

Goal and Kerb in Chickpea

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The objective of this study was to evaluate Goal (oxyfluorfen) and Kerb (pronamide) for crop safety when used as a preemergence herbicide in chickpea. Both Goal and Kerb are selective herbicides that have the potential to control grass weeds in the chickpea phase of wheat-based cropping rotations in the Pacific Northwest.

Two trials were established at Cook Farm outside of Pullman, WA. The first trial was planted with a Horsch drill and then treated preemergence with Valor (2 oz/A) plus Outlook (15 oz/A) over the entire site, while the second trial did not include any other preemergence treatments and was planted using a Monosem vacuum plate planter with seeding depth set to 2 inches. Preemergence treatments of either Goal or Kerb were applied post-seeding on May 17, 2022 (Table 1). Treatments were applied with a CO₂-powered backpack sprayer and a 5-foot boom with four Teejet 11002VS nozzles. The sprayer was calibrated to 15 gallons per acre. The studies were arranged in a randomized complete block design and the plots were 8 ft wide by 30 ft long. The first trial had four replications and the second trial had three replications. Treatments were assessed by visual estimation of percent chickpea injury at 29, 43, and 56 days after preemergence treatment of Goal or Kerb. All data were subjected to an analysis of variance using Agricultural Research Manager software system (ARM ver. 2022.7, Gylling Data Management).

Table 1. Treatment application details for both trials at Cook Farm Pullman, WA.

| Study Application | | |
|--------------------------------|--------------|--------------|
| Trial | Trial 1 | Trial 2 |
| Date | 5/17/2022 | 5/17/2022 |
| Application volume (GPA) | 15 | 15 |
| Timing | Preemergence | Preemergence |
| Crop Stage | - | - |
| Air temperature (°F) | 52 | 51 |
| Wind velocity (mph, direction) | 7, E | 6, E |

Results

In the first trial, percent injury in chickpea in response to either Goal or Kerb was not different between treatments (Table 2). In the second trial, injury increased with increasing rates of either Goal or Kerb (Table 3), indicating that there was some interaction with planter type. The uniform and precise depth control when using the Monosem appears to have reduced injury in chickpea treated with Goal or Kerb applied preemergence. Injured chickpea did not recover, although injury was not predictive of a yield loss. Yield was not significantly different between treatments in either trial (Tables 2 & 3). Yield was lower in Trial 2 primarily due to broadleaf weed interference. Trial 1 was treated with Valor and Outlook, which protected the crop for the season. Goal and Kerb may be effective herbicides for use in chickpea, although more studies are needed to understand herbicide efficacy, planting depth for reduced injury, and fit within the rotation. Kerb, in particular, may cause injury in winter wheat planted after chickpea, and rotation where canola follows chickpea may be the most practical approach to the use of Kerb in the Pacific Northwest.

Table 2. Percent injury and yield for preemergence treatments for Trial 1 at Cook Farm Pullman, WA. Trial 1 was planted with a Horsch drill and then treated preemergence with Valor (2 oz/A) plus Outlook (15 oz/A) broadcast over the entire site. Means with the same letters are not statistically different ($\alpha = 0.05$).

| Treatment | Rate | Injury* | | | Yield* |
|------------|---------|---------|---------|---------|---------|
| | | 6/15/22 | 6/29/22 | 7/12/22 | 9/27/22 |
| | Lb ai/A | % | | | Lbs/A |
| Nontreated | | 0 | 0 | 0 | 2440 |
| Goal | 0.125 | 16 | 18 | 14 | 2320 |
| Goal | 0.25 | 17 | 15 | 9 | 2370 |
| Goal | 0.5 | 21 | 16 | 18 | 2350 |
| Kerb WP | 0.2 | 15 | 12 | 11 | 2420 |
| Kerb WP | 0.4 | 10 | 9 | 9 | 2400 |
| Kerb WP | 0.8 | 18 | 15 | 14 | 2570 |

* Means not statistically different between treatments.

Table 3. Percent injury and yield for preemergence treatments for Trial 2 at Cook Farm Pullman, WA. Trial 2 did not include any other preemergence treatments and was planted using a Monosem vacuum plate planter with seeding depth set to 2 inches. Means with the same letters are not statistically different ($\alpha = 0.05$).

| Treatment | Rate | Injury | | | Yield* |
|------------|---------|---------|---------|---------|---------|
| | | 6/15/22 | 6/29/22 | 7/12/22 | 9/27/22 |
| | Lb ai/A | % | | | (lbs/a) |
| Nontreated | | 0 b | 0 b | 0 b | 950 |
| Goal | 0.125 | 7 ab | 13 ab | 10 a | 1080 |
| Goal | 0.25 | 12 ab | 20 ab | 12 a | 1310 |
| Goal | 0.5 | 17 a | 28 a | 14 a | 1390 |
| Kerb WP | 0.2 | 2 b | 7 ab | 5 a | 1130 |
| Kerb WP | 0.4 | 7 ab | 15 ab | 8 a | 1020 |
| Kerb WP | 0.8 | 10 ab | 15 ab | 12 a | 1120 |

*Means not statistically different between treatments.

Disclaimer

Some of the pesticides discussed in this presentation were tested under an experimental use permit granted by WSDA. Application of a pesticide to a crop or site that is not on the label is a violation of pesticide law and may subject the applicator to civil penalties up to \$7,500. In addition, such an application may also result in illegal residues that could subject the crop to seizure or embargo action by WSDA and/or the U.S. Food and Drug Administration. It is your responsibility to check the label before using the product to ensure lawful use and obtain all necessary permits in advance.