ONION MAGGOT AND ONION THRIPS OVER FORTY YEARS OF IPM

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Introduction
An integrated pest management (IPM) program for onions began as a pilot project in the Holland Marsh, Ontario, Canada, in 1980. The IPM program has continued, with a few breaks, since then. The main onion insect pest in 1980 was onion maggot (Delia antiqua). Cutworms (Noctuidae) and onion thrips (Thrips tabaci) were considered occasional pests. Onion maggot flies are monitored with yellow sticky traps and damage is assessed in grower fields. Onions are scouted for thrips twice a week.

Onion Maggot (Delia antiqua)

A. Onion maggot larvae
B. Bulb with onion maggot damage
C. Dying
D. onions due to onion maggot feeding
E. Many of onion flies caught on a yellow sticky trap
F. Few onion flies on sticky traps. Insert, onion maggot fly

Onion Thrips (Thrips tabaci)

A. Thrips on onion leaf. Insert, adult thrips with Stemphylium conidia
B. Severe thrips damage in an insecticide trial
C. Close up of onion thrips and feeding damage on leaf

Summary
Onion fly populations have decreased over time. Population highs were over 100 flies per trap per day in 1981, with most fields having over 20/trap/day. In 2020, the highest onion fly counts were 13/trap/day and most fields had less than 5/trap/day. Insecticide foliar sprays have been replaced by seed treatments clothianidin and imidacloprid. The reduction in onion fly populations is interesting, but the current levels can still cause over 50% damage in untreated onions. The spray threshold for thrips was increased from one to three thrips per leaf, as the newer insecticides spirotetramat and spinetoram are very effective. In 2021, thrips counts were below the spray threshold throughout the season.

Conclusions
The IPM program, in combination with effective insecticides, has reduced the populations of insect pests and reduced the amount of insecticide applied to onions. Scouting for thrips continues to provide valuable information for onion growers.