

Impact of Thrip Populations in Canola

Dr. Owen Olfert, Dr. Bob Elliott and Murray Braun, Agriculture and Agri-Food
Canada, Saskatoon

Project Code: CARP-SCDC-11/00-06

Final Report: May 2002

Thrips feed on flowers and buds of a range of crops. In canola, pods damaged by thrips are often curled and tend to drop prematurely. Although the research showed insecticide treatments could control thrips for a short time, there were no significant differences in yield between treated and untreated plots. Plant sampling also proved to be a better monitoring tool than sweeps.

Flower thrips (*Thysanoptera*) are pests of a broad range of plants including cereals and broadleaved crops such as canola. Thrips are minute, slender-bodied insects with rasping-sucking mouthparts and feed by rasping the surface of canola buds and sucking up plant fluids. Thrips have six life stages: egg, two larval stages, a prepupal and pupal stage and an adult. Both adults and nymphs cause damage by feeding on the flower and buds. In canola, pods damaged by thrips are often curled and tend to drop prematurely. Some species, such as *T. vulgatissimus* have been credited with contributing to pollination.



Canola Damage

Source: Saskatoon Research Centre



Adult Thrip

Source: Canola Council of Canada

Limited surveys in 1999 in Saskatchewan and Alberta indicated that the predominant species were *Frankliniella tritici* (flower thrip) followed by *Thrips tabaci* (onion thrip) and *T. vulgatissimus* (no common name). The density of thrip populations was estimated by counting the number of thrips on 20 cm plant stalk or raceme samples. In 1999, the thrip density ranged from 2 to 44 thrips per raceme, compared to a density of 2 to 120 thrips per raceme in 2000. The estimated damage based on curled or missing pods ranged from an average of 2 to 40 % in 2000.

The objectives of this study were to develop monitoring protocols for thrips in canola and relate population densities to damage symptoms, and to assess the economic impact of thrips in infested fields of canola by comparing chemically-treated plots with check plots. Three canola fields located in central Saskatchewan near Muenster with low, medium and high density of thrips were selected for the study in 2001.

Preliminary surveys found that thrip population densities were significantly lower in 2001 than 2000, ranging from 0.7 to 17.4 thrips per raceme compared to a range of 2 to 120 thrips per raceme in 2000. Using long-term weather averages, growing season conditions in 2001 were 110% normal for temperature and 54% of normal for precipitation. These conditions affected crop development and thrip population dynamics. In dryer areas of the province, canola crops were under some moisture stress during the growing season. However, the above-average air temperatures would have favored thrip development. Development from egg to adult takes approximately 19-20 days at 20 C, but only 13-14 days at 25 C.

Some plots received insecticide applications (Decis™ 5.0 EC, deltamethrin) at the bud or early flowering stage, controlling thrips for at least 48 hours, and in some cases up to 7 days. However, the results suggest that thrips are able to successfully re-infest canola after 7-days post-treatment. Although treated plots showed a reduction in pod abortion and curled pods, there were no significant differences in yield between treated and untreated plots at any thrip density level (low, medium or high) in 2001.

The results also showed that plant sampling of racemes or 20 cm plant stalks, appears to be a better estimate of population density and a better monitoring tool than sweeps. Preliminary field assessments found that lygus bugs and thrips were often found in combination, and the economic impact on canola of this combination should be assessed in the future.

Scientific Publications

Olfert, O. and B. Elliott. 2001. Impact of thrip populations in canola. Western Committee on Crop Pests. Banff, October 2001.