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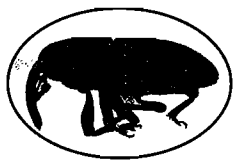
Columns



Features

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Departments

Cover

Louisiana sugarcane harvest
photo by Romney K. Richard

Bill White
Chris Carlton

Rootstock Weevils:
Out of Sight, Out of Mind or Emerging Pests

In Louisiana, three species of weevils form a pest complex that is causing increasing concern among researchers in Louisiana. The three species making up this rootstock weevil complex are: *Apinocis subnudus* (Buchanan), *A. deplanatus* (Casey), and *A. blanditus* (Casey) (Figures 1-3). The association of *Anacentrinus* (=*Apinocis*) *subnudus* with sugarcane in Louisiana dates back to 1910. It was considered an insect of minor importance until 1931, when a serious weevil infestation was found near Arnaudville, LA. Researchers investigating this outbreak collected a second weevil that was subsequently described by Buchanan (1932) as *Anacentrus* (=*Apinocis*) *deplanatus*. In 2011we added *Apinocis blanditus* to this complex based on specimens collected in pitfall traps placed in sugarcane fields. Specimens of these three species were identified based on the key provided by Buchanan (1932) and are deposited in the Louisiana State Arthropod Museum, Baton Rouge, LA. All three species are now included in the genus *Apinocis* based on nomenclatural changes proposed by Zimmerman (1994).

Much of our knowledge about the distribution and biology of rootstock weevils comes from the early literature. A number of weed species are reported as wild hosts. Among these weeds is vaseygrass, *Paspalum urvelli*, a common weed to Louisiana sugarcane fields. In sugarcane, eggs are laid singly in a small puncture made by the female weevil with her beak. Incubation requires from 4-16 days. The young larvae tunnel into the vegetative eyes or into the rootstock. It is unclear whether they feed on the roots or not, but anecdotal evidence suggests that they do. As in some fields, the cane may display drought symptoms if feeding is severe. The larval period ranges from 35-55 days during the summer. Pupation occurs in a cell constructed near the rind in 8-13 days. Adult activity and breeding are continuous year round, with adults living about 40 days.

Early accounts of weevil damage to sugarcane are limited and few recommendations for control given. During 1931, sugarcane was planted twice a year; during spring and fall. Damage to vegetative eyes was greatest in spring planted sugarcane and therefore it was suggested that spring planting should be avoided. One early publication reported that no control measures were known, but in case the damage should continue, experiments in control will be conducted. Apparently, damage did not continue as subsequent references to rootstock weevils in the sugarcane literature are scarce.

Why our sudden interest in rootstock weevils? Is it a case of out of sight, out of mind? That is, have weevil numbers been sufficiently low that they have gone unnoticed, and suddenly we are encountering an emerging problem? Hunter (2002) suggested that it is necessary to distinguish between cyclic and eruptive population dynamics to determine the ecological cause of pest outbreaks. Cyclic dynamics are recognized as predictable oscillations. In contrast, if the frequency of a pest outbreak does not remain constant over time, the pest is said to exhibit eruptive dynamics. Eruptive outbreaks are difficult to predict and ecological causes are harder to identify. Maybe our weevils are tracking some aperiodic ecological variable such as climate (e.g. drought, temperature). Or, perhaps our sugarcane variety composition has inadvertently shifted to weevil susceptibility, or susceptibility to a soil pathogen. Weevil feeding has been reported in the literature to provide a point of introduction for soil pathogens. In fact, it was the abnormal growth observed in the recently released variety HoCP 04-838 that first brought rootstock weevils to our attention. While investigating the cause of the abnormal growth, our plant pathology colleagues consistently found rootstock weevils in association with the apparently diseased plants.

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Out of necessity, we are taking greater notice of these tiny weevils and have begun research along several fronts. Unfortunately, soil insects are notoriously difficult to work on. Our first task will be working out efficient sampling methodology to determine field population densities. We have successfully used pitfall traps to determine the species composition of the pest complex. Also by extensive pitfall trapping, we have begun to look at seasonal distribution and abundance of weevils throughout the sugarcane growing area. Initial trapping shows that now, as in 1931, rootstock weevils are found throughout the cane growing area of Louisiana. And finally, we are learning to rear the weevils in the laboratory to conduct experiments in disease transmission and determining damage threshold levels. How much longer rootstock weevils will continue to be a con-

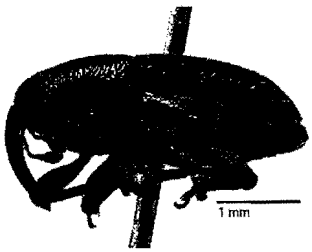

Figure 3. *A. blanditus*

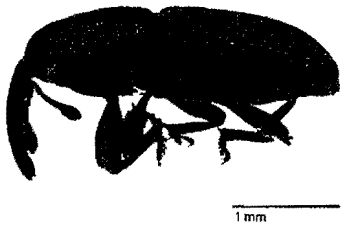

Figure 2. *A. deplanatus*

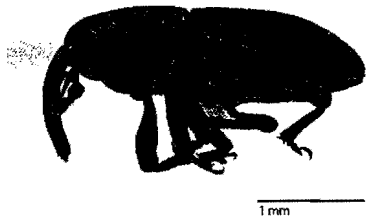

Figure 1. *Apinocis subnudus*

cern remains to be seen, but preemptive research into the natural history of these potential pests will put us in a better position to develop effective management strategies should they prove necessary.

Acknowledgement

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