

Lentil Response to Spring Preemergence Herbicides

Caleb Dalley, Daniel Guimaraes Abe, Hettinger Research Extension Center

A trial was conducted to evaluate lentil response and resulting weed control from spring application of various preemergence herbicides applied at planting. Lentil 'Invincible CL' was planted on May 5, 2020 using a no till drill at a rate of 25 seed per square foot at a depth of 1.5 inches. On May 6, herbicide treatments were applied using a tractor-mounted research sprayer at a spray volume of 10 gallons per acre using 8002XP flat fan nozzles. All treatments were tank-mixed with glyphosate (Roundup PowerMAX at 22 oz/acre) + AMS (8.5 lbs/100 gallons) + Destiny HSOC (1% v/v) to control weeds that had emerged prior to planting (including the weed free control). Lentil emergence occurred on May 19. Between planting and lentil emergence rainfall of 0.23 inches occurred (May 7). During the first six weeks after planting, other substantial rainfall (> 0.05 inches) events occurred on June 2 (0.12 inches), June 4 (0.09 inches), and June 6 (0.16 inches). During the last week of June and first week of July, 3.14 inches of rainfall occurred. Lack of rainfall during the first six weeks of growth limited activation of the applied preemergence herbicides and also limited the germination and growth of summer annual weeds. Due to limited and inconsistent emergence of weeds in this trial, weed control was not evaluated.

Lentil was evaluated for injury at 8 and 14 days after emergence. No herbicide treatment resulted in visible injury to lentil at either evaluation. Lack of lentil response may be due to the limited rainfall that occurred in the months of May and June. Results may have been different with normal or above average rainfall. Stand count were measured by counting the number of lentil plants within two 0.5 m² quadrats in each plot. No differences in lentil stand was found regardless of herbicide treatment. Lentil height was measured on July 1 (6 weeks after emergence). No differences in lentil height was found regardless of herbicide treatment. Similarly, lentil were harvested on August 12 using a small plot combine, and no differences in lentil yield was found. Under the environmental conditions that occurred during the spring of 2020, none of the applied herbicides had a negative impact of lentil. Under conditions with higher amounts of rainfall these results may have been different. Further investigation is needed under different environments to verify the safety of the herbicide treatments applied in this trial.

Table 1. Lentil response to spring preemergence herbicide application.

| Treatment | Product name | Rate (oz/A) | Lentil Injury —%— | Stand count —#/m ² — | Height —cm— | Yield lbs/acre |
|-------------------|---|-------------------|----------------------|------------------------------------|----------------|-------------------|
| 1 | Sharpen Outlook Metribuzin DF | 0.75 21 4 | 0 - | 244 - | 25 - | 1536 - |
| 2 | Anthem Flex Metribuzin DF | 4 4 | 0 - | 265 - | 25 - | 1531 - |
| 3 | Sharpen Metribuzin DF Prowl H2O | 0.75 4 32 | 0 - | 267 - | 24 - | 1579 - |
| 4 | Sharpen Dual II Magnum Metribuzin | 0.75 26.7 4 | 0 - | 240 - | 25 - | 1430 - |
| 5 | Sharpen Metribuzin DF Zidua SC | 0.75 4 3.25 | 0 - | 244 - | 25 - | 1589 - |
| 6 | Sharpen Metribuzin Zidua SC | 0.75 4 5 | 0 - | 248 - | 24 - | 1765 - |
| 7 | Spartan Charge Dual II Magnum | 3.75 26.7 | 0 - | 232 - | 25 - | 1557 - |
| 8 | Spartan Charge Dual II Magnum | 5 26.7 | 0 - | 248 - | 25 - | 1545 - |
| 9 | Weed Free | | 0 - | 249 - | 26 - | 1514 - |
| 10 | Untreated | | 0 - | 251 - | 24 - | 1467 - |
| LSD | P=.10 | | NS | 23.35 | 1.2 | 231.8 |
| CV | | | 0.0 | 7.8 | 3.85 | 12.41 |
| Treatment F | | | 0.000 | 1.189 | 1.463 | 0.864 |
| Treatment Prob(F) | | | 1.0000 | 0.3414 | 0.2119 | 0.5672 |

Lentil (Invincible) were planted using a no-till planter on May 5, 2020.

Herbicides were applied on May 6, 2020.

Glyphosate (Roundup PowerMAX) plus AMS plus MSO (Denstiny HSOC) was tank mixed with all herbicide treatment (including the Weed Free treatment) to control weeds that were present at time of application.

Lentil injury was evaluated 8 and 14 days after emergence; no injury was observed at either evaluation.

Lentil stand count was measured (two 0.5 m² quadrats per plot) on June 8, 2020.

Lentil height was measured (10 random plants per plot) on July 1, 2020.

Lentil were harvested and yield recorded on August 12, 2020.