

# Hickory Shuckworm

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## Distribution:

The hickory shuckworm is distributed throughout most of the area where pecans are grown from South Carolina in the east to Texas and Oklahoma in the west. In Louisiana, the hickory shuckworm is found throughout the state.

## Description:

The adult hickory shuckworm is a small gray to smoky black moth about 3/8-inch long, with a 1/2-inch wingspan (Fig. 1). The moth is seldom observed because it is nocturnal. Even during the day its small size and inconspicuous coloration make it difficult to see. The larva of the hickory shuckworm range from 1/3 to 1/2-inch long. The body of the larva is creamy to dirty white, and the head is reddish brown (Fig. 2). It is similar in appearance to the nut curculio larva, except the hickory shuckworm larva has three pairs of legs located just behind the head while the nut curculio is legless.



Figure 1. Hickory shuckworm moth.



Figure 2. Hickory shuckworm larva.

## Life Cycle and Damage:

The hickory shuckworm overwinters as a mature larva within the shuck of the nut. Pupation occurs within the shuck in late winter or early spring. Adult emergence in Louisiana begins the first week of April. Moths that emerge in the spring before nut formation occurs lay their eggs on the foliage and on the galls formed by various species of phylloxera that attack pecan and hickory trees. Shuckworms hatching from eggs deposited on the foliage generally die before completing their life cycle, but larvae developing within phylloxera galls are able to complete their life cycle.



Figure 3. Egg hatch and point of larval nut entry.

The female shuckworm moth begins laying eggs on the nuts as they begin to form in the spring (Fig. 3). Egg lay continues throughout the summer until shuck-split. There are three to four successive generations of this insect each year. Emergence peaks occur in mid-May, late June, mid-August and early to mid-September (see Fig. 5).

The name hickory shuckworm comes from the fact that the larvae feed and develop within the shuck of the pecan. Several types of damage can be attributed to shuckworm larval feeding. The feeding of shuckworm larvae within the nut before the shell hardens results in premature nut drop. Damage resulting from the shuckmining activities of the larvae after shell hardening include poor kernel development, shuck sticking, scarring and discoloring of the shell, and delayed nut maturity (Fig. 4).



Figure 4. Hickory shuckworm damage.

### **Control:**

The historical seasonal emergence pattern of the hickory shuckworm at the LSU AgCenter, Pecan Research-Extension Station near Shreveport, Louisiana, is shown in Figure 5. The data used to compile this graph were collected from light trap catches over a ten year period at the station. Since emergence of the hickory shuckworm can vary from year to year, and from orchard to orchard, spraying should be timed in accordance with shuckworm activity within a given orchard. Shuckworm activity can be monitored

with light traps and by inspecting aborted nuts for signs of nut entry by shuckworm larvae (Fig. 3).

If you do not have access to a black light trap or to emergence data, you can generally obtain adequate control of the hickory shuckworm by making three insecticide applications. Make the first between June 25 and July 5 (sometimes coincides with 2<sup>nd</sup> generation pecan nut casebearer and with nut curculio emergence. The first of the remaining two applications should begin around August 15 (about half-shell hardening) with the final application following about two weeks later. This coincides with a period of peak shuckworm activity (see Fig. 5) and the stage of nut development where the greatest amount of damage to the nut from the shuckworm occurs. Reducing the infestation level at this time also reduces the number of overwintering larvae, thus lowering the infestation level for the following year.

Growers and homeowners without spray equipment may reduce shuckworm infestations by gathering and destroying nuts that drop prematurely in midsummer and pecan shucks at harvest.

For a list of insecticides that can be used for controlling hickory shuckworm and the rates of application for both commercial growers and homeowners refer to the Louisiana Recommendations for Control of Pecan Insects. This can be found at [www.lsuagcenter.com](http://www.lsuagcenter.com). When using insecticides be sure to check the pH of the water being used for spraying. The pH needs to be between 5.5 and 6.5 for optimum insecticide efficacy. Use of a buffering agent will help to maintain the desired pH once pesticides have been added to a solution.

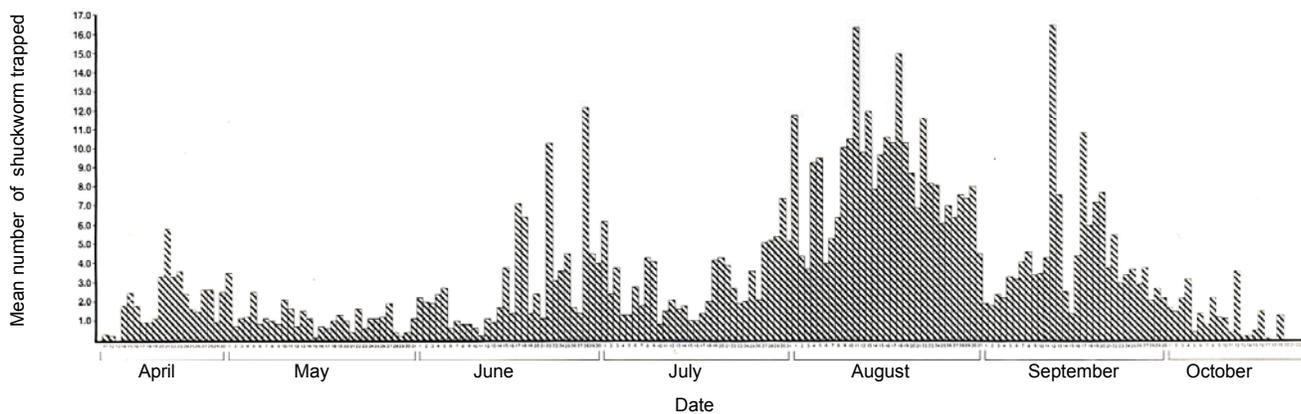


Figure 5. Seasonal emergence pattern of the hickory shuckworm at the LSU AgCenter, Pecan Research-Extension Station, Shreveport, Louisiana.