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Sweet Potato Root Borer

BY
W. E. HINDS,
Entomologist

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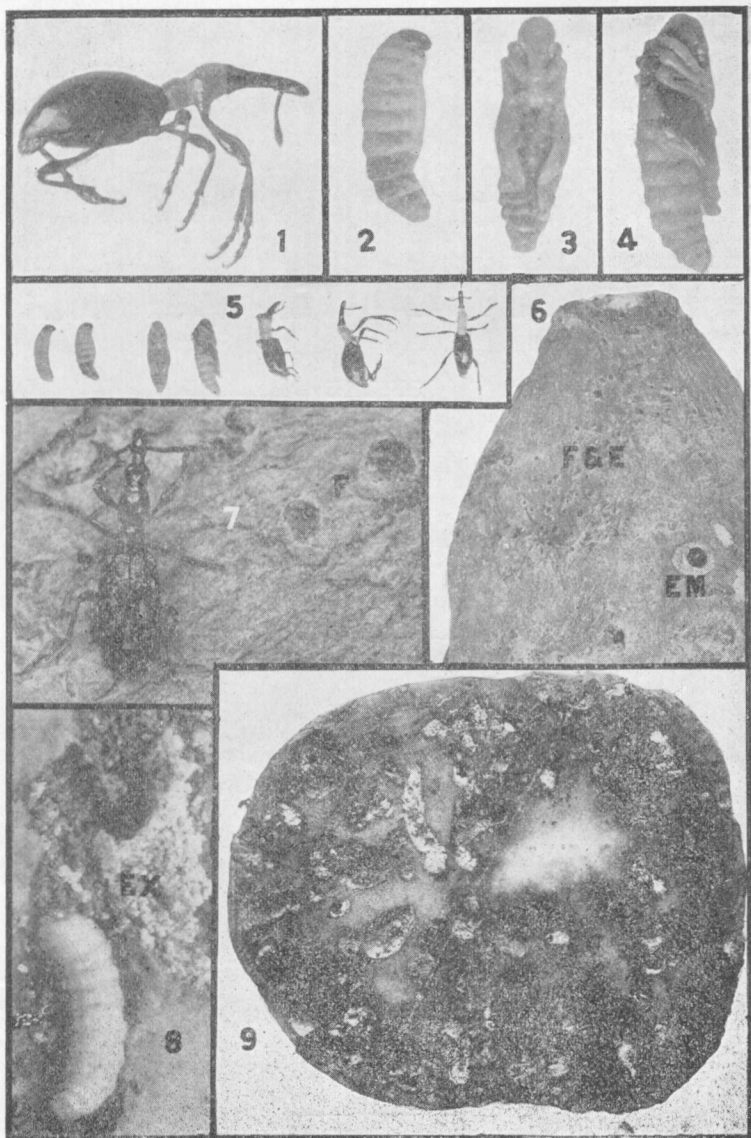


Fig. 1, adult; fig. 2, full-grown grub; figs. 3 and 4, pupae; fig. 5, developmental stages except egg; fig. 6, appearance of work on stem end of potato; F & E are feeding and egg punctures; EM is emergence hole; fig. 7, adult on surface of potato; F is feeding puncture; fig. 8, grub in burrow; EX is typical excrement particles; fig. 9, cross section of badly infested potato. Figs. 1-4, 7 and 8, enlarged 6 diameters; fig. 5, 2 diameters; figs. 6 and 9, natural size. All original.

SWEET POTATO ROOT BORER

(*Cylas formicarius* Ol.)

By

W. E. HINDS, Entomologist.

INTRODUCTION

While the presence of this pest in Alabama has been suspected, the investigation of many rumors and rather extended inspections made in Baldwin, Escambia and Mobile Counties before and during the digging season of 1917 and occasional inspections of potatoes at markets have failed to reveal the species.

The continued success of sweet potato growing depends upon keeping this pest out and it is in line with the best interests of both the growers and users of sweet potatoes that the quarantine herein announced be most carefully enforced. This Circular is intended therefore primarily as a warning and to safeguard as much as possible the sweet potato industry of the future. The crop of 1917 was valued at ten million dollars and there is every reason to believe that the crop of 1918 will be yet more valuable.

All growers and users of sweet potatoes are therefore warned to be on the lookout for this pest and to REPORT ANY SUSPICIOUS SPECIMENS OR INFESTED POTATOES. Send them by mail in tight packages that cannot be crushed to the Entomologist at Auburn for examination and report. If an infestation should occur it may be stamped out by prompt and intelligent action.

SAFEGUARD PLANTING STOCK

This insect can fly but does so very rarely. It is spread almost entirely by movement of infested planting stock, hence the fundamental need of using extreme care in planting only clean, sound stock.

In accordance with the quarantine regulations published herewith (See Rule 23, Section 3 on page 7) every shipment of sweet potato planting stock coming into Alabama from any other state must bear a certificate tag showing (1) that inspection has been made, (2) that no trace of sweet potato root borer was found on the premises or among the stock where shipment originated and (3) that shipment did not originate within five (5) miles of any point where this insect is known to occur. If a grower cannot give such a certificate Alabama planters do not want, and cannot now get his stock, either by purchase or as a gift.

If other states should make similar requirements re-

garding Alabama grown sweet potato planting stock, growers should apply at once to the State Horticulturist, Auburn, for an inspection so that proper certificates can be arranged for and embarrassing delays avoided. So far as we know at the present time all Alabama grown stock is perfectly safe and the culture of bedding or planting stock in this State should be increased to supply Alabama demands. This is a possible and profitable undertaking. Fortunately, most of the Florida growers are yet free from this pest and stock shipped under certificate may be obtained from them but it will certainly prove far safer in the long run if we can produce all of our own planting stock here in Alabama. Only in this way can we hope for long continued freedom from the sweet potato root borer.

STAGES OF THE INSECT

The sweet potato root borer is a weevil, having a snout something like the boll weevil (Fig. 1). The adult is one-fourth inch long, of a steel blue color on the head and hinder part of the body with the central portion, or thorax, and the legs redish orange in color. There are four stages in this weevil as with the boll weevil. The eggs, or first stage, are not conspicuous as they are laid in cavities eaten into the vines or "tubers." From the eggs come the second stage or grubs (Fig. 2), which look very much like small or partly grown boll weevil grubs. The third stage, or transformation stage which is called the pupa (Figs. 3 and 4), occurs also inside the vines or "tubers," and from this comes the fourth stage which is the adult. Only the adults are ever seen outside the "tubers" (Fig. 7). The period from egg to egg in succeeding generations averages between five and six weeks. One female may deposit from 100 to 150 eggs.

NATURE AND EXTENT OF INJURY

The adult insect may lay eggs in the base of the vine, causing the dying of vines in many places, but most of their work is in the roots. Heavily infested roots become so obnoxious that even hogs refuse to eat them (Fig. 9) and the loss is then complete. Damage by this insect will probably always be most severe near the Gulf Coast but the species does damage in Texas at points hundreds of miles inland.

The presence of this weevil may be determined from finding (1) adults; (2) such punctures, especially around the stem end of the potato, as shown in Fig. 6-F and E; (3) Exit holes as shown in Fig. 6-EM opening from (4) irregular burrows which are packed with particles of

excrement having an elliptical form characteristic of this species. (Figs. 8 and 9).

ORIGIN AND DISTRIBUTION OF SPECIES

This pest is not a native of the United States but has been introduced from West Indian Islands into the Gulf States. It was first noticed near New Orleans in 1877 and now occurs quite widely distributed through Louisiana, Texas and along the East Coast of Florida. It is found on the West Coast of Florida in Hillsboro, Pinellas and Manatee Counties, also in Baker County on the northern boundary of Florida and in Charlton County, Georgia, adjoining. It has been found recently in South Mississippi near the Gulf Coast in Hancock, Harrison, Jackson and Pearl River Counties. Jackson County, Miss., is the point of occurrence nearest to Alabama so far as is now known.

GENERAL CONTROL METHODS

Control methods will consist principally of the following: 1. Infested vines should be burned. 2. Infested "tubers," where the infestation is very light, should be boiled and fed to hogs. Heavily infested "tubers" should be boiled or burned to destroy them completely. Only sound potatoes may be utilized for human food. 3. All potatoes from any probably infested locality should be disposed of locally, or if shipped at all, it should be to markets located in large cities, particularly in the northern states in territory where sweet potatoes are not grown. Do not run the risk of inflicting this pest on any other sweet potato growers even in states where there may be no law to protect them. 4. This insect is spread principally through the planting of infested stock, therefore extreme care should be exercised in selecting only sound, uninfested, Alabama-grown stock, or certified stock from other states for future planting. 5. Rotation of crops will be advisable so that sweet potatoes will not be grown upon the same ground two years in succession, as this would certainly result in re-infestation where the borer occurs. Vine cuttings are safer than draws or slips. 6. Deep planting and level cultivation helps to protect the "tubers" in the ground. 7. Storage houses keep the "tubers" better than do banks and potatoes in houses can be fumigated and handled much better if infested. Storage houses should be well cleaned and disinfected by burning sulphur in them after the crop has been moved and before a new crop is stored therein. This kills insects, fungi and mice.

ALABAMA STATE BOARD OF HORTICULTURE
 RULES AND REGULATIONS RELATING TO SWEET
 POTATO ROOT BORER

(*Cylas formicarius* Ol.)

Whereas the so-called sweet potato root borer (*Cylas formicarius* Ol.) is known to be a serious insect enemy threatening the sweet potato growing industry and,

Whereas this insect is known to be present and doing serious damage at numerous points in Texas, Louisiana and Florida as well as in four counties in Mississippi and one county in Georgia and also in Cuba, Porto Rico and other West Indian Islands and Hawaii, China and other foreign territory and,

Whereas this dangerous sweet potato insect is not now known to be present at any point in Alabama, but is liable and likely to be introduced from points where it does now occur if the transportation of infested sweet potato tubers, draws, slips, vines, etc., also of roots and vines of the common field morning glory and of the so-called seaside morning glory, or any other plant within which this species may occur, remains longer unrestricted, therefore,

Be it resolved that for the protection of Alabama sweet potato growers against the introduction of the sweet potato root borer from infested territory without this State, and to guard against its spread within this State, (if at any time it shall be found herein) the Alabama State Board of Horticulture hereby declares the sweet potato root borer (*Cylas formicarius* Ol.) to be a dangerous insect pest and therefore declares and publishes the following quarantine, Rule 23 with regulations, in accordance with Act H. 1277, of the Legislature of Alabama, Code of 1907, p. 823, and for the execution of these Rules and Regulations the State Horticulturist and his authorized deputies and inspectors, including the Entomologist of the Alabama Experiment Station and his assistants, shall have all legal power and authority and shall be accorded all privileges and assistance conferred by said Act establishing the Alabama State Board of Horticulture. Appeals from the decisions of an inspector shall be made in such manner and violations of these Rules and Regulations shall be subject to such penalties as are provided for therein.

Rule 23, Section 1. QUARANTINED TERRITORY DEFINED. Territory now known to be most seriously infested by the sweet potato root borer and against

which a strict quarantine shall be enforced includes all portions of Texas and Louisiana lying south and west of the Red River and all portions of Louisiana lying south of latitude 31 degrees, also the following counties in the states named: Mississippi, Counties of Hancock, Harrison, Jackson and Pearl River; Georgia, Charlton County; Florida, Baker, Volusia, Brevard, St. Lucie, Palm Beach, Broward, Dade, Monroe, Manatee, Pinellas and Hillsboro, also against Cuba, Porto Rico and all other West Indian Islands and Hawaii and any other known infested country or area.

Furthermore, all territory will be considered dangerous, and these quarantine regulations shall apply to any point or premises, where sweet potato stock is grown within five (5) miles of any known point of infestation. The State Board of Horticulture may at any time proclaim and publish through its Secretary additional territory wherein this sweet potato pest is found and reported by competent and satisfactory authority, or wherein there is strong reason to believe that the insect actually occurs although not yet discovered, as dangerous territory, and therefore subject to these quarantine regulations.

Section 2. PROHIBITED MATERIALS In order to prevent the introduction of the sweet potato root borer, or its spread, should the pest become established at any point within Alabama, it is hereby ordered that no sweet potato "tubers," plants, vines or parts thereof, or any morning glory (including the so-called seaside morning glory) vines or roots thereof, originating within the territory described in Section 1, grown upon premises known to be infested by the sweet potato root borer, may be brought into the State of Alabama or distributed within the State by any person, means or method whatsoever, except as may be specifically authorized by the State Board of Horticulture.

Section 3. SWEET POTATO PLANTING STOCK GIVEN STATUS OF NURSERY STOCK. All sweet potato stock intended for planting purposes, (including "tubers" or draws for bedding, slips, vines, etc.) and offered for sale or gift by growers or dealers is hereby given the status of what is commonly called nursery stock and shall be subject to similar requirements of inspection, certification, transportation and other regulation as now enforced by the Alabama State Board of Horticulture for nursery stock. All movement of such sweet potato planting stock into the State

of Alabama from any other State is hereby prohibited unless shipment has attached thereto a proper certificate, of such form as is commonly used with shipments of nursery stock, showing (1) that inspection has been made by proper authorities at point of origin and (2) that such inspection revealed no trace of sweet potato root borer and furthermore (3) that stock covered by such certificate did not grow or originate at or within any territory described in the foregoing Section 1. This Section 3 shall apply also to Alabama grown stock when and after the sweet potato root borer shall have been found present in this State by competent authority.

Section 4. INSPECTION OF SHIPMENTS AND PREMISES. Any shipment consisting of or containing sweet potatoes or other materials specified in Section 2 or any other product or material liable to contain or to aid in disseminating the sweet potato root borer, entering Alabama from any other state or grown within the State of Alabama shall be subject to examination and inspection by any authorized deputy or inspector of the Alabama State Board of Horticulture wherever found within the State of Alabama, and if found infested by this insect in any stage of its development the shipment containing such infestation, or the entire crop, growing or harvested, shall be held subject to confiscation and shall be so treated and disposed of as the inspector may direct.

Section 5. UNLAWFUL TO RETAIN LIVING SPECIMENS. It shall be unlawful for any person, except qualified and authorized inspectors, to bring into the State of Alabama or to have or retain in their possession knowingly while in this State living specimens or any living stage of the sweet potato root borer or sweet potatoes or other materials known or believed to contain any living stage of the insect. Specimens suspected of being the sweet potato root borer should be immediately killed (by dropping them into hot water, kerosene, alcohol, formalin or similar killing material) and should then be mailed in a tight, strong package that will not be crushed in the mails to the State Entomologist, Auburn, Ala., for identification.

Section 6. TIME EFFECTIVE. The foregoing rules and regulations concerning the sweet potato root borer shall take effect on and after February 1, 1918, and shall be substituted for regulations passed by the Alabama State Board of Horticulture under date of December 8, 1917.