
Vegetable weed management

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The situation



As you know Dacthal is no longer available



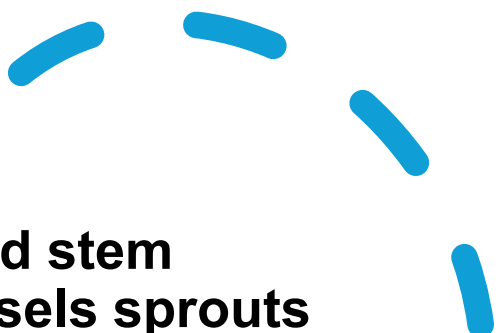
There are a large number of brassica vegetable crops like broccoli raab and bok choi that were dependent on Dacthal as the major herbicide



More weed control options are needed for these crops



The crops

- **Crop groups:**
 - **Group 5-16 head and stem Brassicas like Brussels sprouts**
 - **Group 4-16 leafy brassicas like kale, mustard greens**
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Outline



Herbicide treatments



Crops tested



**Crop tolerance to
herbicides**

Direct seeded

Transplanted



Recommendations

Herbicides tested

DCPA – Dacthal from Amvac



Sulfentrazone – Zeus from FMC



**S-metolachlor – Dual Magnum
from Syngenta**



Crops tested

**Seeded crops: Bok choy,
broccoli raab, collards,
mizuna, radish and
mustard greens**

**Transplanted crops:
brussels sprouts, and kale**

Pre Herbicide treatments

Treatment	Rate
	Lb ai/A
Control	0
Dacthal	7.5
Zeus	0.07
Zeus	0.094
Zeus	0.14
Dual Magnum	0.33
Dual Magnum	0.5
Dual Magnum	0.65

Pre crop injury 1

Treatment	Rate	Bok choy	Broccoli raab
	Lb ai/A	0=safe; 10=dead	
Control	0	0.0 d	0.0 e
Dacthal	7.5	0.9 d	1.3 d
Zeus	0.07	3.0 c	4.9 c
Zeus	0.094	4.5 b	6.9 b
Zeus	0.14	8.9 a	9.4 a
Dual Magnum	0.33	0.1 d	0.0 e
Dual Magnum	0.5	0.0 d	0.5 de
Dual Magnum	0.65	0.4 d	0.3 e

Pre crop fresh weight 1

Treatment	Rate	Bok choi	Broccoli raab
	Lb ai/A	Tons/Acre	
Control	0	14.1 abc	0.95 a
Dacthal	7.5	15.0 a	0.73 bc
Zeus	0.07	14.3 abc	0.52 cd
Zeus	0.094	12.7 bcd	0.43 de
Zeus	0.14	11.1 d	0.30 e
Dual Magnum	0.33	13.9 abc	0.82 ab
Dual Magnum	0.5	14.4 ab	0.78 ab
Dual Magnum	0.65	14.8 a	0.68 bc





Pre crop injury 2

Treatment	Rate	Collards	Mizuna
	Lb ai/A	0=safe; 10=dead	
Control	0	0.0 d	0.0 b
Dacthal	7.5	0.0 d	0.6 b
Zeus	0.07	1.6 c	8.5 a
Zeus	0.094	2.3 b	9.3 a
Zeus	0.14	3.8 a	9.6 a
Dual Magnum	0.33	0.0 d	0.3 b
Dual Magnum	0.5	0.0 d	0.6 b
Dual Magnum	0.65	0.3 d	0.6 b

Pre fresh weight 2

Treatment	Rate	Collards	Mizuna
	Lb ai/A	Tons/Acre	
Control	0	7.3	4.6 ab
Dacthal	7.5	7.2	5.0 a
Zeus	0.07	6.8	2.7 cd
Zeus	0.094	6.3	1.7 de
Zeus	0.14	6.3	0.7 e
Dual Magnum	0.33	6.1	3.0 bcd
Dual Magnum	0.5	6.6	4.1 abc
Dual Magnum	0.65	7.1	4.3 abc



MIZUNA

2019.02 - Treatment #2

Dacthal 75WP

7.5 lb ai/Ac

Pre-Emergence

MIZUNA

2019.02 - Treatment #3

Zeus 4F

0.07 lb ai/Ac

72 Hr Pre-Plant

MIZUNA

2019.02 - Treatment #10

Dual Magnum

0.65 lb ai/Ac

Pre-Emergence

Pre crop injury 3

Treatment	Rate	Radish	Mustard greens
	Lb ai/A	0=safe; 10=dead	
Control	0	0.0 d	0.0 c
Dacthal	7.5	0.0 d	0.0 c
Zeus	0.07	1.5 bc	0.3 c
Zeus	0.094	2.0 ab	1.4 b
Zeus	0.14	2.6 a	2.4 a
Dual Magnum	0.33	0.0 d	0.0 c
Dual Magnum	0.5	0.3 d	0.0 c
Dual Magnum	0.65	0.8 cd	0.3 c

Pre fresh weight 3

Treatment	Rate	Radish	Mustard greens
	Lb ai/A	Tons/Acre	
Control	0	6.0 ab	7.9 a
Dacthal	7.5	6.9 a	9.5 a
Zeus	0.07	5.9 ab	8.8 a
Zeus	0.094	5.4 bc	8.8 a
Zeus	0.14	4.3 c	8.9 a
Dual Magnum	0.33	7.1 a	8.6 a
Dual Magnum	0.5	7.1 a	8.9 a
Dual Magnum	0.65	7.1 a	9.5 a





Transplant crop injury 1

Treatment	Rate	Brussels sprouts	Kale
	Lb ai/A	0=safe; 10=dead	
Control	0	0.0 c	0.0 b
Dacthal	7.5	0.0 c	0.0 b
Zeus	0.07	0.0 c	0.5 ab
Zeus	0.094	0.0 c	0.1 b
Zeus	0.14	1.0 a	1.0 a
Dual Magnum	0.33	0.0 c	0.0 b
Dual Magnum	0.5	0.4 b	0.0 b
Dual Magnum	0.65	0.0 c	0.3 b

Transplant PRE crop fresh weight

Treatment	Rate	Brussels sprouts	Kale
	Lb ai/A	Tons/Acre	
Control	0	4.0	11.9
Dacthal	7.5	4.2	12.3
Zeus	0.07	4.3	11.2
Zeus	0.094	4.1	11.9
Zeus	0.14	5.0	12.4
Dual Magnum	0.33	4.2	11.2
Dual Magnum	0.5	3.8	12.5
Dual Magnum	0.65	3.9	11.5

Summary

**Collards and kale had
good tolerance to Zeus**

**Radish and mustard
greens tolerance to Zeus
should be further
evaluated**

**All seeded and
transplanted crops had
good tolerance to Dual
Magnum**