

SECTION VII.

Forage & Seed Insects

SPRING CANOLA INSECTICIDE EXPERIMENT 1996

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Objective:

To determine if soil or seed applied insecticides and the best foliar applied insecticides can control Cabbage Aphid and Cabbage Seed Pod Weevil in spring canola and how the different insecticides compare to each other.

Summary:

In the spring canola the imidacloprid seed treatments at 16 & 12 oz. ai/cwt, the imidacloprid soil treatment, and the bifenthrin plus endosulfan foliar treatment all gave excellent cabbage aphid control and statistically higher yields.

This is the second year for this experiment. A hail storm hit again this year at the Hermiston Experiment station. It was a small storm on June 8. There did not seem to be any visible damage to the spring canola which was still partially in bloom.

Cabbage Seed Pod weevils were in very low numbers in both fall and spring canola. The Cabbage Aphid was abundant in the spring canola.

In the spring canola for the second year the imidacloprid (Admire soil applied, Gaucho seed treatment) products were very effective, and compared favorably to the foliar applied bifenthrin (Capture) plus endosulfan (Thiodan) in yield and cabbage aphid control.

The spring canola experiment was under a small center pivot. The soils are fine sandy loams with a pH of 7.0. The 1995 crop was potatoes.

Spring experimental methods and design:

In the spring to a depth of two feet available nitrogen was 110 pounds per acre, phosphorus 71 pounds per acre, potash 565 pounds per acre, sulfur 20 pounds per acre, boron 1.8 pounds per acre. A seedbed was prepared with a disk and liquid fertilizer (100 pounds per acre of 18-20-0-15) was applied and incorporated with 0.5 pounds ai Treflan per acre for weed control.

Before seeding, the Admire and Furadan (carbofuran) treatments were broadcast and incorporated in the seedbed at .31 lb. ai per acre and .25 lb. ai per acre, respectfully.

The 10 treatments were seeded into a moist seedbed with 4 replicated blocks on April 15 with 10 pounds of seed per acre. All canola seed was treated with Benlate 50 DF at 8 oz. per cwt and Captan 400 at 2 oz. per cwt. The mustard was not treated. Each plot was 8 feet wide and 140 feet long. The spaces between the 4 blocks were planted to Springfield canola for a total of 3 planted acres.

Gaucha seed treatments were 16 and 12 oz. ai/cwt.

The experimental area received 25 lb. of N through the irrigation water on April 30th.

A light hail storm hit the experiment station on June 8 causing some of the leaves to be striped off. On June 10 maturity was assessed, the mustard was in mid to late bloom (top half of stalk in bloom), the Springfield was in late bloom (only the top portion of the stalk in bloom), the ST 110 was going out of bloom.

The foliar insecticides were applied on June 19, very late bloom for Springfield. The rates were Thiodan 1.3 qt product/A = 1.0 # ai, Capture 2.6 oz product/A = 0.04 # ai.

Flower stems with aphid clusters were counted on June 26th. Sweep nets were also tried to obtain aphid counts but realistic numbers were not obtained.

The plots were swathed on July 17 in 5 foot widths and one full swath was combined from each plot with a Hege plot combine on July 24.

Spring results and discussion

The number of aphids colonies and yield were highly correlated ($r^2=0.803$), with the highest yields matching the best aphid control. For the second year the imidacloprid treatments (Admire soil incorporated and Gaucha seed treatments) performed as well as the best foliar treatment (Thiodan +Capture). Numerically the Thiodan plus Capture treatment was slightly better, the higher Gaucha seed treatment rate better than the lower rate, and both Gaucha treatments were better than Admire soil incorporated treatment.

The yellow mustard did have significant aphid numbers and yielded 400 pounds less than the best foliar and Gaucha seed treatments of canola. This would suggest that mustard may benefit from aphid control.

The ST 110 canola variety is a campestris type where as the Springfield variety is the more common napus type. ST 110 matured at least a week ahead of Springfield and was lower yielding by 600 pounds to the acre. Aphid control with Gaucha on ST 110 was not as effective as on Springfield and only increased yield by 20 % over the untreated check. This compared to a 100% increase (doubling of yield) with the Gaucha treatments and the Thiodan + Capture foliar treatment on Springfield over the untreated check.

treatments	yield#/A	t	Aphid	t
Springfield w/Capture 2.6 oz prod.+ Thiodan 1.3 qt prod/A	2380	a	23.3	b
Springfield w/Gaucho @ 16 oz. ai/cwt (0.1# ai/A)	2376	a	22.3	b
Springfield w/Gaucho @ 12 oz. ai/cwt (0.075# ai/A)	2320	a	14.8	b
Springfield w/Admire .31 # ai/A soil incorporated	2149	ab	64.4	b
Yellow mustard no insect control	1954	ab	77.7	b
Springfield w/Capture 2.6 oz prod/A	1791	bc	152.3	b
ST 110 w/Gaucho @ 12 oz. ai/cwt	1731	bc	396.0	ab
ST 110 no insect control	1444	cd	550.5	ab
Springfield no insect control	1183	d	834.0	a
Springfield w/Furadan .25 # ai/A soil incorporated	1065	d	579.5	ab

t - student t, means with the same letter are not significantly different at the 0.05 level.

Conclusions

Controlling Cabbage Aphid on spring canola can double yields in Oregon's Columbia Basin. There is a direct inverse correlation between aphid numbers and yield. The foliar applied combination of Thiodan plus Capture was very effective in controlling the aphids. The imidacloprid seed treatments (Gaucho) were also effective. For the second year Furadan, soil applied at seeding, resulted in high aphid numbers. In 1996 this treatment resulted in the lowest yield of the trial. If Furadan is used at seeding some additional measures should be taken to control aphids.

The mustard with no insect control had medium levels of aphids and a medium yield in this trial indicating that it does not get the high levels of aphids that canola does, however, neither is mustard immune to aphids. The question arises "would aphid control result in significant yield increases?"

The average control of aphid by the Gaucho seed treatment (12 oz ai/cwt) on the ST 110 variety resulting in a 20% yield increase over the check is a puzzle. The same rate of Gaucho on the Springfield variety had excellent aphid control and a doubling of the yield over the check. Untreated the ST 110 does not appear to have as many aphids, and the yield is slightly higher, than the untreated Springfield. Would this difference apply to all campestris versus napus types or is it just a factor of the earlier maturity of the ST 110 (campestris type)?

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