New York State Integrated Pest Management Program

Effect of Barley Windbreak Density on Onion Maggot Damage

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Introduction:

Many onion growers in Central New York have adopted the practice of interseeding barley with the onions at planting. Without the barley, dry and windy conditions in the spring can result in severe wind erosion of muck fields. Erosion is often so severe that entire fields have to be replanted. An added disadvantage is the loss of productive soil.

Barley germinates quickly and grows vigorously. The young barley plants help prevent wind erosion, and protect the young onion seedlings from damaging winds and "blasting" with windborne soil particles. Once onion seedlings are firmly established the barley is killed with a grass herbicide (Fusilade, Prism). These herbicides cause the barley to stop growing quickly after application, but barley typically does not die for another 10-14 days.

Growers are reporting that onion maggot flies will spend more time in the onion fields in the presence of a barley nurse crop. This can be explained by the fact that insects are very susceptible to dessication. Adult onion maggot flies need to drink frequently and need to conserve water as much as possible. This is illustrated by the fact that spray recommendations for onion maggot control suggest that growers spray in early morning, when dew is still in the field, or in late afternoon/early evening when moisture levels are rising again (Cornell Recommendations). There is usually very little fly activity in onion fields during warm, dry days.

When onion maggot flies are faced with warm and dry conditions they will seek shelter from dessication in dense vegetation, such as grassy borders or nearby hedge-rows. When a dense planting of barley is present in the field, however, flies will not have to leave the onion field. Mating and oviposition can take place in shelter directly surrounding the onion plants.

Personal communication with growers indicates that before the use of barley nurse crops was adopted, growers could easily "scout" their fields for onion maggot damage by driving around the perimeter of the fields. Onion maggot damage would be limited to parts of the field bordering hedgerows and woodlands. After planting of barley nurse crops became widespread, onion maggot damage was not limited to field borders, but was spread evenly across the field.

In this report, we will examine the effect of the presence and absence of a barley nurse crop on the number of onion maggot flies in onion fields. We will also look at the effect of planting density of the nurse crop on the number of onion maggot flies in onion fields.

For a printed copy of the entire report, please contact the NYS IPM office at:

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