

SOURCES OF INFESTATION OF *THRIPS TABACI* IN IOWA

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While employed as entomological assistant by the Iowa Experiment Station during the summer seasons of 1917-'18-'19 the writer was engaged in investigations of the Onion Thrips. During these investigations the following data were of particular interest in their bearing on the problem. In the vicinity of Davenport, Iowa, some five hundred acres are devoted to onion culture. From five to ten percent of this acreage is planted in set onions for the early market while the larger amount is grown from seed.

Records show that the thrips will establish themselves and begin breeding on set onions from two to three weeks earlier than on seed onions. From our life history studies we found fifteen days to be the average life cycle for *Thrips tabaci* during the last two weeks in June.

Thus the thrips have an opportunity to produce an early generation on the set onions. These will infest the seed onions in far greater numbers than would be the case were there no set onions grown in the neighborhood. Consequently, wherever set onions are planted in the vicinity of seed, they have proven a source of infestation for the later crop and it is doubtful whether the larger returns realized from the early crop compensate for this damage.

On June 24, 1919, the writer was called to investigate a report of thrips infestation in a 5 acre field of seed onions near Davenport. The onions in an area covering 4 square rods in the western corner of the field showed the characteristic yellowish "blight" which always indicates a severe infestation of thrips. This same field had been visited in the summers of 1917-'18 and was practically free from thrips both years. Across the fence from the infested corner was a 10-acre field of alfalfa which had been planted in 1918. This field had been in corn in 1917. The nearest field of onions to the west was two miles distant. On June 22, two days before the visit mentioned, the first cutting of alfalfa had been taken off. While the alfalfa was being cut the air was filled with flying thrips. This was mentioned especially by the farmer across the road who noticed them alighting on his clothing. The prevailing wind that day was from the east. Considering the above facts, it is evident that the alfalfa must have been the place of hibernation for the thrips and when this was cut they were induced to migrate. Since these insects fly with the wind they would only be carried over the west corner of the onion field. The resulting spread in this field was traced

from day to day as shown by the accompanying diagram (Figure 11). By the end of three weeks practically three-fourths of the field had been damaged.

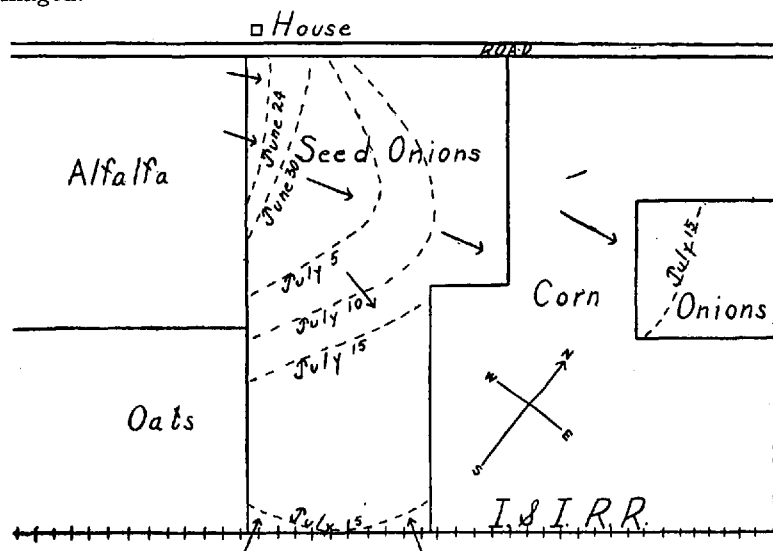


Fig. 11 Diagram illustrating infestation of onion field by *THRIPS TABACI* which had hibernated in field of alfalfa.

It is interesting to note in this connection that an adjacent cornfield did not serve as an obstruction to the spread of thrips as has often been supposed. By July 15, not only was the north end of the field covered by the pest, but also an area of "white blast" was to be found on the west side of a smaller field beyond the corn. The thrips had moved over the corn from the large field already mentioned. Control measures were attempted by the use of two knapsack sprayers, applying the nicotine sulphate spray advised by the U. S. Dept. of Agriculture, but negative results were obtained. Three hundred bushels of onions were harvested by this man from the five acres. This represented a loss of 75% over his 1918 crop. This loss was directly due to the infestation, since surrounding fields which were free from thrips yielded as much as four hundred bushels per acre under the same conditions of temperature and precipitation. Adults of *Thrips tabaci* were found in the alfalfa blossoms July 30 after the 1919 onion crop was harvested. It will be interesting to determine whether or not thrips will continue to winter over in the alfalfa field in the future and thus continue to menace the onion crop in that vicinity.

One serious outbreak of thrips in a field of set onions near Davenport was directly traceable to the fact that adjoining the sets the grower had six rows of perennial multiplier onions. The thrips had wintered over on these and thus had an opportunity to begin breeding early. By June 19, they had spread over the first twenty rows of set onions seriously checking their growth. The further spread in this field was checked by the use of a Hardie barrel sprayer with hose extension to run between the rows. Nicotine sulphate-soap formula was employed.

Another source of spread was the greenhouses of the Davis Floral Co. near Davenport, Iowa. This concern is a large producer of hothouse tomatoes and cucumbers. Here the thrips had a chance to breed on the cucumbers through the winter and in the spring they spread from the houses to onion fields in the neighborhood. The first infestations noted in the fields in three different directions from the greenhouses were, in every case, on the side of the field nearest the greenhouses. Then, too, these attacks occurred from two to three weeks earlier than the infestations in other sections of the onion growing district. Attempts made by this company to grow onions in the near vicinity of the houses failed because of this early infestation by thrips which had emerged from the cucumber houses after breeding there during the winter.

One field of seed onions was visited in Mitchell County, Iowa, on August 26 where the source of infestation was very evident. This field of 10 acres was bordered along the east, south, and west sides by spruce trees forming a windbreak. At the east end of the field, well under these spruce trees, was a long pile of refuse where the tops and screenings of the 1918 season had been thrown when hauled from the field. An area heavily infested by the thrips was found to extend around the three sides of the field bordered by the spruce, but this area extended in the farthest at the east end. The thrips had evidently wintered in this pile of refuse and in the matted grass under the spruce.

A few other sources of infestation might be listed in addition to those already enumerated. In all cases they were factors because they had furnished protection to hibernating adults during the winter. In one field an area bordering an implement shed was the first part to become affected by the thrips. The tops of these onions were noticeably yellow while the rest of the field was still green. Upon examination, the tops of the onions near the sheds were found to be swarming with thrips whereas these insects could only be found deep in the sheaths of the onions over the rest of the field. In a field adjoining an orchard, the semi-circular region of "blast" appeared bordering the orchard. Where bluegrass and weeds along creeks, roads, or railroads were not burned,

an infestation usually resulted in the bordering onion fields. One field which bordered the railroad was practically free from thrips in 1919. When the grower was asked about his practice as to this, he answered that if the railroad company did not burn the grass in the fall and spring he always made it his business to see that it took fire. The matter of destruction, where possible, of places of hibernation is a phase of the problem of control which has been neglected too often by the growers, and yet it is one of the most powerful factors. Elimination of the sources of infestation is far easier and more economical than checking the pest after the outbreak begins.

WHITE-ANT-PROOF WOOD FOR THE TROPICS

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It is well known that white ants or termites are extremely destructive in the Tropics and that the woodwork of buildings and furniture must be constructed either of woods naturally resistant to attack or of woods chemically treated to prevent attack and rapid destruction.

Foreign manufacturers advertise "ant-proof" furniture for South American trade; American manufacturers have, as yet, not seriously competed.

Wood-pulp products, such as composition, ply and laminated wall boards, manufactured in the United States, also demand chemical treatment before they can be used in the Tropics.

Rather discouraging to American manufacturers, is the fact that due to spoiling the wood for fine finishing, cabinet woods can not be treated by the usual effective chemicals. A solution is given in the use of ant-proof woods imported from South America and other tropical countries as veneers glued upon cores of cheap American woods chemically treated. This well-known expedient is satisfactory, but there are other solutions of the problem.

A number of woods grown in the United States are very resistant to attack by white ants. Hence, since many of these woods are suitable for use as veneers, it is not necessary to import timber from the Tropics.

Furthermore, there is a chemical treatment for cabinet woods that, while it will somewhat darken the wood, if the wood is properly treated, permits shellac or varnish to adhere, and a suitable finish can be obtained. Wood treated with this chemical is both white-ant-resistant and