLEOPTERA: CURCULIONIDAE)

FLORIDA *DIAPREPES* TASK FORCE, RESEARCH COMMITTEE<sup>1</sup>

DAVID G. HALL, CHAIRMAN

During the past 30 years, the West Indian sugarcane rootstock borer weevil, *Diaprepes abbreviatus* (L.), has spread from its original site of introduction near Apopka, FL to 15 counties throughout the citrus industry. This native pest of the Lesser Antilles of the Caribbean region is considered a major long-term threat to Florida agriculture. Nineteen species of *Diaprepes* are prevalent in nearby countries within the Caribbean region (Woodruff 1985), but Florida is currently the only state within the U.S.A. with the weevil. In addition, some species within the closely-related genus *Exophthalmus* are major pests of citrus and other agricultural crops in many Caribbean countries excluding Florida.

The biology of *D. abbreviatus* is typical of many curculionid weevils. The adults emerge from the soil, feed, and oviposit on a preferred host plant. As the eggs hatch, larvae fall to the soil surface where they burrow into soil to feed on the roots of the plant. After many months, the larvae pupate in the soil. The adults emerge after a few weeks, leave the soil again and start a life cycle that is variable, ranging from 8 to 24 months. The adults feed on the foliage of at least 41 plant species in Puerto Rico (Martorell 1945) whereas the larvae also appear to be polyphagous with a particular affinity to bore into the plant roots. Host plants such as sugarcane, yams, pineapple, and corn exhibit this type of injury. On the other hand, citrus appears to be a preferred host, but injury is characterized by the destruction of fibrous roots and the cortical layer of both lateral and crown roots.

About 50,000 acres of citrus in Florida have confirmed infestations of the weevil. Most of the infested acreage is exhibiting severe decline or is out of production. Within the last 4 years, *Diaprepes* has been detected in 7 new counties including more recent plantings in Collier, Hendry, and Glades counties completing its dispersal to all major citrus growing areas of the state. Adult weevils discovered in the Moore Haven area in an ornamental nursery in 1993 place the pest within the northwestern edge of the sugarcane growing area in Glades County. *D. abbreviatus* is also a serious threat to the foliage and ornamental plant industry of Florida. Currently, 94 commercial plant nurseries are known to be infested throughout Florida. Nurseries have strict quarantine regulations placed upon them when adult and/or larvae are detected on ornamental plants. Most seriously, recertification is virtually impossible since no effective methods are available to assure weevil eradication.

Because of the increased concern over the spread of *D. abbreviatus* and its devastating effect on the citrus tree in Florida during the past years, a grower-initiated Task Force was organized under the leadership of Mr. J. B. Pratt, Polk County citrus grower, and Ms. Connie Riehard of the Florida Department of Agriculture and Consumer Services. This 27 member Task Force has as primary objectives: 1) establishment of a grower awareness program within the citrus and ornamental industries to

---

<sup>1</sup>Members of research committee: Robert Adair, James Griffith, David Hall, Walter Kender, Richard Mayer, Clayton McCoy, Herbert Nigg, J. B. (Buster) Pratt, William Schroeder, Jeffery Shapiro, Jim Simpson, Sam Simpson, Omelia Sosa, John Taylor, and Gary Tucker.

combat the spread of *Diaprepes* and 2) encourage both short- and long-term strategies for control of this pest through research and extension programs.

In view of the fact that *D. abbreviatus* is becoming an increasingly important economic pest in Florida, threatens agriculture in other states and current biological and chemical control methods are limited, the Task Force agreed to update the bibliography published by Beavers et al. 1979 to assist scientists in their pursuit of a solution to this problem. Bibliographic sources were generated by both federal and state scientists involved in weevil research through various library services and include technical reports, popular articles, etc. that may be non-referred, but important as a source of new ideas.

## ACKNOWLEDGMENT

The Task Force would like to thank Mr. Brian Ostrofsky for his assistance in the preparation of this paper. Florida Agricultural Experiment Station Journal Series No. R-04432.

## REFERENCES

- ANONYMOUS. 1903. Fiddler beetle. J. Jamaica Agric. Soc. 7: 275-7.  
 1908. Cacao and grubs. J. Jamaica Agric. Soc. 12: 367-8.  
 1909. Cocoa trees and grubs. J. Jamaica Agric. Soc. 13: 125-7.  
 1920. Report on the prevalence of some pests and diseases in the West Indies during 1918. West Indian Bull. 18(1 & 2): 39-40, 44-5.  
 1921. Report on the prevalence of some pests and diseases in the West Indies during 1919. West Indian Bull. 19(1): 21.  
 1922. Report on the prevalence of some pests and diseases of crops in the West Indies during 1920. West Indian Bull. 19(2): 234.  
 1933. Service and regulatory announcements, July-Sept. 1933. USDA B.P.Q., S.R.A. No. 116: 197-243. Washington, D.C.  
 1945. Insect pest control. Rep. Dep. Sci. and Agric. 1943-44: 5-7.  
 1945. Insect pest control. Rep. Dep. Sci. and Agric. 1944-45: 14-5.  
 1946. Entomologist. Ann. Rep. Dep. Agric. Jamaica. p. 12.  
 1950-51. Economic Entomology. Investigations. Dep. Agric. Jamaica Bull. 49: 30-41.  
 1952. Ibid. 50: 30-4.  
 1954. Ibid. 54: 8-18.  
 1955. Ibid. 55: 8-16.  
 1956-57. Ibid. 57: 8-19.  
 1958-59. Ibid. 58: 13-20.
- OPINION. 1959. Suppression under the plenary powers of the generic name *Calandra* Clairville & Schellenberg, 1798, and validation under the same powers of the specific name *Abbreviatus* Fabricius, 1787, as published in the binomen *Curculio abbreviatus* (Class Insecta, Order Coleoptera). Bull. Zool. Nom. p. 112-6.  
 1960. Citrus. Annu. Rep. Dep. Agric. Jamaica. p. 49-50.  
 1964. Cereal and forage insects. A sugarcane rootstalk borer *Diaprepes abbreviatus*. Coop. Econ. Insect Rep. 14(49): 1270.  
 1969. Root-stalk borer weevil infestation spreading; new citrus pest could get out of hand in central Florida. Fla. Grower & Rancher 11: 17.  
 1969. Rules of the Department of Agriculture. Div. of Plant Ind. Chap. 7B-34, Suppl. 62: 74N, p. 4.  
 1969. Outbreaks and new records. Plant Prot. Bull. F.A.O. 17(2): 43.  
 1970. Sugarcane weevil has taste for citrus. Sunshine State Agric. Res. Rep. 15(1): 16.

1971. Sugarcane weevil renews threat to citrus. Div. Plant Ind. News Bull. (FL) 13(4): 6-8.
1971. Industry members see firsthand weevil damage to citrus at Apopka. Div. Plant Ind. News Bull. 13(2): 6.
1974. West Indian sugarcane rootstalk borer, questions and answers. USDA Animal & Plant Health Inspection Service. p. 2.
1975. Sugarcane rootstalk borer weevil experiments underway. Div. Plant Ind. News Bull. (FL) 16(4): 8-9.
1975. Dep. Plant Industry investigates biocontrols for weevils. Plant Ind. News DPI 17(1): 5-7.
1975. Sugarcane rootstalk borer weevil infests new area. Div. Plant Ind. News Bull. (FL) 16(3): 15.
- ABREU, E. 1981. White grubs on sugarcane in Puerto Rico [*Phyllophaga* spp., *Diaprepes abbreviatus*]. Proceedings, Second Inter-American Sugar Cane Seminar. [Miami, Fla.: Inter-American Transport Equipment Co.]. p. 46-8.
- ABREU-RODRIGUEZ, E., AND M. PEREZ-ESCOLAR. 1983. Oviposition preference of *Diaprepes abbreviatus* (Coleoptera: Curculionidae) on various ornamental foliage plants. J. Agric., Univ. of P.R. 67(2): 117-20.
- ALFIERI, S. A., JR. 1972. Status report on the sugarcane rootstalk borer weevil. Citrus Ind. (2): 11,30.
- ARMSTRONG, A. M. 1987. Parasitism of *Tetrastichus haitiensis* Gahan on egg masses of *Diaprepes abbreviatus* in Puerto Rico. J. Agric., Univ. of P.R. 71(4): 407-9.
- ARMSTRONG, A. M., AND F. PADOVANI. 1987. Distribution of adult *Diaprepes abbreviatus* L. (Coleoptera: Curculionidae) in the north and northwest sugarcane areas of Puerto Rico. J. Agric., Univ. of P.R. 71(4): 411-3.
- BALLOU, H. A. 1912. Insect pests of the Lesser Antilles. Imp. Dep. Agric., Barbados, W. I. Pamphlet Ser. 71: 66-9.
1915. Report on the prevalence of some pests and diseases in the West Indies during 1914. West Indian Bull. 15(2): 128-9.
1916. Report on the prevalence of some pests and diseases in the West Indies during 1915. West Indian Bull. 16(1): 4.
- BARROW, E. H. 1924. White grubs, *Lachnosterna* sp., and larvae of the weevil root-borer, *Diaprepes spengleri* L., attacking sugar cane in the Guanica District of Puerto Rico, and methods practiced for controlling them. J. Dep. Agric. P.R. 8(2): 22-6.
- BEAVERS, J. B. 1978. Temporary insect-rearing facility [Sugarcane rootstalk borer, *Diaprepes abbreviatus*]. Tech. Bull. US. Dep. Agric. 1576: 35-6.
1981. *Diaprepes abbreviatus*: a sugarcane root weevil infesting citrus and other hosts in Florida. Proceedings, Second Inter-American Sugar Cane Seminar. [Miami, Fla.: Inter-American Transport Equipment Co.] p. 67-9.
1982. Biology of *Diaprepes abbreviatus* (Coleoptera: Curculionidae) reared on an artificial diet. Fla. Entomol. 65(2): 263-9.
1984. Susceptibility of *Diaprepes abbreviatus* to the parasitic nematode *Steinernema glaseri*. IRCS Med. Sci. 12: 480.
- BEAVERS, J. B., H. A. DENMARK, AND A. G. SELHIME. 1972. Predation by *Blattioscius keegani* on egg masses of *Diaprepes abbreviatus* in the laboratory. J. Econ. Entomol. 65: 1483-4.
- BEAVERS, J. B., AND D. J. HUTCHINSON. 1985. Evaluation of selected *Citrus* spp. and relatives for susceptibility to root injury by *Diaprepes abbreviatus* larvae (Coleoptera: Curculionidae). Fla. Entomol. 68(1): 222-3.
- BEAVERS, J. B., AND H. JAFFE. 1979. Sugarcane rootstalk borer weevil, *Diaprepes abbreviatus* (L.): Insect growth regulator. Insecticide and Acaricide Tests 4: 218 (343).
- BEAVERS, J. B., D. T. KAPLAN, AND C. W. MCCOY. 1982. Natural enemies of *Diaprepes abbreviatus* larvae in Florida. Proc. Fla. State Hort. Soc. 95: 63-5.
- BEAVERS, J. B., S. A. LOVSTRAND, AND A. G. SELHIME. 1980. Establishment of the exotic parasite *Tetrastichus haitiensis* (Hym.: Eulophidae) and recovery of a new

- Trichogramma* (Hym.: Trichogrammatidae) from root weevil egg masses in Florida. *Entomophaga* 25(1): 91-4.
- BEAVERS, J. B., C. W. MCCOY, R. F. KANAVAL, R. A. SUTTON, AND A. G. SELHIME. 1972. Two muscardine fungi pathogenic to *Diaprepes abbreviatus*. *Fla. Entomol.* 55(2): 117-20.
- BEAVERS, J. B., C. W. MCCOY, AND D. T. KAPLAN. 1983. Natural enemies of subterranean *Diaprepes abbreviatus* (Coleoptera: Curculionidae) larvae in Florida. *Environ. Entomol.* 12(3): 840-3.
- BEAVERS, J. B., T. P. MCGOVERN, AND V. E. ADLER. 1982. *Diaprepes abbreviatus*: Laboratory and field behavioral and attractancy studies. *Environ. Entomol.* 11(2): 436-9.
- BEAVERS, J. B., AND W. J. SCHROEDER. 1977. Sugarcane rootstalk borer weevil, *Diaprepes abbreviatus* (L.); insect growth regulators. *Insecticide and Acaricide Tests* 5: 234.
1980. Citrus: Sugarcane rootstalk borer weevil, *Diaprepes abbreviatus* (L.). *Insecticide and Acaricide Tests* 5(234).
1981. Effect of Bay Sir 8514 on *Diaprepes abbreviatus* on citrus in Florida. *Fla. Entomol.* 64(2): 361-2.
- BEAVERS, J. B., W. J. SCHROEDER, AND A. G. SELHIME. 1976. Effect of diflubenzuron on larvae of *Diaprepes abbreviatus*. *Fla. Entomol.* 59: 434.
- BEAVERS, J. B., AND A. G. SELHIME. 1973. Further attempts to establish the weevil egg parasite, *Tetrastichus haitiensis* in Florida. *Fla. Entomol.* 58(1): 29-31.
1975. Development of *Diaprepes abbreviatus* on potted citrus seedlings. *Fla. Entomol.* 58: 271-3.
1976. Population dynamics of *Diaprepes abbreviatus* in an isolated citrus grove in central Florida. *J. Econ. Entomol.* 69(1): 9-10.
1978. Flight behavior and dispersal of *Diaprepes abbreviatus*. *Fla. Entomol.* 61(2): 89-91.
- BEAVERS, J. B., J. M. STANLEY, H. R. AGEE, AND S. A. LOVESTRAND. 1979. *Diaprepes abbreviatus* pest of sugarcane and citrus and their response to light traps in field and cage tests. *Fla. Entomol.* 62(2): 136-9.
- BEAVERS, J. B., AND R. E. WOODRUFF. 1971. A field key for separating larvae of four species of citrus weevils in Florida (Coleoptera: Curculionidae). *Fla. Dep. Agric., Div. Plant Ind. Entomol. Circ.* 112: 1-2.
- BEAVERS, J. B., R. E. WOODRUFF, S. A. LOVESTRAND, AND W. J. SCHROEDER. 1979. Bibliography of the sugarcane rootstalk borer weevil, *Diaprepes abbreviatus*. *Bull. Entomol. Soc. Am.* 25(1): 25-9.
- BLACKWELDER, R. E. 1947. Checklist of the coleopterous insects of Mexico, Central America, The West Indies, and South America. *Bull. U.S. Natl. Mus.* 185(5): 803-4.
- BONNEFIL, L. 1985. Vagility and probability of survival in two weevils (Coleoptera, Curculionidae): the sugarcane rootstalk borer weevil (*Diaprepes abbreviatus* L.) and the sweet potato weevil (*Cylas formicarius* F.). *Proc. Caribb. Food Crop Soc. Annu. Meet.* [Bridgetown, Barbados]: The Eastern Caribbean Center and the Caribbean Food Crops Society. 20th. p. 61-5.
- BOURNE, B. A. 1921. Insect attacks reported or observed. *Annu. Rep. Dep. Agric. Barbados* 1919-20: 12.
1923. Report of the assistant director of agriculture on the entomological and mycological work carried out during the period under review. *Annu. Rep. Dep. Agric. Barbados* 1922-23: 8.
- BOX, H. E. 1925. Puerto Rican cane grubs and their natural enemies. *J. Dep. Agric. P.R.* 9: 291-354.
1953. List of Sugarcane Insects. *Commonw. Inst. Entomol., London.* p. 101.
- BULLOCK, R. C. 1971. Effectiveness of foliar sprays for control of *Diaprepes abbreviatus* (L.) on Florida citrus. *Trop. Agric.* 48: 127-31.
1985. Potential for controlling citrus root weevil larvae and adults with chemicals. *Fla. Entomol.* 68(3): 417-23.

- BULLOCK, R. C., C. W. MCCOY, AND J. FOJTIK. 1988. Foliar sprays to control adults of the citrus root weevil complex in Florida. Proc. Fla. State Hortic. Soc. 101: 1-5.
- BUREN, W. F., AND W. H. WHITCOMB. 1977. Ants of citrus: some considerations. Proc. Int. Soc. Citriculture 2: 496-8.
- BURKS, B. D. 1943. The North American parasitic wasps of the genus *Tetrastichus*-A contribution to biological control of insect pests. Proc. U.S. Natl. Mus. 93: 505-608.
- CASSANI, J. R. 1986. Arthropods on Brazilian peppertree, *Schinus terebinthifolius* (Anacardiaceae), in south Florida. Fla. Entomol. 69: 184-96.
- COCK, M. J. W. 1982. A review of biological control of pests in the Commonwealth Caribbean and Bermuda up to 1982. Commonwealth Institute of Biological Control. No. 9: 1-6.
- COLLINS, H. L., C. L. MANGUM, AND D. E. HENDRICKS. 1976. Evaluation of foliar sprays for control of adult *Diaprepes abbreviatus* (L.) on Florida citrus. J. Ga. Entomol. Soc. 11(4): 340-6.
- COLLINS, H. W., W. J. SCHROEDER, AND J. B. BEAVERS. 1977. Citrus, control of large *D. abbreviatus* larvae. Apopka. Fla. Insecticide and Acaricide Tests 2: 40.
- COLLINS, H. W., W. J. SCHROEDER, R. A. SUTTON, AND A. DONNAN, JR. 1976. Control of neonate larvae of *Diaprepes abbreviatus* (L.) in potting soil. Proc. Fla. State Hortic. Soc. 89: 335-6.
- COOK, M. T., AND W. T. HORNE. 1908. Insects and diseases of the orange. Bull. No. 9 Estacion Central Agronomica de Cuba. p. 44.
- COTTON, R. T. 1929. The larvae of the weevil *Exophthalmus quadrivittatus* (Oliver). Proc. Entomol. Soc. Wash. 31(2): 27-31.
- DANFORTH, S. T. 1931. Puerto Rican Ornithological Records. J. Dep. Agric. P.R. 15(1): 33-106.
- DELVARE, G. 1988. *Ceratogramma etiennei* n.sp., a parasite, in Guadeloupe, of *Diaprepes abbreviatus* L. (Hymenoptera, Trichogrammatidae; Coleoptera, Curculionidae). Revue. Francaise. d'Entomologie 10(1): 1-4.
- DEXTER, R. R. 1932. The food habits of the imported toad *Bufo marinus* in the sugarcane sections of Puerto Rico. Bull. No. 74, Fourth Congr. Intern. Soc. of Sugarcane Technol. 74: 1-6.
- DIAZ, F. 1992. Informe sobre avance del Proyecto Manejo Integrado de *Diaprepes abbreviatus* (L.) en Citricos. Fundacion Desarrollo Agropecuario, Republica Dominicana. (Mecanografiado). p. 15.
- DIXON, W. B. 1954. Fiddler beetles. Natl. Hist. Notes. Natl. Hist. Soc., Jamaica 69: 157-83.
- DOWNING, A. S., C. G. ERICKSON, AND M. J. KRAUS. 1991. Field evaluation of entomopathogenic nematodes against citrus root weevils (Coleoptera: Curculionidae) in Florida citrus. Fla. Entomol. 74(4): 584-6.
- DOZIER, H. L. 1932. Descriptions of new trichogrammatid (Hymenoptera) egg parasites from the West Indies. Proc. Entomol. Soc. Wash. 34(3): 29-37.
- EARLE, F. S. 1928. Insect and other pests of sugar cane. Chap. 6, P. 162-88. *In* Sugarcane and Its Culture. John Wiley & Sons, New York, 355.
- EDWARDS, W. H. 1931. Report of the Government Entomologist. Annu. Rep. Dep. Agric. Jamaica. p. 54-6.
1934. Two weevils whose larvae attack the roots of citrus plants in Jamaica. J. Jamaica Agric. Soc. 38: 678-80.
1936. Pests attacking citrus in Jamaica. Bull. Entomol. Res. 27: 335-7.
1936. Annual report of the entomologist for the year 1936. Annu. Rep. Dep. Sci. & Agric. Jamaica. p. 57-8.
1937. Report of the entomologist for the year 1937. Annu. Rep. Dep. Sci. & Agric. Jamaica. p. 435-8.
1942. Entomology Division. Ann. Rep. Dep. Sci. & Agric. Jamaica. p. 9-10.
- ETIENNE, J., AND G. DELVARE. 1991. Les parasites de *Diaprepes abbreviatus* (Coleoptera curculionidae) aux Antilles Francaises. Bull. Soc. Ent. Fr. 96(3): 295-99.

- ETIENNE, J., M. MAULEON, AND F. MADEMBA-SY. 1986. A biological control programme for *Diaprepes abbreviatus*; a citrus pest in the French West Indies. Seminar proceedings: improving citrus and banana production in the Caribbean through phytosanitation: St. Lucia, W.I., 2-5 December 1986. p. 189-94.
- ETIENNE, J., H. MAULEON, AND B. PINTUREAU. 1990. Biologie et dynamiques de *Ceratogramma etiennei* (Hymenoptera; Trichogrammatidae) parasite de *Diaprepes abbreviatus* (Coleoptera: Curculionidae) en Guadeloupe in RCLB, 5-7 Nov. 1990. Les colloques de l'INRA 58: 459-68.
- ETIENNE, J., M. REYES, M. CASTILLO, F. DIAZ, AND A. ABUD ANTUN. 1992. Posibilidad de lucha biológica contra *Diaprepes abbreviatus* (L.) (Coleoptera: Curculionidae) en Republica Dominicana. Caribbean Food Crops Society 28: 104-12.
- FABRICIUS, J. 1801. Systems eleutheratorum. Kiel. 2: 687.
- FAXON, R., AND C. P. TROTTER. 1932. Plant quarantine service in Puerto Rico. J. Econ. Entomol. 25: 435-47.
- FENNAH, R. G. 1936. Report on a visit to St. Lucia in connection with an attack of citrus weevils of the genus *Diaprepes*. Trinidad. Imp. Coll. Trop. Agric. p. 8.
1937. Citrus pest investigation. Oviposition and parasitism of *Diaprepes* in St. Lucia in 1937, including notes on the citrus-growing areas and on recent experimental work. Trinidad. Imp. Coll. Trop. Agric. p. 32.
- 1937-38. Citrus pests investigations. Windward and Leeward Islands. Report on work during the period October 1937-July 1938. Trinidad. Imp. Coll. Trop. Agric. p. 27.
- 1938-39. Citrus pests investigation. Windward and Leeward Islands. Report on work during the period October 1938-May 1939. Trinidad. Imp. Coll. Trop. Agric. p. 32.
1938. Citrus pests investigations. Rep. Agric. Dep. Dominica. 1937: 27-8.
1939. Citrus pests investigation. Windward and Leeward Islands. Report on work during the period June-December 1939. Trinidad. Imp. Coll. Trop. Agric. p. 20.
1939. Entomological investigations. Rep. Dep. Agric. St. Lucia. 1937: 23-5.
- 1939-40. Citrus pest investigation. Windward and Leeward Islands. Report on Work during the period December 1939-August 1940. Trinidad. Imp. Coll. Trop. Agric. p. 11.
1939. Rep. Dep. Agric. St. Lucia. p. 33-8.
1940. Rep. Dep. Agric. St. Lucia. p. 25-8.
1940. Observations on behavior of citrus rootstocks in St. Lucia, Dominica and Montserrat. Trop. Agric. 17(4): 72-6.
1941. Citrus pests investigations. Report on a visit to Jamaica in November 1940. J. Jamaica Agric. Soc. 45(4): 115-8, 120-30.
1941. Citrus pests investigation. Windward and Leeward Islands. Report on work during the period January-July 1941. Imp. Coll. Trop. Agric. Trinidad. p. 7.
1942. The citrus pests investigation in the Windward and Leeward Islands, B.W.I. Imp. Coll. Trop. Agric. Trinidad. 1937-1942.
1942. Citrus pests of St. Vincent. Rep. Agric. Dep. St. Vincent. p. 9.
1946. On the formation of species and genera in the insect fauna of the Lesser Antillean archipelago. Proc. R. Entomol. Soc., London, Ser. A. 21(10-12): 73-80.
1947. The insect pests of food crops in the Lesser Antilles. Dep. Agric. Windward Islands, St. George, Granada, B.W.I. p. 17-8.
- FIGUEROA, W., AND J. ROMAN. 1990. Biocontrol of the sugarcane rootstalk borer, *Diaprepes abbreviatus* (L.) (Coleoptera: Curculionidae), with entomophilic nematodes. J. Agric., Univ. of P.R. 74(4): 395-404.
1990. Parasitism of entomophilic nematodes on the sugarcane rootstalk borer, *Diaprepes abbreviatus* (L.) (Coleoptera: Curculionidae), larvae. J. Agric., Univ. of P.R. 74(2): 197-202.

- FUTCH, S. AND C. W. MCCOY. 1994. Citrus Root Weevils. Florida Cooperative Extension Service, IFAS, University of Florida, Gainesville. SP 157: 1-7.
- GAHAN, A. B. 1929. Description of an egg parasite of *Exophthalmus quadrivittatus* (Oliver). Proc. Entomol. Soc. Wash. 31(1): 17-8.
- GOWDEY, C. C. 1926. Catalogus insectorum Jamaicaensis. Dep. Agric. Jamaica. Entomol. Bull. No. 4 (Part 1). p. 1-114.
1927. Report of the Government Entomologist. Dep. Sci. and Agric. Jamaica. p. 30-1.
- GREGORY, G. B. 1938. An experiment on the hand-collecting of egg masses of citrus weevils (*Diaprepes* spp.) in St. Lucia. Trop. Agric. (Trinidad) 15: 112-4.
- GRIFFITH, R. J. 1975. The West Indian sugarcane rootstalk borer weevil [*Diaprepes abbreviatus*] in Florida. Proc. Fla. State Hortic. Soc. 88: 87-90.
- GRIFFITHS, J. T. 1975. Industry's concern in international plant protection [*Diaprepes abbreviatus*, *Anastrepha suspensa*]. Bull. Entomol. Soc. Am. 21(2): 101-3.
- GUNTHER, K., AND F. ZUMPT. 1933. Curculionidae: Subfam. Tanymecinae. Chap. In *Coleopterorum catalogus*. Berlin. 27, Part 131, 107-10.
- HAMILTON, P. A. 1972. Citrus weevils. Research Report Feb. 1970-April 1972. Citrus Res. UWI, Jamaica. p. 6.
- HAMLEN, R. A., AND J. B. BEAVERS. 1975. Evaluation of soil fumigants and soil insecticides to control *Diaprepes abbreviatus* in muck and potting soils. Proc. Fla. State Hortic. Soc. 88: 518-22.
- HAMLEN, R. A., W. J. SCHROEDER, AND J. B. BEAVERS. 1979. Toxicity and persistence of surface applied and soil incorporated insecticides against *Diaprepes abbreviatus* larvae. J. Econ. Entomol. 72: 131-4.
- HANTULA, J., A. SAURA, J. LOKKI, AND N. VIRKKI. 1987. Genic and color polymorphism in Puerto Rican phyllobiine weevils *Diaprepes abbreviatus* (L.) and *Compsus maricaco* Wolcott. J. Agric., Univ. of P.R. 71(4): 391-7.
- HERBAUGH, L. L., AND E. C. MOSTELLER. 1980. Ovicidal capacity of various chemicals for control of West Indian sugarcane root borer on *Dracaena marginata*, Plymouth, FL, 1979 *Diaprepes abbreviatus*. Insecticide and Acaricide Tests 5: 170-2.
- HORTON, A. H. 1972. Scientists plot controls for sugarcane weevils. Fla. Div. Plant Ind. News Bull. 14(4): 7-9.
- HUTSON, J. C. 1917. *Diaprepes abbreviatus*. The Agric. News 16(399): 251.
1917. Insect notes. Some weevils of the genus *Diaprepes* in the West Indies. The Agric. News 16(395): 186-7.
1918. Report on the prevalence of some pests and diseases in the West Indies during 1917. West Indian Bull. 17(2): 86-7, 91.
1918. Report on the Agricultural Department, St. Lucia. 1917-1918.
- JACKSON, G. C. 1963. *Diaprepes abbreviatus* Linnaeus on *Phoenix dactylifera* L. J. Agric. Univ. P.R. 47(4): 290.
- JAFFE, K., H. MAULEON, AND A. KERMARREC. 1990. Qualitative evaluation of ants as biological control agents with special reference to predators on *Diaprepes* spp. (Coleoptera: Curculionidae) on citrus groves in Martinique and Guadeloupe. Rencontres Caraibes en Lutte Biologique, Guadeloupe 5-7: 405-16.
1990. Predatory ants of *Diaprepes abbreviatus* (Coleoptera: Curculionidae) in citrus groves in Martinique and Guadeloupe, F.W.I. Fla. Entomol. 73(4): 684-7.
- JONES, H. L. 1969. A citrus pest new to Florida may get out of hand. Citrus Ind. 10: 15, 18.
- JONES, I. F., J. B. BEAVERS, AND W. J. SCHROEDER. 1984. Identification of weevil egg masses (Coleoptera: Curculionidae) by enzyme electrophoresis. Fla. Entomol. 67(4): 573-5.
- JONES, I. F., AND W. J. SCHROEDER. 1983. Study of first-instar *Diaprepes abbreviatus* (Coleoptera: Curculionidae) activity for control purposes. J. Econ. Entomol. 76(3): 567-9.

1984. Capture of *Diaprepes abbreviatus* (Coleoptera: Curculionidae) in frass extract-baited traps in citrus. *J. Econ. Entomol.* 77(2): 334-6.
1984. Citrus: Sugarcane rootstalk borer weevil: *Diaprepes abbreviatus* (L.). Insecticide and Acaricide Tests 9: 67.
- JONES, T. H. 1915. The sugarcane weevil rootborer (*Diaprepes spengleri* Linn.). Insular Exp. Stn. (Rio Piedras, P.R.) Bull. 14: 1-9, 11.
- KERMARREC, A., AND H. MAULEON. 1985. Nocuite potentielle du nematode entomoparasite *Neoaplectana carpocapsae* Weiser pour le crapaud *Bufo marinus* aux antilles. Med. Fac. Landbouww. Rijksuniv. Gent. 50(3a): 831-8.
- KNAPP, J. L. 1985. The citrus root weevils in Florida: an Extension Service perspective. Fla. Entomol. 68(3): 368-70.
- KROMBEIN, K. V., P. D. HURD JR., D. R. SMITH, AND B. D. BURKS. 1979. Symphyta and Apocrita (Parasitica). Chap. In *Catalog of Hymenoptera in America North of Mexico*. Smithsonian Institution Press, Washington, D.C., 1174-5.
- LARTER, L. N. H. 1937. Insect pests. Rep. Dep. Sci. & Agric. Jamaica. 1936. p. 71-2.
- LAUMOND, C., H. MAULEON, AND A. KERMARREC. 1979. Donnees nouvelles sur le spectre d'hotes et le parasitisme du nematode entomophage *Neoaplectana carpocapsae*. Entomophaga. 24(1): 13-27.
- LEONARD, M. D. 1931. Report of the Division of Entomology for the Fiscal Year 1929-1930. Annu. Rep. Insular Exp. Stn. p. 110-23.
1932. Insect conditions in Puerto Rico during the fiscal year July 1930 thru June 1931. J. Dep. Agric. P.R. 16: 121-44.
1933. Notes on insect conditions in Puerto Rico for the fiscal year July 1931 thru June 1932. J. Dep. Agric. P.R. 17(2): 97-137.
- LOVESTRAND, S. A., AND J. B. BEAVERS. 1980. Effect of diflubenzuron on four species of weevils attacking citrus in Florida. Fla. Entomol. 63(1): 112-5.
- MARSHALL, G. A. K. 1916. On new neotropical Curculionidae. Ann & Mag. Natl. Hist. (Ser. 8). 18: 449-69.
1938. New injurious Curculionidae (Coleoptera). Bull. Entomol. Res. 29: 1-8.
- MARTORELL, L. F. 1945. A survey of the forest insects of Puerto Rico. Part II. *J. Agric., Univ. of P.R.* 29(4): 457-81.
1959. Control of the important sugarcane insect pests in Puerto Rico. *Sugar J.* 22: 55-63.
1976. Annotated food plant catalog of the insects of Puerto Rico. Agric. Exp. Stn., Univ. P.R. p. 303.
- MARTORELL, L. F., AND S. M. GAUD. 1965. Status of important insect pests of sugarcane in Puerto Rico and their control. Proc. 12th Congr. Intern. Soc. Sugarcane Technol. p. 1278-86.
- MAULEON, H., AND F. MADEMBA-SY. 1988. A pest of citrus in the French Antillies: *Diaprepes abbreviatus* L. *Fruits* 43(4): 229-34.
- MCCOY, C. W. 1985. Citrus: Current status of biological control in Florida. Chap. In *Biological Control in Agricultural IPM Systems*. Academic Press. p. 481-99.
1986. Development of fungi to commercialization for the microbial control of root weevil pests. Proc. Tropical/Subtropical Agric. Res. p. 32-50.
1989. Entomogenous fungi as microbial pesticides. UCLA Symposia on Molecular and Cellular Biology, New Series 112: 139-61.
1991. Survival of *Beauveria bassiana* as biological control agent in tropical soils. Achievements in Tropical and Subtropical Agricultural Research. Caribbean Basin Administrative Group. p. 45-47.
- MCCOY, C. W., AND D. G. BOUCIAS. 1989. Selection of *Beauveria bassiana* pathotypes as potential microbial control agents of soil-inhabiting citrus weevils. Mem. Inst. Oswaldo Cruz, Rio de Janeiro. 84, Suppl. 3: 75-80.
- MCCOY, C. W., R. C. BULLOCK, G. G. SOARES, C. A. TARRANT, AND G. M. BEAVERS. 1984. Pathogens of the citrus root weevil complex and the potential use of *Beauveria bassiana* as microbial control agent in Florida. Proc. Intern. Soc. Citriculture 1: 462-5.



- MCCOY, C. W., AND C. A. TARRANT. 1987. Rooting out the weevil. *Research* 87, 1987. p. 14-5.
- MONTES, M., E. ARTEAGA, AND R. BROCHE. 1981. Control of the citrus root weevil with the nematode, *Neoaplectana* in citrus nurseries. *Proc. Intern. Soc. Citriculture* 2: 670-2.
- MUMFORD, B. C. 1964. List of intercepted plant pests. USDA, Agric. Res. Serv. Plant Quarantine Div.
- MYERS, J. G. 1931. A preliminary report on an investigation into the biological control of West Indian insect pests. *Empire Marketing Board* 42: 173.
- NORMAN, P. A., A. G. SELHIME, AND R. A. SUTTON. 1974. Feeding damage to five citrus rootstocks by larvae of *Diaprepes abbreviatus* (Coleoptera: Curculionidae). *Fla. Entomol.* 57: 296.
1974. Laboratory evaluation of insecticides against larvae of *Diaprepes abbreviatus*. *J. Econ. Entomol.* 67: 94-5.
- NOWELL, W. 1912. Plant pests and diseases. Rep. Local. Dep. Agric., Barbados. 1911-1912. p. 50-1.
1912. Field investigations of beetle grubs attacking roots of sugarcane. Rep. Local. Dep. Agric., Barbados. 1911-1912. p. 50-1.
1913. Report of the assistant superintendent of agriculture on the entomological and mycological work carried out during the season under review. Rep. Local. Dep. Agric., Barbados. 1911-1913. p. 34-45.
- O'BRIEN, C. W., AND G. J. WIBMER. 1982. Annotated checklist of the weevils (Curculionidae *sensu lato*) of North America, Central America, and the West Indies (Coleoptera: Curculionoidea). Chap. *In* *Memoirs of the American Entomological Institute*. The American Entomological Institute, Ann Arbor, Michigan, 28-31.
- O'NEAL, J. 1975. Evaluation of insecticidal dips for effectiveness against *Diaprepes abbreviatus* (L.) larvae infesting nursery stock. *J. Econ. Entomol.* 68: 650-2.
- ORAMAS, D., J. RODRIGUEZ, AND A. L. GONZALEZ. 1990. Effect on yam (*Dioscorea rotundata* Poir) of soil spray and seed treatment with the nematicide-insecticide oxamyl L, and soil treatments with phenamiphos 15G. *J. Agric., Univ. of P.R.* 74(2): 103-10.
- OSBORNE, L. S., AND D. G. BOUCIAS. 1985. A review of chemical antagonists to mycopathogens of citrus root weevils. *Fla. Entomol.* 68(3): 409-16.
- PAVIS, C., C. MALOSSE, P. H. DUCROT, F. HOWSE, K. JAFFE, AND C. DESCOINS. 1992. Defensive secretion of first-instar larvae of rootstalk borer weevil, *Diaprepes abbreviatus* L. (Coleoptera: Curculionidae), to the fire-ant *Solenopsis geminata* (F.) (Hymenoptera: Formicidae). *J. Chem. Ecol.* 18(11): 2055-68.
- PICKLES, A. 1940. Report of the entomologist for the year 1938. Rep. Dep. Agric. Trinidad Tob. 1938. p. 71-4.
- PIERCE, W. D. 1915. Some sugarcane root-boring weevils of the West Indies. *J. Agric. Res.* 4: 255-67.
- POUCHER, C. 1976. Special problems of major eradication programs [*Diaprepes abbreviatus*, nursery stock]. *Plant Ind. News DPI* 17(4): 14-5.
- RHODES, L. F. 1990. Investigations into the potential of entomogenous nematodes for the control of the citrus root weevil, *Diaprepes famelicus* Ol. *Rencontres Caraïbes en Lutte Biologique, Guadeloupe*. 5-7 (November). p. 161-5.
- RICHMAN, D. B., W. F. BUREN, AND W. H. WHITCOMB. 1983. Predatory arthropods attacking the eggs of *Diaprepes abbreviatus* (L.) (Coleoptera: Curculionidae) in Puerto Rico and Florida. *J. Ga. Entomol. Soc.* 18(3): 335-42.
- RICHMAN, D. B., W. H. WHITCOMB, AND W. F. BUREN. 1986. Predation on neonate larvae of *Diaprepes abbreviatus* (Coleoptera: Curculionidae) in Florida and Puerto Rico Citrus Groves. *Fla. Entomol.* 66(2): 215-22.
- RITCHIE, A. H. 1915-1916. Report of the Government Entomologist for the year 1915-1916. *Annu. Rep. Dep. Agric. Jamaica*. p. 37-70.
- 1916-1917. *Annual Report of the Entomologist. Annu. Rep. Dep. Agric. Jamaica*. p. 30.

- ROMAN, J., AND J. B. BEAVERS. 1982. A survey of Puerto Rican soils for entomogenous nematodes which attack *Diaprepes abbreviatus* (L.) (Coleoptera: Curculionidae). J. Agric., Univ. of P.R. p. 311-6.
- ROMAN, J., AND W. FIGUEROA. 1985. Control of the larva of the sugarcane rootstalk borer, *Diaprepes abbreviatus* (L.), with the entomogenous nematode *Neoaplectana carpocapsae* Weiser. J. Agric., Univ. of P.R. 69(2): 153-8.
- SCHAUFF, M. E. 1987. Taxonomy and identification of the egg parasites (Hymenoptera: Platygasteridae, Tichogrammatidae, Mymaridae, and Eulophidae) of citrus weevils (Coleoptera: Curculionidae). Proc. Entomol. Soc. Wash. 89(1): 31-42.
- SCHIROCKI, A. 1992. Entomopathogenic nematodes (Steinernema, Heterorhabditidae) for control of *Diaprepes abbreviatus* in Florida citrus: aspects of the biology and application. Thesis. University of Reading, England. 97 p.
- SCHROEDER, W. J. 1980. Citrus: Sugarcane rootstalk borer weevil, *Diaprepes abbreviatus* (L.). Insecticide and Acaricide Tests 5: 42.
1980. Citrus, *Diaprepes abbreviatus* control, Plymouth, Florida, 1979. Insecticide and Acaricide Tests 5: 42.
1981. Attraction, mating, and oviposition behavior in field populations of *Diaprepes abbreviatus* on citrus. Environ. Entomol. 10(6): 898-900.
1987. Laboratory bioassays and field trials of entomogenous nematodes for control of *Diaprepes abbreviatus* (Coleoptera: Curculionidae) in citrus. Environ. Entomol. 16: 987-9.
1987. Induced pupation in *Diaprepes abbreviatus* (Coleoptera: Curculionidae). Fla. Entomol. 70(1): 186-7.
1989. Entomogenous nematodes for root weevil control in citrus. Citriculture: proceedings of the Sixth International Citrus Congress: Middle-East, Tel Aviv, Israel, March 6-11, 1988. p. 1223-6.
1990. Water-absorbent starch polymer: Survival aid to nematodes for control of *Diaprepes abbreviatus* (Coleoptera: Curculionidae) in citrus. Fla. Entomol. 73(1): 130-2.
1990. Suppression of *Diaprepes abbreviatus* (Coleoptera: Curculionidae) adult emergence with soil application of entomopathogenic nematodes (Nematoda: Rhabditida). Fla. Entomol. 73(4): 680-3.
1990. Entomopathogenic nematodes for root weevil control in Citrus. Proceedings and abstracts, Vth International Colloquium on Invertebrate Pathology and Microbial Control Adelaide, Australia, 20-24 August 1990.
1992. Entomopathogenic nematodes for control of root weevils of citrus. Fla. Entomol. 75(4): 563-7.
- SCHROEDER, W. J., AND J. B. BEAVERS. 1977. Citrus root weevils in Florida: Identification, biology and control. Proc. Intern. Soc. Citriculture 2: 498-500.
1985. Semiochemicals and *Diaprepes abbreviatus* (Coleoptera: Curculionidae) Behavior: Implications for survey. Fla. Entomol. 68(3): 399-402.
1987. Movement of the entomogenous nematodes of the families Heterorhabditidae and Steinernematidae in soil. J. Nematol. 19(2): 257-9.
- SCHROEDER, W. J., J. B. BEAVERS, R. A. SUTTON, AND A. G. SELHIME. 1976. Ovicidal effect of Thompson-Hayward TH 6040 in *Diaprepes abbreviatus* on citrus in Florida. J. Econ. Entomol. 69: 780-2.
- SCHROEDER, W. J., AND D. S. GREEN. 1983. *Diaprepes abbreviatus* (Coleoptera: Curculionidae): Oil sprays as a regulatory treatment, effect of egg attachment. J. Econ. Entomol. 76: 1395-6.
- SCHROEDER, W. J., R. A. HAMLIN, AND J. B. BEAVERS. 1979. Survival of *Diaprepes abbreviatus* larvae on selected native and ornamental Florida plants. Fla. Entomol. 62(4): 309-12.
- SCHROEDER, W. J., AND I. F. JONES. 1983. *Coral ardisia*: *Ardisia crispa* sugarcane rootstalk borer weevil: *Diaprepes abbreviatus* (L.). Insecticide and Acaricide Tests 8: 7.

1983. Capture of *Diaprepes abbreviatus* (Coleoptera: Curculionidae) in traps: effects of location in a citrus tree and wick materials for release of the attractant. J. Econ. Entomol. 76(6): 1312-4.
1984. A new trap for capturing *Diaprepes abbreviatus* (Coleoptera: Curculionidae). Fla. Entomol. 67(2): 312-4.
- SCHROEDER, W. J., AND D. J. LYON. 1976. Citrus, *Diaprepes abbreviatus* control, Plymouth, FL. Insecticide and Acaricide Tests 2(41): 39.
- SCHROEDER, W. J., AND R. A. SUTTON. 1975. Citrus: *Diaprepes abbreviatus* control, Plymouth, Florida. Repr. US. Agric. Res. Serv.
1977. Citrus root damage and the spatial distribution of eggs of *Diaprepes abbreviatus*. Fla. Entomol. 60: 114.
1978. *Diaprepes abbreviatus*: Suppression of reproductive potential on citrus with an insect growth regulator plus spay oil. J. Econ. Entomol. 71(1):69-70.
1978. Citrus: The so-called sugarcane rootstalk borer weevil: *Diaprepes abbreviatus*. Insecticide and Acaricide Tests 3: 57.
- SCHROEDER, W. J., R. A. SUTTON, AND J. B. BEAVERS. 1980. *Diaprepes abbreviatus*: Fate of diflubenzuron and effect on nontarget pests and beneficial species after application to citrus for weevil control. J. Econ. Entomol. 73(5): 637-8.
- SCHROEDER, W. J., R. A. SUTTON, AND A. G. SELHIME. 1977. Spray oil effects of *Diaprepes abbreviatus* on citrus in Florida. J. Econ. Entomol. 70: 623-4.
- SEIN, F., JR. 1932. The sugar cane root caterpillar and other new root pests in Puerto Rico. J. Dep. Agric. P.R. 14(3): 167-91.
- SELHIME, A. G., AND J. B. BEAVERS. 1972. A new weevil pest of citrus in Florida. Citrus Ind. 53(1): 4-5.
- SHAPIRO, J. P. 1988. Isolation and fluorescence studies on a lipophorin from the weevil *Diaprepes abbreviatus*. Arch. Insect. Biochem. Physiol. 7(2): 119-31.
1989. Xenobiotic absorption and binding by proteins in hemolymph of the weevil *Diaprepes abbreviatus*. Arch. Insect. Biochem. Physiol. 11(2): 65-78.
1991. Phytochemicals at the plant-insect interface. Arch. Insect. Biochem. Physiol. 17(4): 191-200.
- SHAPIRO, J. P., AND T. R. GOTTFELD. 1994. Resistance of eight cultivars of citrus rootstock to a larval root weevil, *Diaprepes abbreviatus* L. (Coleoptera: Curculionidae) J. Econ. Entomol. (in press).
- SHAPIRO, J. P., R. T. MAYER, AND W. J. SCHROEDER. 1988. Absorption and transport of natural and synthetic toxins mediated by hemolymph proteins. Frontiers in Physiol. Insect Ecol. 2: 997-1005.
- SHAPIRO, J. P., D. L. SILHACEK, AND R. P. NIEDZ. 1992. Storage proteins of the larval root weevil *Diaprepes abbreviatus* (Coleoptera: Curculionidae): riboflavin binding and subunit isolation. Arch. Insect. Biochem. Physiol. 20(4): 315-31.
- SIMANTON, W. A., AND R. C. BULLOCK. 1973. Evaluation of dip treatment to destroy *Diaprepes abbreviatus* on citrus nursery trees. Fla. Entomol. 56: 305-11.
- SIMMONDS, F. J. 1953. Insect pests of sugarcane in the French Antilles. Trop. Agric. 30: 122-7.
- SIRJUSINGH, C., A. KERMARREC, H. MAULEON, C. LAVIS, AND J. ETIENNE. 1992. Biological control of weevils and white grubs on bananas and sugarcane in the Caribbean. Fla. Entomol. 75(4): 548-62.
- SKEETE, C. C. 1924. Insect attacks reported or observed. Report of the assistant director of agriculture on the entomological and mycological work carried out during the period under review. Rep. Dep. Agric., Barbados. 1923-1924. p. 9.
1925. Entomological Work. Rep. Dep. Agric., Barbados. 1924-1925. p. 9.
1926. Entomological Work. Rep. Dep. Agric., Barbados. 1925-1926. p. 9.
1928. Entomological Work. Rep. Dep. Agric., Barbados. 1926-1927. p. 14.
1928. Entomological Work. Rep. Dep. Agric., Barbados. 1927-1928. p. 10.
- SMYTH, E. G. 1917. The white grubs injuring sugar cane in Puerto Rico. J. Dep. Agric. P.R. 2: 49-90.

- SOSA, OMELIO AND J. B. BEAVERS. 1985. Entomogenous nematodes as biological control organisms for *Ligyris subtropicus* (Coleoptera: Scarabaeidae) in sugarcane. *Environ. Entomol.* 14: 80-2.
- STOREY, G. K., C. W. MCCOY, K. STENZEL, AND A. ANDERSCH. 1990. Conidiation kinetics of the mycelial granules of *Metarhizium anisopliae* (BIO 1020) and its biological activity against different soil insects. *Proc. Vth Intern. Colloq. Invertebr. Pathol.*, Adelaide, Australia. p. 320-5.
- SUTTON, R. A., AND W. J. SCHROEDER. 1980. Citrus: Sugarcane rootstalk borer weevil, *Diaprepes abbreviatus* (L.). *Insecticide and Acaricide Tests* 5: 42.
1980. Citrus: *Diaprepes abbreviatus* ovicidal tests, Plymouth, Florida, 1979. *Insecticide and Acaricide Tests* 5: 42.
- SUTTON, R. A., A. G. SELHIME, AND W. MCCLOUD. 1971. Colonization and release of *Tetrastichus haitiensis* as a biological control agent for citrus root weevils. *J. Econ. Entomol.* 65: 184-5.
- SWEETMAN, H. L. 1936. *The Biological Control of Insects*. Comstock Publ. Co., Inc., Ithaca, NY. 461 p.
1936. *The Principles of Biological Control*. Wm. C. Brown Co., Dubuque, Iowa, USA. 560 pages.
- SY, F. M., AND H. MAULEON. 1989. Influence of rootstock on the tolerance of citrus to the weevil *Diaprepes abbreviatus* (L.). *Fruits* 44(9): 491-5.
- TAYLOR, C. B. 1898. Injurious insects. Beetle grub destructive to orange trees. *J. Jamaica Agric. Soc.* 2: 11-4.
- TRYON, E. H., JR. 1986. The striped earwig, and ant predators of sugarcane rootstock borer, in Florida citrus. *Fla. Entomol.* 69(2): 336-43.
- TUCKER, R. W. E. 1929. Sugarcane borers. *Trop. Agric.* 6(8): 224-6.
1932. Entomological Section. Department of Science and Agriculture, Barbados 2: 24-5.
1936. Parasites introduced into Barbados for control of insect pests. *Dep. Sci. and Agric.*, Barbados 5: 1-22.
1936. Report on the entomological section for the year ending March 31st, 1936. *Dep. Sci. and Agric.*, Barbados 5: 67-75.
1938. Report on the entomological section for the year ending March 31st, 1937. *Dep. Sci. and Agric.*, Barbados 6: 74-82.
1938. Report on the entomological section for the year ending 31st March, 1938. *Dep. Sci. and Agric.*, Barbados 7: 65-71.
1939. Report on the entomological section for the year ending 31st March, 1939. *Dep. Sci. and Agric.*, Barbados 8: 56-60.
1939. The control of *Diaprepes abbreviatus* L. and *Lachnosterna (Phytalus) Smithi*, Arrow, in Barbados surveyed over a period of eleven years. *Dep. Sci. and Agric.*, Barbados 8: 8-18.
1940. *Bufo marinus* L. in Barbados. *Dep. Sci. and Agric.*, Barbados 8: 145-50.
1952. The insects of Barbados (Coleoptera: Curculionidae). *J. Agric.*, Univ. of P.R. 36(4): 348.
1953. Biological control of insect pests in Barbados. *Proc. Intern. Soc. Sugarcane Technol.* 8: 573-81.
- TUCKER, R. W. E., AND G. N. WOLCOTT. 1935. Parasite introductions, Barbados and Puerto Rico. 5th Entomol. Congr. Brisbane. 1935. p. 398-404.
- VALENTINE, B. D., AND B. S. VALENTINE. 1957. Some injurious weevils in Haiti (Curculionidae). *The Coleopterists' Bull.* 11: 29-33.
- VAN DINE. 1913. The insects affecting sugar cane in Puerto Rico. *J. Econ. Entomol.* 6: 256.
- VAN EMDEN, F. I. 1952. On the taxonomy of Rhynchophora larvae: Adelnathinae and Alphinae (Insecta: Coleoptera). *Proc. Zool. Soc.*, London 122(3): 651-795.
- VAN WHERVIN, L. W. 1968. The citrus weevils of Jamaica and some of their parasites. *Univ. W. Indies Citrus Res. Bull.* 1: 1-23.
- VAURIE, P. 1961. A review of the Jamaican species of the genus *Exophthalmus* (Coleoptera, Curculionidae, Otiorynchinae). *Am. Mus. Novit.* 2062. p. 1-41.

- VILARDEBO, A., AND M. BOISSEAU. 1988. Rearing technique for *Diaprepes abbreviatus* L. (Coleoptera: Curculionidae) on artificial medium. *Fruits* 43(1): 43-7.
- VIRKKI, N., C. MAZZELLA, AND A. DENTON. 1990. Staining of substances adjacent to the sex bivalent in certain weevils of Puerto Rico. *J. Agric., Univ. of P.R.* 74(4): 405-18.
- VIRKKI, N., AND J. M. SEPULVEDA. 1990. Chromosomes of the Puerto Rican 'vaquita,' *Diaprepes abbreviatus* (L.) (Curculionidae: Otiorrhynchinae: Phyllobiini). *J. Agric., Univ. of P.R.* 74(2): 121-32.
- WADLEY, F. M. 1937. Observations on some insects associated with sugarcane in Puerto Rico. *J. Agric., Univ. of P.R.* 21(2): 21-6.
- WALTERS, E. A. 1936. Entomological investigations. Rep. Dep. Agric. St. Lucia. 1935: 20-30.
- WARD, G. B., R. T. MAYER, M. F. FELDLAUFER, AND J. A. SVOBODA. 1991. Gut chitin synthase and sterols from larvae of *Diaprepes abbreviatus* (Coleoptera: Curculionidae). *Arch. Insect. Biochem. Physiol.* 8(2): 105-17.
- WATSON, N. B. 1904. The rootborer of sugarcane (*Diaprepes abbreviatus*. West Indian Bull. 4(1): 37-47.
- WETMORE, A. W. 1916. Birds of Puerto Rico. USDA Bull. 326:140.
- WHITCOMB, W. H., T. D. GOWAN, AND W. F. BUREN. 1982. Predators of *Diaprepes abbreviatus* (Coleoptera: Curculionidae) larvae. *Fla. Entomol.* 65(1): 150-8.
- WHITWELL, A. C. 1990. *Diaprepes* spp. problems in Dominica and some possible solutions. *Rencontres Caraibes en Lutte biologique, Guadeloupe.* 5-7 Novembre. p. 529-41.
- WOLCOTT, G. N. 1922. Insect parasite introduction in Puerto Rico. *J. Dep. Agric. P.R.* 6: 5-20.
1922. Vaquitas de importancia economica en Puerto Rico. *Entomol. Exp. Insular (Rio Piedras, P.R.)*. Circ. 60: 1-20.
1929. Notes on the life history of *Exophthalmus quadrivittatus* Oliver (Coleoptera). *Proc. Entomol. Soc. Wash.* 31: 21-6.
1933. *An Economic Entomology of the West Indies.* Richard Clay & Sons, Ltd., Bungay, England. 688 p.
1933. The changed status of some insects in Puerto Rico. *J. Dep. Agric. P.R.* 17(3): 265-70.
1933. The larval period of *Diaprepes abbreviatus* L. *J. Dep. Agric. P.R.* 17(3): 257-64.
1933. Otiorrhynchids oviposit between paper. *J. Econ. Entomol.* 26: 1172-3.
1934. The diapause portion of the larval period of *Diaprepes abbreviatus* L. *J. Econ. Entomol.* 18(3): 417-27.
1935. Report of the Entomologist. Rep. P.R. Agric. Exp. Stn. 1933-1934. p. 142-4.
1935. The white grub problem in Puerto Rico. Fifth Congr. Intern. Soc. Sugarcane Technol., Brisbane. Queensland. p. 445-56.
1936. "Insectae Boringuenses" a revised annotated checklist of the insects of Puerto Rico, with a host plant index by Jose I. Otero. *J. Agric., Univ. of P.R.* 20(1): 1-627.
1936. The life history of *Diaprepes abbreviatus* at Rio Piedras, P.R. *J. Agric., Univ. of P.R.* 20(4): 883-914.
1948. The insects of Puerto Rico, Coleoptera. *J. Agric., Univ. of P.R.* 32(2): 225-416.
1951. Control of soil-inhabiting grubs of Puerto Rico. *J. Econ. Entomol.* 44: 58-60.
1952. Control of the soil inhabiting grubs of Puerto Rico. *J. Agric., Univ. of P.R.* 34(4): 333-7.
1954. Residual effectiveness of insecticides against soil inhabiting insects. *J. Agric., Univ. of P.R.* 38(2): 108-14.
- WOLCOTT, G. N., AND L. F. MARTORELL. 1943. The seasonal cycle of insect abundance in Puerto Rican cane fields. *J. Agric., Univ. of P.R.* 27(2): 85-104.

- WONG, T. T. Y., J. B. BEAVERS, R. A. SUTTON, AND P. A. NORMAN. 1975. Field tests of insecticides for control of adult *Diaprepes abbreviatus* on citrus. *J. Econ. Entomol.* 68: 119-21.
- WONG, T. T. Y., R. A. SUTTON, J. B. BEAVERS, AND P. A. NORMAN. 1975. *Diaprepes abbreviatus*: Control on citrus foliage with carbaryl. *J. Econ. Entomol.* 68: 725-6.
- WOODRUFF, R. E. 1962. Some Florida Citrus Weevils. *Entomology Circular*, Florida Department of Agriculture. 5.
1964. A Puerto Rican weevil new to the United States (Coleoptera: Curculionidae). *Fla. Dep. Agric., Div. Plant Ind. Entomol. Circ.* 30: 1-2.
1968. The present status of a West Indian weevil (*Diaprepes abbreviatus* (L.)) in Florida (Coleoptera: Curculionidae). *Fla. Dep. Agric., Div. Plant Ind. Entomol. No. 77.* p. 4.
1979. Florida Citrus Weevils (Coleoptera: Curculionidae). *Entomology Circular*, Florida Department of Agriculture 202: 1-4.
1985. Citrus weevils in Florida and the West Indies: Preliminary report on systematics, biology, and distribution (Coleoptera: Curculionidae). *Fla. Entomol.* 68(3): 370-9.
- WUTSCHER, H. K., AND W. J. SCHROEDER. 1987. Rubidium uptake as an indicator of citrus root damage. *HortScience* 22(1): 136-7.
1988. Rubidium uptake as an indicator of citrus root damage. *SAAS Bull. Biochem. and Biotech.* 1: 17-20.