

## The Codling Moth Population for 1955

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These observations were made in the north central portion of Oklahoma. Apple and pear orchards are not abundant in this region, therefore the observations had to be centered in isolated orchards. Practically all of the field observations were made in the experiment station orchard near Perkins, due to its nearness and convenience. Codling moth studies in this orchard during previous seasons provided information on moth populations in preceding years.

Available information indicates that the moth population in this orchard reached a peak during 1951 and 1952. In those years it was possible to find as many as five and six over-wintering larvae beneath a single bark scale; and, during the ensuing growing seasons, 90 to 95 per cent of the fruits in the orchard were infested with the moth larva.

Changing of the spray routine, together with more thorough spray applications, and perhaps drier and more severe growing seasons, caused the codling moth population to start downward from the 1951-52 peak. The reduction of populations has been noted in particular while making collections for the hibernation cages. Where previously it was possible to find hibernating larva underneath the loose bark scales at the rate of one to five per scale, it now became necessary to examine 25 to 30 or more scales before a single larva was found. Corrugated paper bands attached around the tree trunks to trap the larva seeking shelter for hibernation also yielded a proportionately smaller number. Wormy or infested apples became less numerous. This decrease in population was first noted during the fall of 1953 and in the low infestation of fruits produced during the 1954 growing season. By the end of the 1954 growing season, difficulty was experienced in obtaining sufficient numbers of larva for the hibernation cages that yielded 1955 spring emergence records.

Conditions resulting from the severe freezes of March 22 and 26, 1955, are expected to reduce the codling moth populations to an even lower level in 1956. These freezes destroyed most of the 1955 crop of pear and apple, the favorite host plants of this insect. Thus adult females were forced to range over a wider area in search of food, thereby becoming more subject to a fatal accident before ovipositing.

Infestation counts made in an orchard where moth populations were normal but a shortage of suitable oviposition places existed could indicate higher populations than actually are present. Apparently the moths were forced to oviposit on the less desirable host plants or even plants that are entirely unsuitable for larval development. The less desirable host plants, such as haws and quinces, are not native to this area; the small number which do grow here were poorly fruited in 1955. Furthermore, climatic conditions also have been unfavorable for moth development in 1955.

The spring emergence records obtained from hibernation cages also indicate a lower moth population. Larva for the hibernation cages are obtained by two methods. One is the placing of corrugated paper bands around apple tree trunks. These trap the larva as they move down or up the tree; and the bands are collected and brought to the cages after all the apples are removed from the trees. The other method is collection of wormy apples during late summer and early fall. These are placed in the cages, where the larva move into hibernation material provided for them. No record of the number of larva collected by this method in past seasons is available. However, during the 1954 collecting period, more apples were collected and more corrugated bands put out than during any previous year. The bands were placed earlier in the season to insure trapping the first hibernating

forms. Despite this additional effort, the number of larva collected apparently was small, and the number of adult moths which emerged in the spring of 1955 was lower than at any time since this series of observations was started. The record by years is as follows: In the spring of 1952, 738 adults; in 1953, 665; and in 1954, 716; and in 1955, only 60.

The time of appearance of the adults in the spring of 1955 was about normal as compared to previous years. The first adult emerged on April 14, at which time 3 adults were taken in the cage. In the spring of 1954, the first adults appeared 5 days earlier, when 5 adults appeared on April 9. The comparable dates for 1953 and 1952 were April 17 and April 30, respectively. The last of the overwintering adults emerged in the cage on June 4, 1955. This was somewhat earlier than during previous seasons, although not unusual. Comparable dates for 1952, 1953, and 1954 were June 25, June 10, and July 1.

The apple crop and moth population in the orchard under observation was so small in 1955 that it did not seem feasible to continue observations aimed at ascertaining the emergence date for the first generation of adults. Collection of overwintering larva for the 1956 spring emergence records likewise had to be abandoned because of the small fruit crop and low codling moth population.

#### SUMMARY

A study on the spring emergence date of overwintering codling moth adults, together with their abundance, has been in process since 1951. Extremely high moth populations were observed in the Oklahoma Experiment Station orchard during 1951, 1952, and 1953. The greatest numbers of moths were observed during the period of 1951 and 1952. During the 1953 season the population began to decline and reached a low during 1955. Climatic factors during the 1955 season were unfavorable for the normal development of the codling moth. The indications are that because of unfavorable factors the moth population in the area under consideration will be reduced to an even lower number for the 1956 season.