Section II
Environmental Toxicology

ANTAGONISM BETWEEN A HERBICIDE AND INSECTICIDES IN CANOLA

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Previous research and observations indicate a strong antagonism between the Herbicide Harmony extra and the 2 federally labeled insecticides for control of the primary pests of Canola in the PNW Region. A RCBD trial of 12 treatments including the check, with 4 replicates of 8 x 20 feet per treatment, was established 7 mi west of Colfax, WA on cooperator land to test the hypothesis further. Treatments to measure antagonism consisted of Capture 2E alone, Capture plus 3 subfield rates of Harmony (1/10 1/100 and 1/1000), Gaucho 480 alone, plus the same subfield rates of Harmony, the 3 subfield rates of Harmony w/o insecticide, and the untreated check. Harmony extra was applied at the rosette stage just prior to bolt of the crop. The Gaucho seed treatments were made at planting. Capture 2E was applied at 0.04 lb aia at full bloom at 20 gpa/20psi with a buffer to pH 5.0. Cabbage aphid colonies per square meter were counted at PrCt(53-DAE), 7-DAT, and 15-DAT. Cabbage seedpod weevil exit holes per 100 pods per replicate were counted at harvest to measure CSPW control, and yield data was collected by small plot combine.

The data in the tables shows significant differences in insect control and yield related to antagonism between the light rates of herbicide and the insecticides. Very cold, drought conditions delayed maturity in the Canola (Hyola 401) which normally blooms 43-DAE. The 1/10 field rate Harmony treatments damaged the Canola severely and delayed maturity; the data for these treatments for CSPW % being lower, and CA feeding longer, than other treatments due to a lack of pods compared to the other treatments. Capture 2E alone and Gaucho 480 alone provided the best CA and CSPW control, but Capture was significantly higher in yield. The CA colonies were active until the Canola began to dry down at 65-DAE, and Gaucho at 10 oz ai cwt usually loses activity around 60-DAE. The lower rates of Harmony applied to the insecticide treatments produced no phytotoxicity, but the numbers of CA yields, and CSPW were significantly higher for the herbicide/insecticide treatments compared to insecticides alone except for Capt/Harmony 1/000 for which CSPW damage and yield were NSD. For the third year antagonism of some sort is demonstrated to appear between Harmony, and the labeled insecticides.

Cabbage aphid colonies/meter square on herbicide/insecticide treated Canola

Treatment/formulation	Rate	PrCt(45-DAE)	7-DAT	15-DAT
Gaucho 480	10 oz ai cwt	0.25a	0.50a	1.00b
Gau + Harmony A	10 oz/1/1000rate	2.25b	4.25d	4.50c
Gau + Harmony B	10 oz/ 1/100 rate	3.50c	5.00d	5.25d
Harmony only	1/100 rate	4.50d	9.00e	12.25e
Capture 2 EC	0.04 lb aia	4.50d	0.00a	0.00a
Capt + Harmony	0.04/1/10 rate	4.75d	4.50d	5.75d
Harmony only	1/1000 rate	5.25d	9.75e	12.75e
Capt + Harmony	0.04/1/1000 rate	5.50d	2.75b	3.00c
Capt. + Harmony	0.04/1/100 rate	5.50d	3.25c	4.00c
Harmony only	1/10 rate	5.75d	9.50e	11.75e
Gaucho + Harmony	10 oz/ 1/10 rate	5.75d	6.50d	10.00e
Check	----------	5.25df	9.75e	13.00e

Numbers followed by the same letter are not Significantly Different. AOV LSD T Test (0.05). Statistix.

CSPW Damage & Canola Yield/Acre

Treatment/Formulation	Rate	Exit Holes/100 pods	Lbs Seed
Capture 2 EC	0.04 lb aia	0.75a	1434a
Capt + Harmony	0.04/1/1000 rate	1.50a	1394a
Capt + Harmony	0.04/1/100 rate	6.00b	1327b
Gaucho 480	10 oz ai cwt	1.00a	1056c
Gau + Harmony	10 oz/1/100 rate	24.50d	1029c
Capt + Harmony	0.04/1/10 rate	12.00c	987c
Gau + Harmony	10 oz/1/1000 rate	25.75d	968c
Harmony only	1/1000 rate	25.00d	809d
Harmony only	1/100 rate	24.50d	684d
Harmony only	1/10 rate	13.25c	342e
Gau + Harmony	10z/1/10 rate	12.75c	299e
Check	----------	25.25c	931c

Numbers followed by the same letter are not Significantly Different. AOV LSD T Test (0.05).