Cabbage Weed Management Research Report—2010

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Two trials were completed in 2010. The first trial continued evaluations of tank-mixtures of GoalTender with insecticides, fungicides and annual grass herbicides. This work followed on results obtained in 2009 where combinations frequently caused increased injury and in the case of 3-way mixtures, decreased yields. These results seemed to be directly related to the nature of the formulations used which were emulsifiable concentrates (EC). This year the insecticides (Warrior II, Radiant, Coragen) and fungicides (Bravo Ultrex, Quadris) were selected specifically because they were not EC formulations. The three graminicides (Select Max, Poast, Assure II) were all EC's. GoalTender alone caused 27% early/initial injury (necrosis) which was somewhat higher than what was observed in 2009, however by 20 days after treatment (DAT) this decreased by 50%. There was no increased injury observed when any of the insecticides and fungicides were tank-mixed with GoalTender and this injury was also reduced by 50% by 20 DAT. When the three graminicides were tank-mixed with GoalTender injury increased to 40+%. But, by 20 DAT this degree of injury had also decreased to the same levels seen with the other treatments. Three-way tank-mixtures of GoalTender, Stinger, and the three insecticides produced injury levels that were intermediate, around 35%. It is important to note that in no case were yields reduced. However, yield results may have been more variable than the numbers show because due to very hot, dry weather and poorly timed irrigation a situation was created where there was significant internal cracking of the heads that led to the development of bacterial soft rot.

The second trial evaluated Prowl H2O and Dual Magnum applied pre- and post-transplant (48hr) in 8 brassica crops. The purpose with this trial, an IR-4 phytotoxicity trial, was to generate sufficient data to enable BASF to go forward with registration of Prowl H2O on cabbage among other crops. Similar trials were conducted in 5 other states. In the case of Prowl the rates chosen were 1.5 and 3 pt/A. There was no observed injury with either rate or timing in pak choi, Chinese cabbage, kohlrabi, broccoli, early cabbage, and romanesco broccoli. There was slight injury, 10%, with the 3 pt rate applied post-transplant on turnip and cauliflower. Due to high temperatures yields of romanesco broccoli and cauliflower could not be taken. No yields were reduced in any of the other crops. Dual Magnum was applied at 0.7 and 1.4 pt/A. There were more instances of relatively minor stunting (10-15%) with Dual Magnum. This usually occurred with the high rate applied post-transplant. However, in no case were yields reduced where there was initial stunting. One outlier is in the case of the early cabbage when treated with the low rate applied pre-transplant, where yields were reduced compared to the handweeded control.

Table 1. Evaluating tank mixtures of Goal Tender with insecticides, fungicides, and grass herbicides.

				CABBAGE			
Rating Date				6 DAT	20 DAT	31 DAT	8/17
Rating Data Type				Injury	Stunting	Stunting	Harvest Wt.
Rating Unit				%	%	%	lb/40 ft
Trt No.	Treatment Name	Rate	Rate Unit				
1	Handweeded			0	0	0	137
2	Goal Tender	4	fl. Oz	27	10	0	132
3	Goal Tender	4	fl. Oz	27	12	2	130
	Warrior II	1.5	fl. Oz				
4	Goal Tender	4	fl. Oz	25	10	0	119
	Coragen	4.2	fl. Oz				
5	Goal Tender	4	fl. Oz	25	10	3	117
	Radiant	8	fl. Oz				
6	Goal Tender	4	fl. Oz	22	12	3	123
	Bravo Ultrex	1.5	lb				
7	Goal Tender	4	fl. Oz	27	10	3	115
	Quadris	8	fl. Oz				
8	Goal Tender	4	fl. Oz	45	13	10	119
	Select Max	14.5	fl. Oz				
9	Goal Tender	4	fl. Oz	45	13	7	139
	Poast	24	fl. Oz				
10	Goal Tender	4	fl. Oz	40	13	7	119
	Assure II	9	fl. Oz				
11	Goal Tender	4	fl. Oz	30	8	0	126
	Stinger	5	fl. Oz				
12	Goal Tender	4	fl. Oz	33	13	5	123
	Stinger	5	fl. Oz				
	Warrior II	1.5	fl. Oz				
13	Goal Tender	4	fl. Oz	37	10	3	117
	Stinger	5	fl. Oz				
	Radiant	8	fl. Oz				
14	Goal Tender	4	fl. Oz	32	13	3	115
	Stinger	5	fl. Oz				
	Coragen	4.2	fl. Oz				
15	Stinger	5	fl. Oz	0	8	0	117
	Select Max	14.5	fl. Oz				
16	Stinger	5	fl. Oz	0	10	0	128
	Poast	24	fl. Oz				
LSD (P=.05)				11	11	13	33
Standard Deviation				7	7	9	20
CV				26	60	287	35

Table 2. Brassica phytotoxicity trial with Prowl H_2O and Dual Magnum.

Crop Variety				PAK CHOI		CHINESE CABBAGE		KOHLRABI		CAULIFLOWER
Rating Date				33 DAT	6/30	33 DAT	7/1	33 DAT	7/1	33 DAT
Rating Data Type				Stunting	Fresh Wt.	Stunting	Fresh Wt.	Stunting	Fresh Wt.	Stunting
Rating Unit				%	lb/25 ft	%	lb/25 ft	%	lb/25 ft	%
Trt No.	Treatment Name	Rate	Growth Stage							
1	Handweeded			0	82	0	68	0	20	0
2	Prowl H_2O	1.5 pt	PSTTP48h	3	79	5	59	0	18	3
3	Prowl H_2O	3 pt	PSTTP48h	0	84	0	71	3	18	5
4	Prowl H_2O	1.5 pt	PRETP	0	103	0	75	0	20	6
5	Prowl H_2O	3 pt	PRETP	0	95	3	66	4	18	0
6	Dual Magnum	0.7 pt	PSTTP48h	8	84	8	57	0	18	10
7	Dual Magnum	1.4 pt	PSTTP48h	4	68	8	55	9	13	13
8	Dual Magnum	0.7 pt	PRETP	0	90	4	53	1	18	11
9	Dual Magnum	1.4 pt	PRETP	6	82	11	55	3	18	16
LSD (P=.05)				6	20	8	22	5	4	8
Standard Deviation				4	13	6	15	3	4	6
CV				171	33	136	55	140	44	79

Crop Variety				TURNIP		BROCCOLI		CABBAGE		ROMANESCO
Rating Date				33 DAT	7/2	33 DAT	7/22	33 DAT	8/9	33 DAT
Rating Data Type				Stunting	Fresh Wt.	Stunting	Fresh Wt.	Stunting	Fresh Wt.	Stunting
Rating Unit				%	lb/25 ft	%	lb/25 ft	%	lb/25 ft	%
Trt No.	Treatment Name	Rate	Growth Stage							
1	Handweeded			0	35	0	11	0	82	0
2	Prowl H_2O	1.5 pt	PSTTP48h	3	26	2	9	0	75	0
3	Prowl H_2O	3 pt	PSTTP48h	3	31	5	11	0	71	5
4	Prowl H_2O	1.5 pt	PRETP	0	37	6	11	5	71	3
5	Prowl H_2O	3 pt	PRETP	3	33	4	11	1	84	5
6	Dual Magnum	0.7 pt	PSTTP48h	5	33	3	7	5	73	0
7	Dual Magnum	1.4 pt	PSTTP48h	4	29	4	9	13	66	10
8	Dual Magnum	0.7 pt	PRETP	3	22	8	9	9	57	13
9	Dual Magnum	1.4 pt	PRETP	9	29	4	11	14	71	9
LSD (P=.05)				7	15	8	7	9	22	8
Standard Deviation				5	11	6	4	6	15	6
CV				145	71	147	86	117	49	117