

OOC Final Report.**Title: Late-season aphid management on winter canola****Investigators:**

Kristopher Giles, Professor: IPM of insects in field crops.

Tom Royer, Professor: IPM coordinator.

Jack Dillwith, Professor: Insect Biochemist

Chad Godsey, Assistant Professor: Cropping Systems Specialist

Objectives:

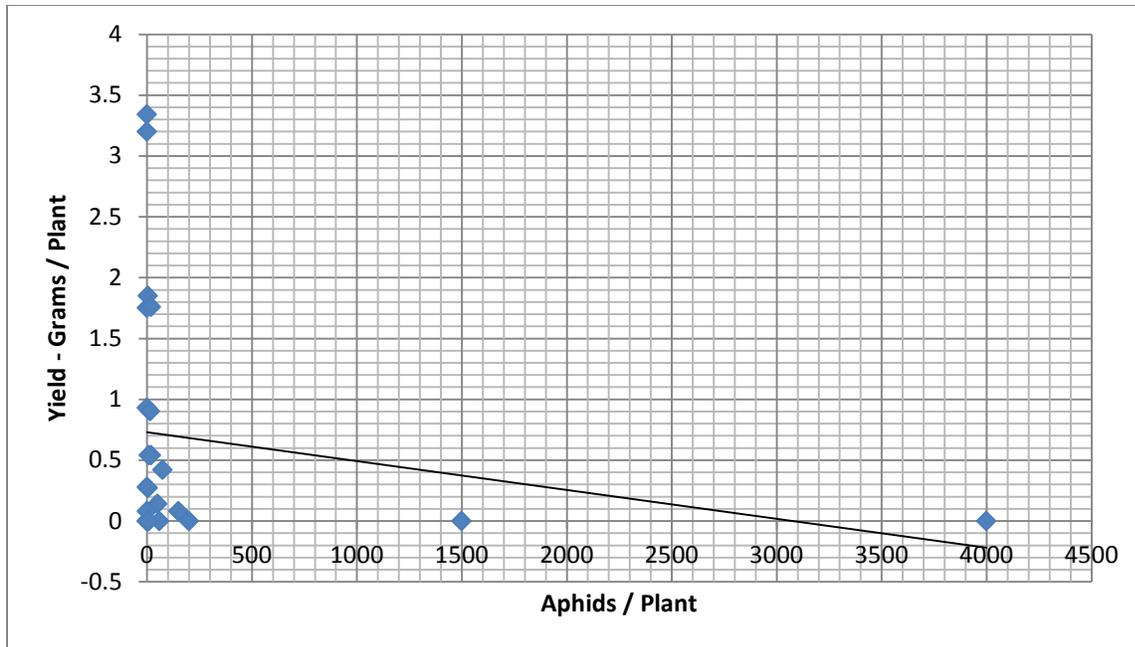
1. Describe the relationship between late season aphid infestations and canola yield and oil content in seed.
2. Document the profitability of late-season curative insecticide treatments against aphids.

Timeline

2010	Aug	√-Project organizational meeting
	Sept	√-Establish experimental research plots
	Sept-Dec	√-Maintain field plots
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2011	Jan-Mar	√-Maintain field plots
	Mar-May	√-Conduct field sampling
	June	√-Harvest
	June-July	√-Summarize and analyze all data and write final report

Summary:

Objective 1. The relationship between late season aphid infestations and canola yield was evaluated in a field on The OSU Research Station in Perkins, OK. Plots were either treated with insecticide or left untreated to allow for a variation in Green-peach and cabbage aphid numbers per plant. 24 total plants were marked and monitored longitudinally every 7-10 days for 28 days. At harvest, seed yield was determined for each plant. Yield versus peak aphid abundance/plant was described using correlation analyses. The high degree of variability in yields versus aphid abundance resulted in a very poor and unpredictable relationship between the variables (See figure below). This poor relationship was caused primarily by an outbreak of false chinch bugs that overwhelmed many of the plants with low aphid numbers. Because of this confounding effect, we were unable to evaluate oil content levels in canola seed; as there would be no predictive relationship to evaluate. However, as described in the summary for objective 2, the false chinch bug outbreak allowed the team to evaluate the yield savings of insecticide treatments against late season aphid and/or false chinch bug infestations.



Objective 2. The profitability of late-season curative insecticide treatments was compared between plots with and without late-spring aphid infestations. Also, the additional effect of a late season false chinch bug outbreak was also evaluated in a separate field. The two replicated (RCBD) field studies were located at The OSU Research Station in Perkins, OK. For the aphid only study a late season infestation of green peach aphids allowed for comparison of treatment with an insecticide versus control plots; assigned plots were treated as aphid numbers reached the calculated economic threshold. All plots were subsequently treated to remove confounding effects of false chinch bug infestations.

For the study that included false chinch bug effects, some plots were left untreated during the false chinch bug outbreak. Yields were determined by hand harvesting or standard plot harvesting procedures.

It is clear from our data that during the very dry spring of 2011 late season aphids can cause significant yield losses per plant and should be controlled when they reach economic thresholds (See table below). In fact, suppression of late season green peach aphids resulted in reduced aphid numbers and a 3-fold yield savings.

Treatment	7-D	13-D	Yield (g)
Seed treatment + Warrior 3.84 oz/A in late spring	12 ^a	0 ^a	1.044 ^a
Seed treatment only	507 ^b	1 ^a	0.296 ^b

For the study that included false chinch bug effects, yield savings were even more dramatic. As previously demonstrated, insecticidal seed treatments were shown to be a critical management approach for insects and the addition of aphid control in the spring saved approximately 150 lbs per acre (see table below). For 2011, suppression of false chinch bugs at threshold resulted in nearly 400 lbs of additional yield savings.

Treatment	Yield / Acre (LBS)
Control	304
Seed Treatment	494
Seed Treatment + Aphid Control	646
Seed Treatment + Aphid + False Chinch Bug Control	1026

Our one year study confirmed the assumption that late season aphids must be controlled and insecticides are economically justified. Fortunately, we were able to assess the benefits of controlling another sporadic pest (false chinch bug) and justify a more comprehensive approach to monitoring and managing the broad range of insect pests that occasionally reach high levels in winter canola.