

Broccoli Weed Control Trial 2009

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Objective: To evaluate new preemergence weed control strategies for broccoli

Methods: Conducted in cooperation with Chris Drew and Jose Aguiar at Sea Mist Farms in Castroville. The soil type was Rindge Muck (pH = 7.3; organic matter = 8.39; sand – 23, silt – 26 and clay – 51%). The trial was located at this site due to high hairy nightshade pressure and the high organic matter content of the soil which was deactivating applied preemergence herbicides. Post plant preemergence materials were applied on July 17 and 2 leaf postemergence applications were made on August 7 and 4 leaf postemergence applications were made on August 14. Each plot was one 40-inch bed wide by 20 feet long. There were three replications arranged in a randomized complete block design. It was applied in 68 gallons of water using a CO₂ backpack sprayer using two passes of a one nozzle wand with an 8008E tip at 30 psi. Weed evaluations were conducted by counting all weeds in 1 ft² and by rating weeds on a scale of 0-10 (0= no weed control to 10 complete weed control). Yield was evaluated by harvesting and weighing all heads in each plot on October 28. See tables for evaluations and dates.

Results: On the July 29 evaluation date only rates the preemergence applications because the post emergence applications had not yet been applied. All materials except Dual Magnum at 0.5 pint/A reduced the count of nightshade plants per square foot (Table 1). However, even the best treatment, Caparol at 4.0 pints/A, still had 52 nightshades per ft² which was high. All materials had acceptable phytotoxicity. The August 14 evaluation date measured the effect of the preemergence application and the 2nd true leaf postemergence application. On this date Caparol at 2 & 4 pint/A followed by Goal Tender at 8.0 ounces, and Dacthal at 14 pints followed by AN20 at 68 gallons/A gave the best weed control. Caparol at 4.0 pints had unacceptably high phytotoxicity. Caparol at 4.0 pint/A and Dacthal followed by AN20 had significantly lower number of broccoli plants per plot. A similar trend was observed on the August 17 evaluation date. Goal Tender applications at the 4 true leaf stage had little impact on nightshade plants and the effect of these treatments was not measured. Harvest evaluations indicated that the untreated control and Caparol at 4.0 pints/A both had the lowest number of heads/A and the lowest tonnage of heads (Table 2). Most treatments ranged between 21-23,000 heads/A, however a few treatments such as Dacthal at 14 pint followed by 6.0 ounces of Goal Tender at 2 true leaves or 8.0 ounces of Goal Tender at the 4 true leaf stage had more plants/A and higher tonnage.



Dual Magnum 2 pints



Caparol 4 pints



Dacthal 14 pints - August 7



Dual Magnum 2 pints
+ 8 oz Goal Tender



Caparol 4 pints
+ 8 oz Goal Tender



Dacthal 14 pints
+ 8 oz Goal Tender – August 14



Dacthal 14 pints
+ AN20 68 gals



Untreated – August 14

Table 1. Weed, phytotoxicity and stand count evaluations

| Material | Material/A | Timing | July 29 | | Aug. 14 | | | Aug 17 | |
|---------------------------------|-------------------------|------------------------------------|-------------------------------|--------------------|--------------------------------|--------------------|--------------------------|--------------------------------|--------------------|
| | | | Nightshade count ¹ | Phyto ² | Nightshade rating ³ | Phyto ² | Stand count ⁴ | Nightshade rating ³ | Phyto ² |
| Dual Magnum 7.63 Goal Tender | 0.5 pint 8.0 ounces | Preemergence Post 2&4 true leaf | 87.3 | 0.0 | 4.0 | 1.0 | 94.0 | 6.3 | 2.0 |
| Dual Magnum 7.63 Goal Tender | 1.0 pint 8.0 ounces | Preemergence Post 2&4 true leaf | 67.7 | 0.0 | 4.3 | 1.0 | 89.7 | 7.0 | 2.0 |
| Dual Magnum 7.63 Goal Tender | 2.0 pint 8.0 ounces | Preemergence Post 2&4 true leaf | 50.3 | 0.0 | 4.7 | 1.3 | 90.0 | 7.7 | 2.0 |
| Caparol 4L Goal Tender | 1.0 pint 8.0 ounces | Preemergence Post 2&4 true leaf | 77.7 | 0.0 | 4.7 | 1.0 | 76.7 | 7.0 | 2.3 |
| Caparol 4L Goal Tender | 2.0 pint 8.0 ounces | Preemergence Post 2&4 true leaf | 63.7 | 1.0 | 7.0 | 1.7 | 84.7 | 8.7 | 2.0 |
| Caparol 4L Goal Tender | 4.0 pint 8.0 ounces | Preemergence Post 2&4 true leaf | 52.0 | 2.0 | 9.0 | 3.7 | 48.7 | 9.0 | 5.0 |
| Dacthal 6F Goal Tender | 14.0 pint 6.0 ounces | Preemergence Post 2 true leaf | 66.7 | 0.0 | 4.0 | 1.0 | 84.7 | 6.0 | 1.3 |
| Dacthal 6F Goal Tender | 14.0 pint 6.0 ounces | Preemergence Post 4 true leaf | 66.0 | 0.0 | 0.0 | 0.0 | 89.7 | 2.0 | 1.3 |
| Dacthal 6F Goal Tender | 14.0 pint 8.0 ounces | Preemergence Post 2 true leaf | 68.7 | 0.0 | 4.0 | 1.0 | 92.3 | 6.0 | 1.7 |
| Dacthal 6F Goal Tender | 14.0 pint 8.0 ounces | Preemergence Post 4 true leaf | 64.0 | 0.0 | 0.0 | 0.0 | 90.7 | 2.0 | 1.0 |
| Dacthal 6F AN 20 | 14.0 pint 68 gallons | Preemergence Post 2 true leaf | 73.7 | 0.0 | 7.7 | 2.0 | 63.7 | 8.7 | 3.7 |
| Untreated | --- | --- | 97.3 | 0.0 | 0.0 | 0.0 | 88.3 | 0.0 | 0.0 |
| Pr>Treat | | | 0.003 | <0.001 | <0.001 | <0.001 | 0.002 | <0.001 | <0.001 |
| Pr>Block | | | <0.001 | 0.384 | 0.877 | 0.734 | 0.826 | 0.157 | 0.713 |
| LSD _{0.05} | | | 19.40 | 0.50 | 0.80 | 0.50 | 19.60 | 0.70 | 1.00 |

1 – weed counts per 1 ft²; 2 – phytotoxicity rating: 0 = no crop damage to 10 = crop dead; 3 – weed rating scale: 0 = no weed control to 10 complete weed control; 4 – plants per plot.

Table 2. Yield evaluation on

| Material | Material/A | Timing | Harvested heads/A | Biomass (ton/A) |
|---------------------------------|-------------------------|------------------------------------|-------------------|-----------------|
| Dual Magnum 7.63 Goal Tender | 0.5 pint 8.0 ounces | Preemergence Post 2&4 true leaf | 22,000 | 6.4 |
| Dual Magnum 7.63 Goal Tender | 3.0 pint 8.0 ounces | Preemergence Post 2&4 true leaf | 21,800 | 6.2 |
| Dual Magnum 7.63 Goal Tender | 4.0 pint 8.0 ounces | Preemergence Post 2&4 true leaf | 21,300 | 5.9 |
| Caparol 4L Goal Tender | 3.0 pint 8.0 ounces | Preemergence Post 2&4 true leaf | 21,300 | 5.8 |
| Caparol 4L Goal Tender | 4.0 pint 8.0 ounces | Preemergence Post 2&4 true leaf | 22,900 | 6.4 |
| Caparol 4L Goal Tender | 4.0 pint 8.0 ounces | Preemergence Post 2&4 true leaf | 13,900 | 4.6 |
| Dacthal 6F Goal Tender | 14.0 pint 6.0 ounces | Preemergence Post 2 true leaf | 27,000 | 7.7 |
| Dacthal 6F Goal Tender | 14.0 pint 6.0 ounces | Preemergence Post 4 true leaf | 23,700 | 6.3 |
| Dacthal 6F Goal Tender | 14.0 pint 8.0 ounces | Preemergence Post 2 true leaf | 24,200 | 6.8 |
| Dacthal 6F Goal Tender | 14.0 pint 8.0 ounces | Preemergence Post 4 true leaf | 26,600 | 7.2 |
| Dacthal 6F AN 20 | 14.0 pint 68 gallons | Preemergence Post 2 true leaf | 22,900 | 6.4 |
| Untreated | --- | --- | 18,700 | 4.5 |
| Pr>Treat | | | <0.001 | 0.001 |
| Pr>Block | | | 0.731 | 0.813 |
| LSD _{0.05} | | | 4,300 | 1.3 |