

Monitoring Method and North Florida Phenology of Pecan Nut Casebearer¹

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The pecan nut casebearer, *Acrobasis nuxvorella*, is one of the most important early season pests of pecan. The larvae overwinter in hibernacula in pecan trees and emerge to continue feeding in early spring on buds and stems. The first generation larvae produced by the females from the overwintering larvae are the most devastating, as the females oviposit directly on the developing nutlets (Fig. 1). After the eggs hatch the larvae begin feeding on and destroy the nutlets. The distinctive signs of larval feeding damage are webbing and frass wrapped around the nutlets. A first generation nut casebearer larva (Fig. 2 and Fig. 3) can destroy all the nuts in one to several nut clusters. Nut casebearer populations may vary widely from year to year and from location to location. Populations fluctuate in response to the availability of nuts and other unknown factors. Larval parasitism rates are usually 10% or more. Two to four generations of nut casebearer may occur, but it is the first generation larvae that are usually the most damaging.

Recently a sex pheromone (attractant) produced by the female nut casebearer was identified, synthesized and tested for its attraction to males with



Figure 1. Pecan nutlets with the nutlet on the right showing a nut casebearer egg near the top. Credits: Division of Plant Industry

excellent results. Baited Delta traps (Fig. 4) that intercept flying male nut casebearer were placed in a pecan orchard in Monticello, FL from 1995-1999 (Fig. 5). The earliest male nut casebearer emergence observed in any year was April 5 while the latest first emergence was observed about 10 May. This is a 35

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day range in the emergence from year to year. This fact emphasizes how useful such monitoring and detection tools can be to growers for making management decisions. Remember that other areas of Florida, Georgia and Alabama will have different emergence patterns. Populations often differ in orchards in close proximity. Historical records suggest that the average peak oviposition date for Monticello, FL is May 18 but can vary by plus or minus 7-10 days.



Figure 2. Early nut cluster showing frass and webbing produced by nut casebearer larval feeding.

In addition to the timing of nut casebearer emergence, pheromone trap data may indicate the relative population levels of nut casebearer in the orchard. In the test years at Monticello only low populations were observed, as this is the male capture rate averaged for six traps (Fig. 1). In another commercial pecan orchard less than 10 miles away, trap counts often were > 10-15 males/night.

Growers and agents can refer to an article by M. Harris and other pecan entomologists including the author in the 1997 Proceedings of the Southeastern Pecan Growers Association for further information. Based on that article male moths emerge about 3 days before females and females require about 3 days for mating before laying eggs. Eggs require about 4 days before hatch and larvae feed on buds for 2 days before nut entry. Population buildup requires about 2-4 days. Adding all of these stage durations together provides an estimate that first nut entry takes place

about 12-16 days after the first male is trapped. Therefore, the decision as to whether the nut casebearer population in the trapped orchard warrants the application of a control tactic and the proper timing for it can be made appropriately and fine tuned as follows. Based on the trap captures, timing for examination of nutlets for eggs and nut entry can be timed properly (7-12 days after the first capture) and treatment decisions can be better timed. Because nut casebearer occur early in the season, it is wise to apply an insecticide only when necessary and to select an insecticide that will have the least impact on beneficials.

Nut casebearer does have natural enemies that may be affected by toxic sprays. In addition, applying chemicals in early season that adversely affect beneficials can induce outbreaks of foliage-feeding insects such as leafminers, aphids and mites. Our current knowledge of pecan physiology strongly suggests that pecan requires high quality foliage for the entire season to overcome the inherent tendency to bear in alternate years. See UF/IFAS pecan management recommendations for available management tools.



Figure 3. Larger nuts showing feeding damage by nut casebearer larva.

Growers may purchase the pheromone and traps from commercial distributors of such pest management products (ex. Trece, Inc. P.O. Box 6278, Salinas, CA 93912) and a few traps per cultivar

block can provide the required data on nut casebearer emergence. Nut casebearer populations in previous years provide some indication of potential current year populations. Using the traps over a period of years should enable the pecan grower to refine decision making concerning treatments for nut casebearer. For example low populations in years with high nut set may be advantageous because nutlet removal would reduce heavy nut set to a more appropriate level and maintain well-filled, high quality nuts. Use of control measures may not be appropriate in such a situation.



Figure 4. Delta sticky trap used with pheromone to monitor nut casebearer male emergence and flight.

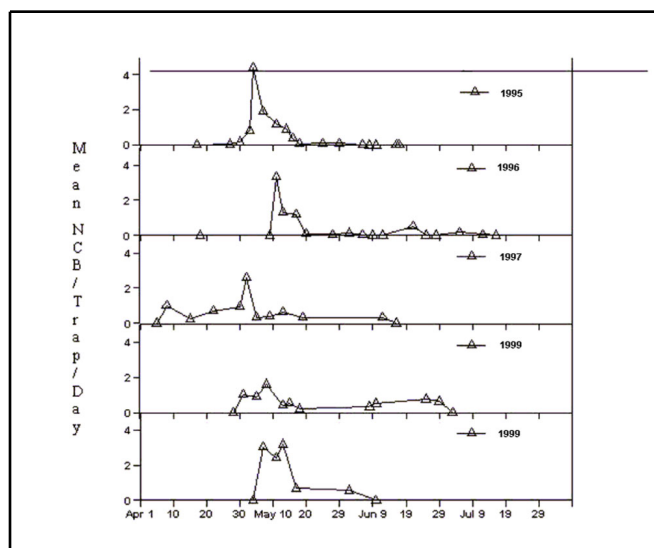


Figure 5. Mean number of pecan nut casebearer males/trap/day in Delta traps with pheromone at Monticello, Florida in years 1995 - 1999.