

2009 Dry Bulb Onion Weed Control Studies

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Summary: The objective of this study was to evaluate new preemergence treatments such as low rates of Goal Tender and labeled rates of Nortron. In addition, we evaluated the efficacy and safety of Basagran for use as a post emergence treatment on onions. Goal Tender used preemergence at 0.5 ounce per acre was generally weak on the weeds but was safe on the onions. Nortron was weak on nettleleaf goosefoot. Basagran was an effective post emergence herbicide when used in conjunction with Dacthal applied preemergence. All rates of Basagran with or without a COC yielded well, however, Basagran at 32.0 ounces with 0.5% v/v COC was moderately phytotoxic to the onions at an evaluation conducted 48 days after planting.

Methods: Trial was conducted in cooperation with Marvin Borzini and Bob Riddle in San Ardo. Each plot was one 80-inch bed wide by 10 feet long and replicated four times in a randomized complete block design. The trial was seeded to the variety 'Ranchero' on March 18 and the post plant preemergence applications were made on March 18; the first irrigation was applied on March 19. The first true leaf applications were made on March 22 (34 days after planting) and second true leaf applications were made on March 30 (42 days after planting). All materials were applied with a CO₂ backpack sprayer with four passes of a one nozzle wand with an 8008E tip at 30 psi applying the equivalent of 72 gallons per acre. The soil at the site was Docas silty clay loam. See tables for evaluations and dates.

Results: The April 22 weed counts only measured the effect of the preemergence applications as all post emergence applications were made after this date. There was a high population of weeds at the site with nettleleaf goosefoot being the main weed. Dacthal provided good weed control of the weeds (Table 1), and Goal Tender also provided good weed control. Nortron was weak on nettleleaf goosefoot. The May 5 evaluation date measured the impact of the pre and post emergence treatments. The preemergence treatments of Goal Tender treatments did not include follow up post emergence treatments and they had more weeds on this evaluation date (Table 2). All treatments that included post emergence applications provided excellent weed control. The untreated control took the equivalent of 471.8 hours per acre to weed, while all treatments that included follow up post emergence applications reduced hand weeding to less than 3.9 hours per acre. Phytotoxicity ratings less than 2.0 are generally considered acceptable and all treatments except for Goal Tender used preemergence and Dacthal followed by 32 ounces of Basagran + 0.5% COC had acceptable phytotoxicity ratings on this date. There were no significant differences in the number of bulbs or tonnage per acre among the treatments. However, Nortron at 32 ounces per acre had the lowest yield; the 32 ounce rate of Nortron also yielded low in the 2008 trials. Therefore, it is recommended that growers that decide to use this higher rate, apply experimental strips and observed them for problems in order to get familiar with how it performs on their soil types.

Table 1. Weed counts (weeds per 3 ft²) on April 22 (35 days after planting)

| Treatment | Material/A | Lbs a.i./A | Application | Nettleleaf Goosefoot | Night- shades | Pig Weed | Sow Thistle | Total Weeds |
|------------------------------------|--------------------------------|------------------------|--|-------------------------|------------------|-------------|----------------|----------------|
| Untreated | ---- | ---- | ---- | 80.3 | 3.8 | 6.8 | 2.5 | 93.3 |
| Dacthal 6F Fb Goal Tender 4F | 1.33 gals 6.0 oz | 8.0 0.188 | Preemergence 1 st true leaf | 3.8 | 0.8 | 0.0 | 0.3 | 4.8 |
| Goal Tender 4F | 0.5 oz | 0.0156 | Preemergence | 8.0 | 2.0 | 4.5 | 0.5 | 15.0 |
| Goal Tender 4F | 1.0 oz | 0.0312 | Preemergence | 4.5 | 1.3 | 2.0 | 0.3 | 8.0 |
| Goal Tender 4F | 2.0 oz | 0.0614 | Preemergence | 1.8 | 0.3 | 0.5 | 0.0 | 2.5 |
| Nortron 4SC Fb Goal Tender 4F | 32 oz 6.0 oz | 1.00 0.188 | Preemergence 1 st true leaf | 34.8 | 0.0 | 0.0 | 0.5 | 35.3 |
| Dacthal 6F Fb Basagran 4 | 1.33 gals 16.0 oz | 8.00 0.50 | Preemergence 2 nd true leaf | 6.5 | 0.3 | 0.3 | 0.0 | 7.0 |
| Dacthal 6F Fb Basagran 4 COC | 1.33 gals 16.0 oz 1% v/v | 8.00 0.50 1% v/v | Preemergence 2 nd true leaf 2 nd true leaf | 6.5 | 0.3 | 0.3 | 0.0 | 7.0 |
| Dacthal 6F Fb Basagran 4 | 1.33 gals 32.0 oz | 8.00 1.00 | Preemergence 2 nd true leaf | 8.0 | 1.3 | 0.5 | 0.0 | 9.8 |
| Dacthal 6F Fb Basagran 4 COC | 1.33 gals 32.0 oz 1% v/v | 8.00 1.00 1% v/v | Preemergence 2 nd true leaf 2 nd true leaf | 4.8 | 0.5 | 0.8 | 0.0 | 6.0 |
| Pr>Treat | | | | <0.001 | 0.020 | 0.008 | <0.001 | <0.001 |
| Pr>Block | | | | 0.467 | 0.745 | 0.793 | 0.176 | 0.714 |
| LSD _{0.05} | | | | 8.7 | 2.1 | 3.7 | 0.7 | 11.5 |

Table 2. Weed counts (weeds per 3 ft²) on May 5 (48 days after planting)

| Treatment | Material/A | Lbs a.i./A | Application | Nettleleaf Goosefoot | Night- shades | Pig Weed | Sow Thistle | Total Weeds | Phyto | Weed Time (hr/A) |
|------------------------------------|--------------------------------|------------------------|--|-------------------------|------------------|-------------|----------------|----------------|--------|------------------------|
| Untreated | ---- | ---- | ---- | 52.3 | 3.3 | 5.0 | 2.5 | 63.0 | 0.0 | 471.8 |
| Dacthal 6F Fb Goal Tender 4F | 1.33 gals 6.0 oz | 8.0 0.188 | Preemergence 1 st true leaf | 0.3 | 0.3 | 0.5 | 0.0 | 1.0 | 0.0 | 2.4 |
| Goal Tender 4F | 0.5 oz | 0.0156 | Preemergence | 7.5 | 1.0 | 5.3 | 0.3 | 14.0 | 0.3 | 46.4 |
| Goal Tender 4F | 1.0 oz | 0.0312 | Preemergence | 2.8 | 1.3 | 3.5 | 0.0 | 7.5 | 0.8 | 26.1 |
| Goal Tender 4F | 2.0 oz | 0.0614 | Preemergence | 2.3 | 0.8 | 1.5 | 0.0 | 4.5 | 2.3 | 14.1 |
| Nortron 4SC Fb Goal Tender 4F | 32 oz 6.0 oz | 1.00 0.188 | Preemergence 1 st true leaf | 0.3 | 0.0 | 0.0 | 0.0 | 0.3 | 1.5 | 3.3 |
| Dacthal 6F Fb Basagran 4 | 1.33 gals 16.0 oz | 8.00 0.50 | Preemergence 1 st true leaf | 0.0 | 0.0 | 1.5 | 0.0 | 1.5 | 0.3 | 3.1 |
| Dacthal 6F Fb Basagran 4 COC | 1.33 gals 16.0 oz 1% v/v | 8.00 0.50 1% v/v | Preemergence 1 st true leaf 1 st true leaf | 0.3 | 0.0 | 1.0 | 0.0 | 1.3 | 1.3 | 2.7 |
| Dacthal 6F Fb Basagran 4 | 1.33 gals 32.0 oz | 8.00 1.00 | Preemergence 1 st true leaf | 0.3 | 0.3 | 0.3 | 0.0 | 0.8 | 1.5 | 2.9 |
| Dacthal 6F Fb Basagran 4 COC | 1.33 gals 32.0 oz 1% v/v | 8.00 1.00 1% v/v | Preemergence 1 st true leaf 1 st true leaf | 1.5 | 0.0 | 0.5 | 0.0 | 2.0 | 2.3 | 3.9 |
| Pr>Treat | | | | <0.001 | 0.065 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Pr>Block | | | | 0.629 | 0.721 | 0.570 | 0.718 | 0.522 | 0.395 | 0.215 |
| LSD _{0.05} | | | | 6.5 | NS | 2.5 | 0.7 | 8.5 | 1.1 | 36.9 |

Table 3. Harvest evaluation on September 17

| Treatment | Material/A | Lbs a.i./A | Application | Bulbs/A | Bulb wt lbs/bulb | Total yield ton/A |
|------------------------------------|--------------------------------|------------------------|--|---------|---------------------|-------------------------|
| Untreated | ---- | ---- | ---- | 91,115 | 0.96 | 43.5 |
| Dacthal 6F Fb Goal Tender 4F | 1.33 gals 6.0 oz | 8.0 0.188 | Preemergence 1 st true leaf | 77,672 | 1.18 | 46.2 |
| Goal Tender 4F | 0.5 oz | 0.0156 | Preemergence | 90,617 | 1.11 | 50.4 |
| Goal Tender 4F | 1.0 oz | 0.0312 | Preemergence | 77,672 | 1.12 | 43.4 |
| Goal Tender 4F | 2.0 oz | 0.0614 | Preemergence | 74,685 | 1.22 | 45.2 |
| Nortron 4SC Fb Goal Tender 4F | 32 oz 6.0 oz | 1.00 0.188 | Preemergence 1 st true leaf | 66,718 | 1.26 | 42.1 |
| Dacthal 6F Fb Basagran 4 | 1.33 gals 16.0 oz | 8.00 0.50 | Preemergence 1 st true leaf | 84,145 | 1.14 | 47.7 |
| Dacthal 6F Fb Basagran 4 COC | 1.33 gals 16.0 oz 1% v/v | 8.00 0.50 1% v/v | Preemergence 1 st true leaf 1 st true leaf | 81,157 | 1.10 | 44.2 |
| Dacthal 6F Fb Basagran 4 | 1.33 gals 32.0 oz | 8.00 1.00 | Preemergence 1 st true leaf | 79,663 | 1.13 | 44.1 |
| Dacthal 6F Fb Basagran 4 COC | 1.33 gals 32.0 oz 1% v/v | 8.00 1.00 1% v/v | Preemergence 1 st true leaf 1 st true leaf | 81,157 | 1.07 | 43.2 |
| Pr>Treat | | | | 0.242 | 0.007 | 0.505 |
| Pr>Block | | | | 0.003 | 0.956 | <0.001 |
| LSD _{0.05} | | | | NS | 0.14 | NS |