

LIFE HISTORY STUDIES OF THE PEACH BORER IN SOUTHERN ILLINOIS.

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Recent development in control measures for the Peach Borer is calling for more careful studies of the life history of this insect. Most Illinois peach growers have given up the worming-out method of destroying the borers, and are using the chemical, paradichlorobenzene, for this purpose. This material is most effective applied in the fall when the soil temperature is 60° F., or above. If applied too early the late hatching worms will escape the treatment. If applied too late volatilization will not take place with sufficient rapidity. A series of tests has been conducted to determine the latest dates on which the material should be applied, but the question of earliest effective dates has not been settled. This would necessitate a record of the emergence of the moths, with a knowledge of the length of the hatching period of the eggs. These studies were carried on during the season of 1924 and 1925 at Carbondale.

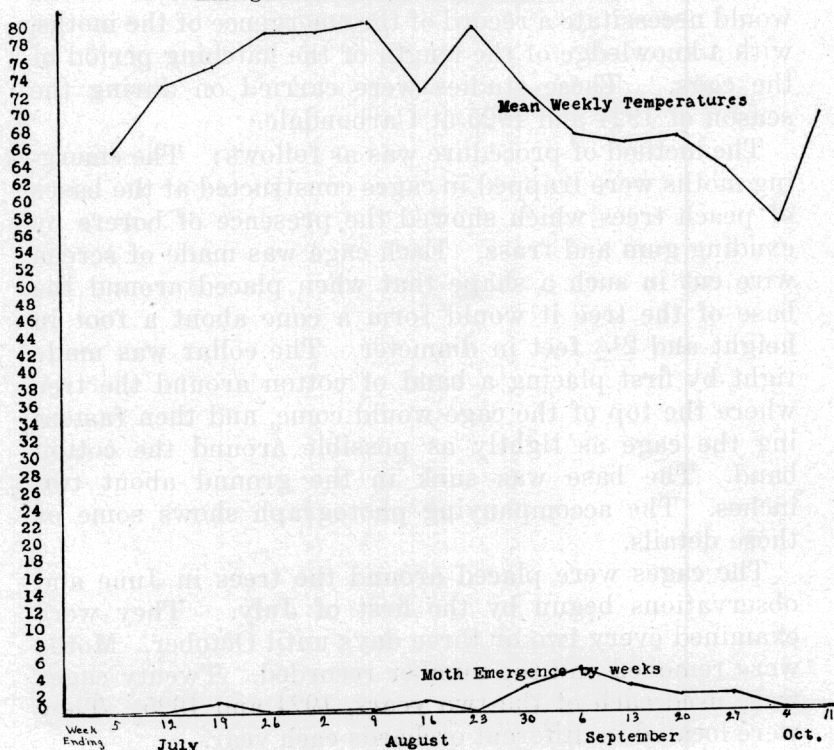
The method of procedure was as follows: The emerging moths were trapped in cages constructed at the bases of peach trees which showed the presence of borers by exuding gum and frass. Each cage was made of screen wire cut in such a shape that when placed around the base of the tree it would form a cone about a foot in height and 2½ feet in diameter. The collar was made tight by first placing a band of cotton around the tree where the top of the cage would come, and then fastening the cage as tightly as possible around the cotton band. The base was sunk in the ground about two inches. The accompanying photograph shows some of these details.

The cages were placed around the trees in June and observations begun by the first of July. They were examined every two or three days until October. Moths were removed and the number recorded. Twenty cages were used each of the two years, 1924 and 1925. They were located in different orchards each year.

The accompanying graphs show the emergence of the moths. The light emergence during 1924 can be largely accounted for by the selection of an orchard in which the trees did not contain a sufficient number of worms. It was during this first season also that a discovery was made which had some bearing on the total number recorded. It was found that if observations were made at intervals of even as short as two days, many of the moths, weakened by fluttering against the screen, would drop and be eaten, or carried away by ants or other predacious insects. It was decided for this reason to count each empty pupal case as representing an emerged moth.

In these charts the emergence is recorded by weeks. It will be noted that in 1924 the first emergence was in the week ending July 19, and in 1925, July 4. The last emergence was in the week ending September 27 in 1924,

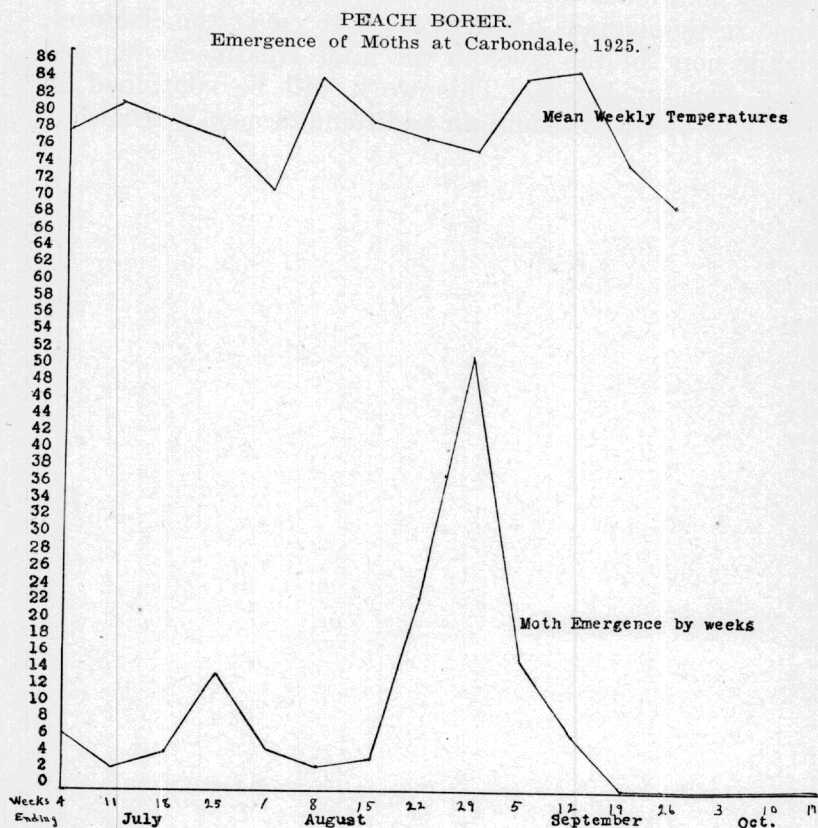
PEACH BORER.
Emergence of Moths at Carbondale, 1924.



and in 1925, it was the week ending September 12. Thus the entire period was two weeks earlier the second year than it was the first. The peak occurred September 6 the first season, and August 29 the second.

There appears to be some correlation between temperature and emergence. The variations in temperature have an immediate effect upon the pupa, but as the pupal period is at its shortest of considerable duration (at least two weeks), it does not show in the emergence until later. The charts show that each rise in temperature is followed about two weeks later by an increase in the number of moths emerging, and each drop in temperature by a corresponding decrease in emergence.

The immediate practical value of these studies to the peach grower lies in the information as to the best time



for treating for borers in his trees. The ideal time for this operation is the earliest date in the fall when all the worms have hatched. The length of the hatching period has been found to vary with the temperature, but studies in New Jersey have shown that with the cool nights of September and October, fifteen days are required for incubation. This means that during the past season which had been abnormally hot until the middle of September, the last eggs had hatched by September 26, and that in 1924, a cooler summer, eggs were not all hatched until October 11. Some observations had been made in 1923 tending to corroborate these conclusions. Peach trees that year were treated with paradichlorobenzene August 18, September 1, September 15, October 1, and October 13. Some of the trees treated on the first and third dates mentioned were found to contain borers above, or just in the mounds of earth made to cover the chemical, while none of the trees in the later treatments showed any such evidences. This work will be continued in 1926, in order to secure an additional season's record.



Cage used to trap Peach Borer Moths.