

The West Indian Cane Weevil And the Sugarcane Rootstalk Borer Weevil — Likely Pests of Sugarcane in Florida

by Omelio Sosa Jr.
Sugarcane Field Station, USDA, ARS
Star Route, Box 8
Canal Point, FL 33438

The West Indian cane weevil, *Metamasius hemipterus* (L.), was first discovered by R.M. Baranowski in 1984 at Homestead, Fla., in cassava roots (Woodruff & Baranowski 1985). Infested sugarcane was first observed at the Everglades Research and Education Center in Belle Glade, Fla. during February 1994 (Giblin-Davis et al 1994). In September 1994 a heavy infestation by *Metamasius* was observed along four 0.8 km rows of increase plot of cultivar CP 85-1382 at Okeelanta Corp., about 7 km south of South Bay, Fla. Infestation was not observed in adjacent rows of other cultivars. CP 85-1382 was released in 1993, therefore, there is only very small acreage of this cultivar but it is distributed widely.

A survey of CP 85-1382 by the Florida Sugar Cane League and the USDA showed this pest to be widely distributed throughout the Florida sugarcane industry. All 18 locations that had CP 85-1382 growing in the field were surveyed, with the West Indian cane weevil being found in 11 of the locations.

The biology of the West Indian cane weevil has not been studied under Florida conditions, thus the following account was extracted from Woodruff & Baranowski (1985). Adults are about 9-14 mm long, exhibiting great variation in their color patterns of red or yellow, and black, to being entirely black. Eggs are laid in holes or cracks

of damaged plant tissue, or in holes made by adults with their mouthparts at the end of the beak, hatching in about four days. Larvae are legless, and chew tunnels through sugarcane stalks, molting several times during a seven week period. When larvae are ready to pupate, they construct a pupal case of cane fiber inside the stalk, and remain as pupae about 10 days. The adult may remain in the pupal case until conditions are right for emergence. Therefore, it takes about 63 days for this pest to complete its life cycle.

Several plants serve as hosts for the West Indian cane weevil, but the two most commonly mentioned in the literature are sugarcane and bananas. Other reported hosts of this pest are several species of palms, papaya, mango, guava, pineapple, bromeliads, and orchids. The weevil's distribution extends from central Mexico south to northern Argentina and Uruguay; and throughout the West Indies. It has also been found in West Africa, French Cameroon, and Gabon (Woodruff & Baranowski 1985).

To determine the infestation level of the West Indian cane weevil in the cultivar CP 85-1382 at the Okeelanta site, 10 feet (3.04 m) of row at 10 different locations along the two center rows of a four 0.8 km row plot were sampled on Sept. 12, 1994. All stalks were stripped of leaves to expose the stalks and counted, and infested stalks were cut and taken to the laboratory and dissected. A record was kept of the

number and stage of development of the West Indian cane weevil present. Twenty-one percent of the stalks in a field at Okeelanta were infested; 85% were larvae (all instars), 8% were pupae, and 7% were adults. Plantings of this variety at Wedgeworth Farm had 32% of the stalks infested (Sept. 26, 1994), and in a South Florida Industries Farm planting, 8% were infested (Sept. 29, 1994). Infestations were light at other locations and thus no counts were made.

A replicated test of 10 commercial cultivars growing at South Florida Industries Farm was evaluated for weevil infestation levels on Oct. 27, 1994. There were two 10 ft. (3.04 m) rows of each cultivar with five replications. All plants in one row of each cultivar were stripped for easier detection of infestation, and all infested and non-infested stalks were counted. This test revealed that CP 85-1382 was the "preferred" cultivar, having 21% of its stalks infested. Another variety with substantial infestation (16%) was CP 80-1743. However, this cultivar also had a lot of rat damage, which probably attracted the weevil. The overall infestation level across all cultivars was 5%. However, there was a wide range of infestation levels among cultivars.

Damaged areas within infested stalks was generally confined to the lower internodes (lower 1/3 of the stalk). When damaged areas are cut open, the inside of the stalks have been basically hollowed and turned to

bagasse, often to the extent that the stalk breaks over. Lodged stalks have the appearance of having been damaged by rats, but closer inspection can reveal the presence of the weevil or its damage. Not all infested stalks lodge (but they may eventually lodge), so lodged cane stalks alone are not always a good indicator of weevil activity. Most stalks lodge about 0.5 m above the soil. Periodic checks of infested cane have indicated an overlapping of life stages during the fall and winter. Therefore, infestation levels and losses will continue unabated until the cane is harvested.

Pesticides available for use in sugarcane may not be effective against this pest because: 1) multiple overlapping generations; 2) eggs are laid inside the stalks; 3) larvae are legless and do not venture outside the stalk; and 4) adults predominantly stay concealed inside the stalks, although they are good fliers and evidently do a good job of dispersing.

Since cultivars growing next to CP 85-1382 did not seem to be affected at the infestation sites visited, host plant resistance could be a promising method of controlling this pest if it becomes a common pest in Florida sugarcane. In other geographic areas where the weevil occurs in cane, it is generally regarded as a secondary pest.

Worldwide, the West Indian cane weevil is generally considered a secondary pest of sugarcane, attracted to cane damaged by either mechanical cultivation, harvesting, rats, borers, disease, or natural growth cracks. It has been reported that this pest rarely attacks healthy plants. However, there has been substantial economic losses to at least one commercial sugarcane cultivar in Florida. The observed damage on this cultivar has been severe; sugarcane borer infestation pales by comparison. Furthermore, this pest could pose a threat to other mainland U.S. cane growing areas. Fortunately, the variety

CP 85-1382 is just being increased commercially there is little cane planted because of its recent release. We have recommended that expansion of this cultivar be placed on hold until we have more information on how this pest behaves next season. The possibility of its further distribution is enhanced, both within and outside our industry, because several other plants are hosts to this pest.

Another weevil that is of concern to Florida sugarcane growers is the sugarcane rootstalk borer weevil, *Diaprepes abbreviatus* (L.). This pest was first reported in central Florida in 1964 (Woodruff 1968). Although it has not been found in sugarcane, it has been found in areas surrounded by sugarcane; the latest report as recent as October 1994 where an adult weevil was collected in a backyard orange tree seedling in a home at Canal Point.

Diaprepes has many hosts, including citrus, sugarcane, ornamental plants,

VOORHIES SUPPLY CO., INC.

A Complete Power Transmission—General Industrial
and Welding Supply House

Union Chain



Union Chain



Abrasives
Bearings
Belt Pulleys
Belts
Bushings
Chain, Coil, Roller
Clutches
Compressors
Couplings
Domite Shredder,
Hammer & Knife Tips
Drills & Taps
Electric Vani-Speed Drives
Engines
Fasteners

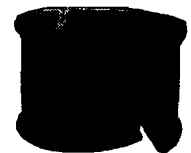


Complete Product Line:

Gasket Material
Gears & Gear Boxes
Hoists & Cranes
Hose-Rubber and Metallic
Hydraulic Jacks, Drives
O-Rings
Paint
Pipe & Pipe Fittings
Plastics
Power Generators
Power Mowers
Pumps
Rope & Twine
Safety Wear

Sprockets
Steel, Cold & Hot Rolled
Steel, Plate, Grating
Tape
Tarps
Tools-Electric, Air
Tools-Measuring
Tubing & Fittings
Vises
Welding Machines
Welding Gases
Welding Accessories
Wheels-Casters
Wire Rope

Plastic
Mill Liners



Schaefer Brushes



401 W. ST. PETER

NEW IBERIA, LA 70560

Phone
318-364-2431

Fax
318-365-0548

yucca, papaya, sweet potatoes, cotton and peppers. *Diaprepes* has spread to at least 18 counties and more than 142,000 acres of land are currently infested according to the latest report of the *Diaprepes* Task Force¹.

While *Metamasius* attack the stalks, *Diaprepes* attack the roots. The immature stage or larvae are the ones that cause the damage. *Diaprepes* is a major pest of sugarcane in Puerto Rico and the West Indies. In some areas of Puerto Rico, 23,000 larvae/ha have been found. Furthermore, during 1978, sugarcane production in Puerto Rico decreased from 1 million metric tons/year to an estimated 150,000 metric tons. This decrease has been partially attributed to infestations by *Diaprepes* (Beavers et al 1979).

Sugarcane growers should be aware and learn to recognize these two pests. Although colors and size may vary, Fig-

¹Division of Plant Industry, 1911 SW 34 St., Gainesville, FL 32614



FIGURE 1. Left: Sugarcane rootstalk borer weevil, *Diaprepes abbreviatus* (L.); right: West Indian cane weevil, *Metamasius hemipterus* (L.)

ure 1 should help growers identify both species. □

Acknowledgements: I would like to thank R. Perdomo (Okeelanta Corp.), M. Ulloa (Osceola Farms), and S. Stein (Wedge-worth Farms) for their help and access to their farms. I would also like to thank J. Shine (Florida Sugar Cane League) for contacting and surveying growers fields.

REFERENCES

Beavers, J.B., R.E. Woodruff, S.A. Lovstrand, & W.J. Schroeder. 1979. Bibliography of the sugarcane rootstalk borer weevil, *Diaprepes abbreviatus*. Bull. Entomol. Soc. Am. 25:25-29.

Giblin-Davis, R., J.E. Peña, & R. E. Duncan. 1994. Lethal pitfall trap for evaluation of semiochemical-mediated attractions of *Metamasius hemipterus sericeus* (Coleoptera: Curculionidae). Florida Entomologist. 77:247-255.

Woodruff, R.E., & R.M. Baranowski. 1985. *Metamasius hemipterus* (Linnaeus) recently established in Florida. Entomology Circular 272. Fla. Dept. Agric. & Consumer Serv., Division of Plant Industry.

Woodruff, R.E. 1968. The present status of a West Indian weevil [*Diaprepes abbreviatus* (L.) in Florida (Coleoptera: Curculionidae). Fla. Dept. Agric., Div. Plant Ind., Entomol. Cir. 77:1-4.

When you specify Ferguson perforating screens, you can be assured of high performance.

Do as many sugar refineries and raw sugar mills do, sweeten profits with Ferguson Centrifugal Screens.

CALL TOLL-FREE 1-800-341-9800 (U.S.A.)

FERGUSON PERFORATING & WIRE CO.

131 Ernest St., Providence, RI 02905 U.S.A.
(401) 941-8876 TELEX: 927539 FAX: (401) 941-2950

• ROUND HOLE CENTRIFUGAL SCREENS • JUICE SCREENS
• MUD FILTER SCREENS • WIRE CLOTH

yucca, papaya, sweet potatoes, cotton and peppers. *Diaprepes* has spread to at least 18 counties and more than 142,000 acres of land are currently infested according to the latest report of the *Diaprepes* Task Force¹.

While *Metamasius* attack the stalks, *Diaprepes* attack the roots. The immature stage or larvae are the ones that cause the damage. *Diaprepes* is a major pest of sugarcane in Puerto Rico and the West Indies. In some areas of Puerto Rico, 23,000 larvae/ha have been found. Furthermore, during 1978, sugarcane production in Puerto Rico decreased from 1 million metric tons/year to an estimated 150,000 metric tons. This decrease has been partially attributed to infestations by *Diaprepes* (Beavers et al 1979).

Sugarcane growers should be aware and learn to recognize these two pests. Although colors and size may vary, Fig-

¹Division of Plant Industry, 1911 SW 34 St., Gainesville, FL 32614

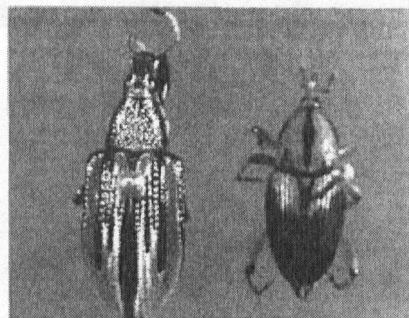


FIGURE 1. Left: Sugarcane rootstalk borer weevil, *Diaprepes abbreviatus* (L.); right: West Indian cane weevil, *Metamasius hemipterus* (L.)

ure 1 should help growers identify both species. □

Acknowledgements: I would like to thank R. Perdomo (Okeelanta Corp.), M. Ulloa (Osceola Farms), and S. Stein (Wedgeworth Farms) for their help and access to their farms. I would also like to thank J. Shine (Florida Sugar Cane League) for contacting and surveying growers fields.

REFERENCES

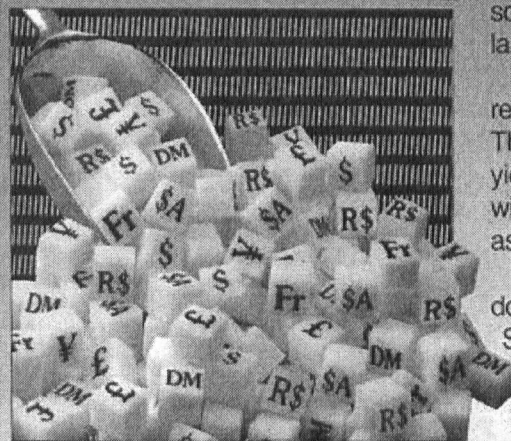
Beavers, J.B., R.E. Woodruff, S.A. Lovestrang, & W.J. Schroeder. 1979. Bibliography of the sugarcane rootstalk borer weevil, *Diaprepes abbreviatus*. Bull. Entomol. Soc. Am. 25:25-29.

Giblin-Davis, R., J.E. Peña, & R. E. Duncan. 1994. Lethal pitfall trap for evaluation of semiochemical-mediated attractions of *Metamasius hemipterus sericeus* (Coleoptera: Curculionidae). Florida Entomologist. 77:247-255.

Woodruff, R.E., & R.M. Baranowski. 1985. *Metamasius hemipterus* (Linnaeus) recently established in Florida. Entomology Circular 272. Fla. Dept. Agric. & Consumer Serv., Division of Plant Industry.

Woodruff, R.E. 1968. The present status of a West Indian weevil [*Diaprepes abbreviatus* (L.) in Florida (Coleoptera: Curculionidae). Fla. Dept. Agric., Div. Plant Ind., Entomol. Cir. 77:1-4.

Sweeten profits.



Today's automatic discharge centrifugals handle much larger volumes of sugar than ever before.

These processing advances have demanded that the quality and performance of centrifugal screens be improved, too.

As we have for 65 years, Ferguson Perforating has responded with centrifugal screens of the **highest quality** to handle the larger volumes.

Our Conical Slot Screens provide for the retention of more small grain crystals in the basket. The unique conical shape prevents clogging and yields a higher purity sugar. Used in conjunction with our woven backing screens, you can be assured of **high performance**.

Do as many sugar refineries and raw sugar mills do, **sweeten profits** with Ferguson Centrifugal Screens.

CALL TOLL-FREE 1-800-341-9800 (U.S.A.)



FERGUSON PERFORATING & WIRE CO.

131 Ernest St., Providence, RI 02905 U.S.A.
(401) 941-8876 TELEX: 927539 FAX: (401) 941-2950

• ROUND HOLE CENTRIFUGAL SCREENS • JUICE SCREENS

• MUD FILTER SCREENS • WIRE CLOTH