

## Russian thistle control in fallow with Talinor® herbicide

Mark Thorne and Drew Lyon

Russian thistle is a warm-season introduced annual forb and is a major weed problem in the low to mid-rainfall farming regions of eastern Washington. Russian thistle is particularly problematic during the fallow phase of wheat/fallow crop rotations (Figure 1) and if left uncontrolled, will significantly deplete soil moisture, and reduce yield of the following wheat crop. Chemical applications are used in reduced-tillage or no-till cropping systems to minimize soil moisture loss and to protect soil from erosion; however, control of ongoing flushes of Russian thistle through the summer requires repeat herbicide applications or tillage operations. Glyphosate is a common herbicide for weed control in fallow, but it has no soil residual, and repeat applications are often required. Glyphosate-

resistant Russian thistle is also now commonly found in eastern Washington. Herbicides with some soil residual could reduce the number of repeat applications, providing the herbicide is effective on Russian thistle. Talinor is currently not labeled for chemical fallow but does have soil activity and is being tested to determine if it can control flushes of Russian thistle following an initial application. Talinor

has a 1-month plant-back restriction for wheat and barley; therefore, applications would need to occur well in advance of fall planting.



Figure 1. Russian thistle nontreated (left) five weeks following Gramoxone + Talinor application (right) at Lind, WA

We compared tank mixes of Talinor plus PowerMax® or Gramoxone® SL 3 for Russian thistle control with other herbicides used for chemical fallow weed control including Sharpen®, Valor® SX, Reviton®, and Huskie®. Treatments were applied on June 6, 2024, in no-till fallow and July 5 in tilled fallow. Sharpen (saflufenacil), Valor (flumioxazin), and Reviton (tiafenacil) are Group 14 protoporphyrinogen oxidase (PPO) inhibitors that are primarily burndown herbicides with varying degrees of soil activity. Huskie is a product mix of pyrasulfotole and bromoxynil. Talinor is a product mix of bicyclopyrone and bromoxynil. Bicyclopyrone and pyrasulfotole are both Group 27 herbicides that inhibit carotenoid biosynthesis and have some soil activity. Bromoxynil is a Group 6 herbicide that inhibits photosynthesis but is only a contact herbicide with very little soil activity. PowerMax® (glyphosate, Group 9) and Gramoxone® SL 3 (paraquat, Group 22) were included to control Russian thistle already present at the time of application.

Treatments were applied with a CO<sub>2</sub>-pressurized backpack sprayer and 10-ft hand-held spray boom with six AIXR110015 TeeJet<sup>®</sup> nozzles. The spray output was 15 gpa with 40 psi nozzle pressure and 3 mph ground speed. The experimental design at each timing was a randomized complete block with four replicates per treatment and 10- by 30-ft plots. All treatments included ammonium sulfate (AMS) at 15 lb/100 gal and modified seed oil (MSO) at 0.025% v/v.

Soil pH and organic matter at both sites were 5.7 and 1.0%, respectively. At the June application site, Russian thistle plants were 2-8 inches tall and averaged 2.2 plants/yd<sup>2</sup>. The field was in no-till chemical fallow and had residual spring wheat stubble from the 2023 crop. Russian thistle at the July application site was 2-10 inches tall and averaged 0.8 plants/yd<sup>2</sup>. The field was in tilled fallow with a 4-inch dust mulch surface layer. Treatment efficacy was evaluated visually at 1 week after treatment (WAT), 3 WAT, and 5 WAT as a percentage of nontreated plants.

June applications of PowerMax + Reviton, Huskie, and Talinor, and Gramoxone SL 3 + Talinor maintained  $\geq 90\%$  control of Russian thistle throughout the five-week trial; however, by 5 WAT, the greatest control was from Talinor with either PowerMax or Gramoxone SL 3 (Figure 2). PowerMax alone increased in control from 1 WAT to 5 WAT but PowerMax with either Sharpen or Valor SX decreased in control suggesting some form of antagonism or interference with PowerMax uptake and translocation. Similar results were seen from the July application as all treatments except PowerMax + Sharpen or Valor SX maintained good control throughout the five-week period. However, PowerMax alone only reached 60% control by 5 WAT but PowerMax + Talinor controlled Russian thistle nearly 100% and was slightly more effective than Gramoxone SL 3 + Talinor.

Overall, Talinor is an effective tank mix partner with either PowerMax or Gramoxone SL 3 for controlling Russian thistle in fallow; however, there were no new flushes observed so we could not assess whether Talinor was effectively controlling new emergence. Timing of application and soil activity of the herbicide are important factors in Russian thistle control in fallow. Early applications with herbicides with little or no soil activity will not control subsequent flushes. Later applications may have the potential to be effective if they include tank-mix partners that are effective on larger plants, but larger plants also have had time to deplete soil moisture.

### Russian thistle control in fallow

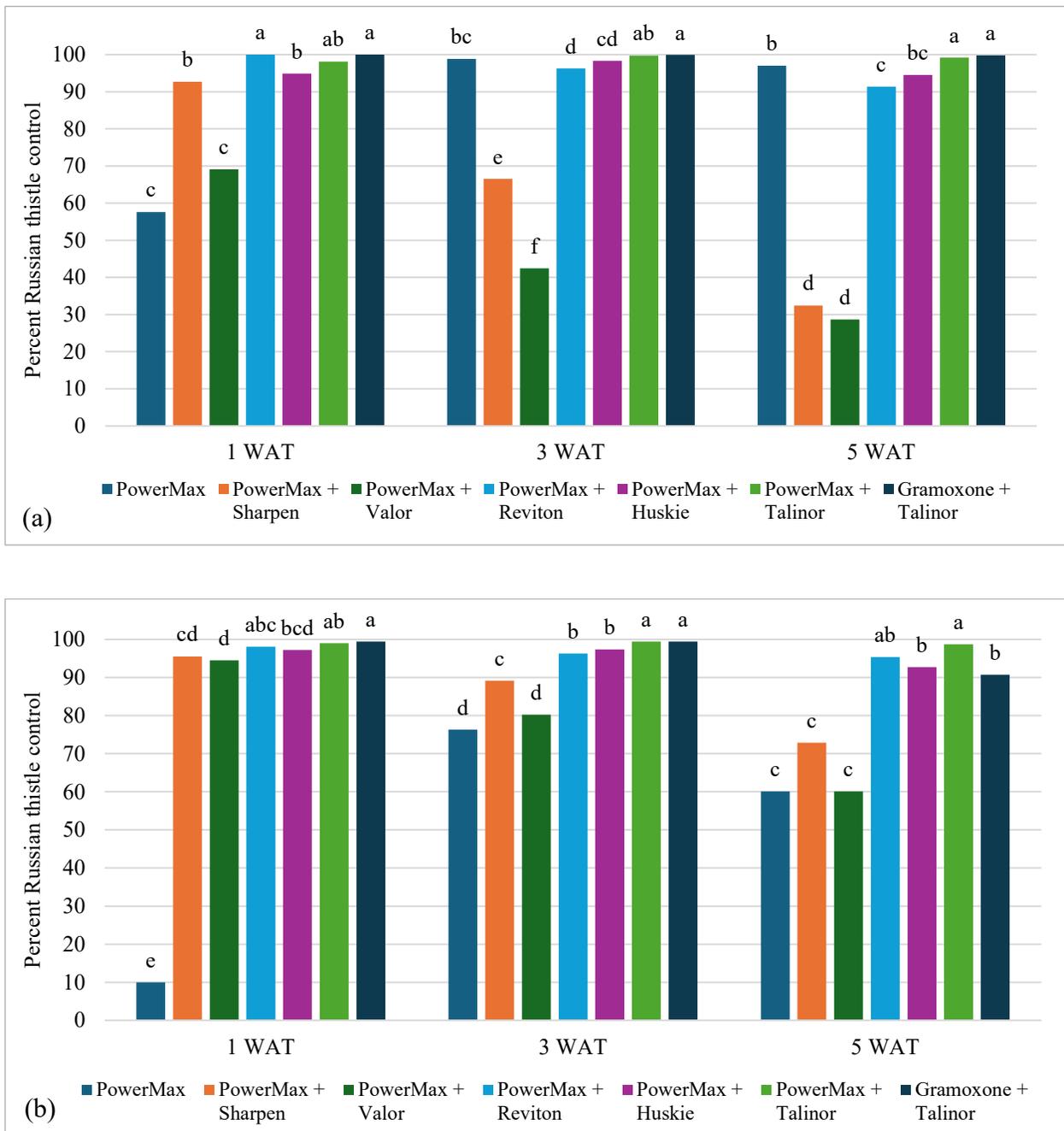


Figure 2. Russian thistle control in fallow as a percent of nontreated check visually rated 1 week after treatment (WAT), 3 WAT, and 5 WAT. Treatments were applied on (a) June 6 and (b) July 5 at Lind, WA. Columns within each rating time with the same letter are not significantly different from each other ( $P \leq 0.05$ ).

## **Off-Label or Experimental-Use 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.**