



Winter Canola as a Rotational Crop for Winter Wheat in Oklahoma: Pest Management Challenges and Solutions.



Tom A. Royer¹ tom.royer@okstate.edu, K.L. Giles¹, A.A. Zarrabi, J. Damicone¹ and J. Bushong²

¹Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater

³Department of Plant and Soil Sciences, Oklahoma State University, Stillwater



Abstract

Canola is an economically viable winter rotational crop for Oklahoma winter wheat producers that broadens their options for management of difficult-to-control winter annual grassy weeds, delivers positive economic returns as a cash crop and provides an early season source of pollen and nectar for native and domestic pollinators. Since its introduction in 2003, canola has presented insect and plant disease pest management challenges that must be addressed with regard to minimizing deleterious effects on pollinators and natural enemies while maximizing economic return to the grower. This poster outlines several pest complexes that have arisen and the strategies that have been used to address their effective management.

Introduction

Dr. Thomas Peeper, professor of weed science at Oklahoma State University had long wondered how he could help Oklahoma wheat growers deal with some chronic, difficult weed problems. In 2002 he began evaluating some potential rotational crops that could be grown by wheat growers to help them address those problem weeds. He focused in on transgenic winter canola varieties that had improved winter hardiness and were glyphosate tolerant.



In 2003, Dr. Peeper (far right) established the “Oklanola Project” to demonstrate the utility of winter canola as a rotational crop for winter wheat that could be grown profitably, AND allow producers to control some serious grassy weed problems.

Canola offers excellent options to control grassy weeds, is profitable, and actually enhances yields in the wheat that follows the canola crop. Canola acreage in Oklahoma has increased from 5000 acres to more than 185,000 acres since 2003; Oklahoma now ranks second in US canola production. It also brought some new pest challenges.

Photos:

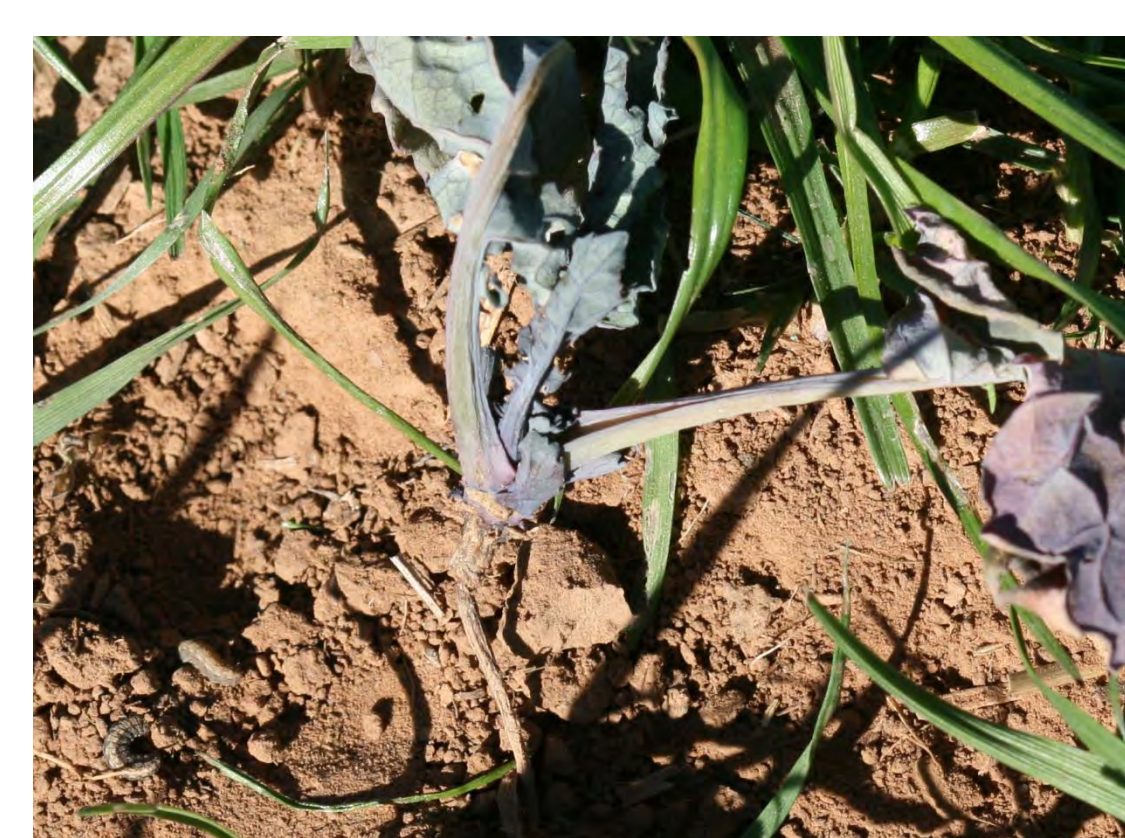
Army cutworm: Frank Peairs, Colorado State (bugwood.org)

Springtail: Susan Ellis, USDA (bugwood.org)

Blackleg: Vikram Bisht

Other photos by Tom Royer, Ali Zarrabi and Todd Johnson

IPM Challenges



IPM Solutions

Aphids (cabbage, green peach and turnip) are a major problem for canola growers. The Canola IPM team monitored seasonal occurrence of the aphids and their natural enemies. They also evaluated the effectiveness of insecticide-seed treatments and found that the use of a seed treatment delayed aphid buildup during the winter, reducing the need for 1-2 spring insecticide applications. Impact: \$23 million in yield savings annually.

Army cutworms are a problem in canola because tilled canola fields provide a desirable egg-laying habitat when adult army cutworm moths migrate into Oklahoma. Timely scouting helps producers avoid stand loss caused by army cutworm feeding, and if an insecticide is needed for control, can also reduce fall diamondback moth infestations.

Diamondback moths infest canola in the fall, and larvae can survive (and feed) in the crown of a plant as it overwinters. They also occasionally build up in spring in damaging numbers. We are currently attempting to determine the yield impact from overwinter feeding by DBM larvae in the crown. We encourage producers not to rely on pyrethroid sprays as a regular application for DBM to avoid development of insecticide-resistance populations.

False chinch bug can be a major pest of canola in dry years. They tend to build in the fall and winter when we have lower precipitation and mild temperatures. Current recommendations stress the importance of scouting early and applying insecticides with as high gallonage of water carrier as possible.

Variegated cutworm can cause severe damage to developing seed pods if not controlled. Infestations must be caught early through diligent, regular scouting. Thresholds were “borrowed” from North Dakota for bertha armyworm, suggesting a treatment threshold of 2 caterpillars per square foot.

Blackleg disease is a major concern for sustainable canola production. Dr. Damicone screens canola germplasm to identify resistance to blackleg disease in cooperation with KSU canola breeder, Michel Stamm. Beekeepers love blooming canola, so we encourage producers to inform beekeepers before spray applications and spray when bees are not active in the field. We also work with chemical companies to register pesticides that are safer for bees.

Springtails?????. Some county extension educators in “canola country” were deluged with calls from irate homeowners living near newly harvested canola fields. Under the right conditions, Collembola numbers can build in canola, and after canola harvest, migrate and invade garages, closets, and bedrooms by the millions. We don’t have a good solution yet, other than to encourage residents to sweep areas daily and patiently wait for them to die off in 1-2 weeks.....