

# Tolerance of Chickpea Varieties to Pyridate

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*Cook Agronomy Farm in Pullman, WA*

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## Methods

The study was established at the WSU Cook Agronomy Farm near Pullman, WA. Treatments were applied post emergence (POST) detailed in Table 1 and Table 2. The study was conducted in a randomized split plot design with 3 replications within variety. Plots were 8' by 16' long. Chickpea varieties used were Royal, Sierra, Billy bean, and Sawyer. The chickpea varieties were planted in 75' strips using a Monosem planter on an 8 inch row spacing. Trial area was treated with glyphosate before planting as a preplant burn down.

Crop injury and common lambsquarters control were visually rated 19 days after treatment (DAT) of application A (Table 2). Plots were harvested by hand using 3 quarter-meter<sup>2</sup> quadrats per plot on September 1, 2016. All data were subjected to an analysis of variance using the statistical package built into the Agricultural Research Manager software system (ARM 8.5.0, Gylling Data Management).

## Results

No significant difference in crop injury were observed compared to the nontreated control. The variety Sierra had the greatest amount of visual injury 19 DAT with 38% injury with pyridate at 24 fl oz/A and 35% injury with pyridate at 48 fl oz A<sup>-1</sup>. Greater injury was observed at the higher rate of pyridate compared to the nontreated within each variety (Table 2).

The greater percent common lambsquarters control was observed at the highest rate of pyridate (48 fl oz/A) within each variety. Common lambsquarters control was significantly greater when pyridate was applied compared to the variety nontreated control.

Within variety, pyridate at 24 fl oz A<sup>-1</sup> applied to the Royal yielded 760 lb/A higher than the nontreated control at 610 lb A<sup>-1</sup>. At 48 fl oz A<sup>-1</sup> of pyridate, Royal yielded 1450 lb A<sup>-1</sup> more than the nontreated control. Sierra yields were similar with 880 lb more per acre at 24 fl oz A<sup>-1</sup> of pyridate and 1800 lb more per acre at 48 fl oz A<sup>-1</sup> compared to the nontreated control with 430 lb A<sup>-1</sup> yield. Sawyer also had an increase in yield as the rate of pyridate increased. The nontreated control for Sawyer yielded 430 lb A<sup>-1</sup> well the pyridate at 24 fl oz A<sup>-1</sup> yielded 1500 lb A<sup>-1</sup> and 48 fl oz A<sup>-1</sup> of pyridate yielded significantly more at 2090 lb A<sup>-1</sup>. Billy bean yielded the best out of the four varieties at both rates of pyridate with 2010 lb A<sup>-1</sup> (24 fl oz A<sup>-1</sup> pyridate) and 2600 lb A<sup>-1</sup> (48 fl oz A<sup>-1</sup> pyridate) significantly greater than the yield for the Billy bean nontreated treatment of 690 lb A<sup>-1</sup>

**Table 1. Treatment application details**

| Study Application              | A            |
|--------------------------------|--------------|
| Date                           | June 1, 2016 |
| Application volume (GPA)       | 15           |
| Crop Stage                     | 4-6" weeds   |
| Air temperature (°F)           | 75           |
| Soil temperature (°F)          | 62           |
| Wind velocity (mph, direction) | 7, SW        |
| Next rain occurred on          | June 8, 2016 |

**Table 2. Percent crop injury, percent common lambsquarters control, and yield following applications of paraquat with and without a nonionic surfactant at different application timings in chickpea. Pullman, WA, 2016. Means followed by the same letter are not statistically significantly different ( $\alpha=0.05$ ).**

| Treatment                  | Rate          |      | June 20, 2016 | June 20, 2016                | September 1, 2016 |
|----------------------------|---------------|------|---------------|------------------------------|-------------------|
|                            |               |      | Crop Injury   | Common lambsquarters control | Yield             |
|                            | lb ai/A       |      | %             | %                            | lb/A              |
| <b>Variety: Royal</b>      |               |      |               |                              |                   |
| Nontreated                 | -             | -    | 0             | 0 a                          | 610 a             |
| Pyridate (Tough)           | 24 fl oz/A    | 0.94 |               |                              |                   |
| NIS (Induce)               | 0.25 %<br>v/v |      | 7             | 38 ab                        | 1370 ab           |
| Pyridate (Tough)           | 48 fl oz/A    | 1.88 |               |                              |                   |
| NIS (Induce)               | 0.25% v/v     |      | 27            | 87 c                         | 2060 bc           |
| <b>Variety: Sierra</b>     |               |      |               |                              |                   |
| Nontreated                 | -             | -    | 0             | 0 a                          | 430 a             |
| Pyridate (Tough)           | 24 fl oz/A    | 0.94 |               |                              |                   |
| NIS (Induce)               | 0.25 %<br>v/v |      | 38            | 58 bc                        | 1310 ab           |
| Pyridate (Tough)           | 48 fl oz/A    | 1.88 |               |                              |                   |
| NIS (Induce)               | 0.25% v/v     |      | 35            | 90 c                         | 2220 bc           |
| <b>Variety: Billy bean</b> |               |      |               |                              |                   |
| Nontreated                 | -             | -    | 0             | 0 a                          | 690 a             |
| Pyridate (Tough)           | 24 fl oz/A    | 0.94 |               |                              |                   |
| NIS (Induce)               | 0.25 %<br>v/v |      | 7             | 53 bc                        | 2010 bc           |
| Pyridate (Tough)           | 48 fl oz/A    | 1.88 |               |                              |                   |
| NIS (Induce)               | 0.25% v/v     |      | 3             | 93 c                         | 2610 c            |
| <b>Variety: Sawyer</b>     |               |      |               |                              |                   |
| Nontreated                 | -             | -    | 0             | 0 a                          | 430 a             |
| Pyridate (Tough)           | 24 fl oz/A    | 0.94 |               |                              |                   |
| NIS (Induce)               | 0.25% v/v     |      | 8             | 70 bc                        | 1500 abc          |
| Pyridate (Tough)           | 48 fl oz/A    | 1.88 |               |                              |                   |
| NIS (Induce)               | 0.25% v/v     |      | 15            | 93 c                         | 2090 bc           |

**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.**