THE CAUSE OF THE OCCURRENCE OF OUTBREAKS OF THE PINE-SHOOT MOTH (EVETRIA BUOLIANA SCHIFF.) AND THE POSSIBILITY OF CONTROLLING IT

by

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(Summary of the preceding paper.)

The economical importance of the Pine-shoot moth is very great in many parts of the Netherlands, especially on dry soil. For this reason the pest was investigated.

In our country the insect's way of living does not differ from what has been described by research-workers from other countries. The moths fly towards the end of June or the beginning of July; the eggs hatch in July; the young larvae hibernate in the buds; the next spring they bore into new buds wherein they continue their development or they bore into the base of a young shoot, thus causing the damage typical of their species. If no young shoots are bored into, the damage is indistinguishable from that caused by Evetria turionana Pupation takes place in a shoot or bud which has fornerly been fed on.

Practically always a plague of Evetria follows one caused by Brachyderes incanus.

In some years plagues occur in many parts of our country (general plagues), in other years only a single wood is affected (local plagues). As is evident from the graph [1]) on p. 19 these general plagues are closely connected with drought during the month of July; the local plagues occur in years when July is dry as well as in years when it is wet. They are often connected with a plague of Brachyderes incanus.

From this we drew the conclusion that the July rains probably de not directly influence the young larvae because otherwise local plagues would be impossible in wet years. They do influence them indirectly, however, as in wet years the trees have a greater resistance with regard to the infection. In July the eggs are laid and the young larvae bore themselves into the buds. For this reason we made a series of observations with regard to the behaviour of the young larvae at the time of boring. These observations made it acceptable that it depends on the degree of moisture of the tree whether the young larvae can bore themselves into the needles, as is evident from the table below. During these observations the weather was damp so that the trees had no lack of water, even on the poorest soil.

Place.	Bored in.	Of these found in shoot.	Not bored in.
Well-growing wood.	0	0	10.
Badly-growing wood, on shifting sand. .	1	1	9.
On cut-off branch, left dry 1 day. . .	5	0	0.
Well-growing tree.	0	0	2.
Cutt-off branch.	2	0	0.
Well-growing tree.	0	0	2.
Cut off branch.	2	0	0.
Well-growing tree.	0	0	1.
Cut-off branch.	1	0	0.

Starting from these facts it was possible to give an explanation of the origin of most large and small outbreaks, known in our country.

In order to prevent plagues it will be necessary to take measures to make the degree of moisture of the trees in the month of July as favourable as possible. Deep digging, which desiccates the soil, facilitates the occurrence of the plague; leaving the soil uncovered does the same, a.o. as it makes the occurrence of Brachyderes incanus possible. It is therefore desirable for the woods to be closed in as soon as possible.

As in normal years only the forerunners on poor soil, which suffer most from the desiccating influence of the wind, can be affected, it is of importance to remove them, in order to make the Evetria population as small as possible so that the plague may develop more slowly in dry years.

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[1]) In this graph in which the rainfall in July, and the plagues since 1840 have been indicated, | means a general plague, ⊤ means a general plague of little importance, | a local plague connected with Brachyderes incanus, Y a local plague in which no connection with some circumstance or other could be proved. Of the plagues between 1918 and 1926 it cannot be said with any certainty whether they were by evetria buoliana or Evetria turionana.