

Control of smooth scouringrush with sulfonylurea herbicides and non-ionic surfactants

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The sulfonylurea herbicide, chlorsulfuron, is effective for controlling smooth scouringrush (*Equisetum laevigatum*), and its long soil persistence is a likely factor. However, its persistence limits its use in areas where pulse or other susceptible crops are grown due to damage that can occur if the crops are planted within the plantback restriction period (see product labels for crop plantback restrictions). Other sulfonylureas have shorter plantback intervals, but their efficacy on smooth scouringrush may be lower. Recently, we have shown that the organosilicone non-ionic surfactant Silwet® L77 increases efficacy of glyphosate on smooth scouringrush. This trial compares Silwet L77 with M-90®, a commonly used non-ionic surfactant, each added to three different sulfonylurea herbicides. We compared Finesse® (chlorsulfuron + metsulfuron) with Amber® (triasulfuron) and Affinity® BroadSpec (thifensulfuron + tribenuron), both of which have relatively short plantback intervals. All herbicides were applied in 2019 during the no-till fallow phase of the rotation. In 2020, we evaluated treatments based on stem density in the winter wheat crop just prior to harvest.

The study site is located on the Hall farm near Steptoe, WA. The field is in a three-year rotation of no-till fallow/winter wheat/spring wheat. Soil pH and organic matter was 5.0 and 2.2%, respectively. Initial smooth scouringrush density averaged 468 stems/yd². Plots measured 10 by 30 ft and were arranged in a randomized complete block design with four replications per treatment and a factorial arrangement with three herbicides and two surfactants. All herbicide treatments were applied on June 12, 2019 with a



Figure 1. Smooth scouringrush in no-till fallow.

hand-held spray boom with six TeeJet® XR11002 nozzles on 20-inch spacing and pressurized with a CO₂ backpack at 3 mph. Spray output is 15 gpa at 25 psi.

A thick stand of smooth scouringrush in the nontreated check treatment averaged 239 stems/yd² but was not statistically different from any of the Amber or Affinity BroadSpec treatments (Table 1). Both Finesse treatments reduced density substantially compared with all other treatments. Finesse with Silwet L77 averaged 1 stem/yd² and was less dense than the Finesse + M-90 treatment, which averaged 5 stems/yd². Both Amber and Affinity BroadSpec may not have the soil persistence needed to give long-term control of smooth scouringrush. Furthermore, Silwet L77 improves efficacy of Finesse and appears to aid uptake through the stem.

Table 1. Herbicide and surfactant effect on smooth scouringrush in winter wheat following application in the previous fallow year.

Herbicide	Rate oz /A + % v/v	Scouringrush density* stems/yd ²
Nontreated check		239 a
Finesse + M-90	0.5 + 0.25	5 b
Finesse + Silwet L77	0.5 + 0.25	1 c
Amber + M-90	0.56 + 0.25	265 a
Amber + Silwet L77	0.56 + 0.25	211 a
Affinity BroadSpec + M-90	1.5 + 0.25	216 a
Affinity BroadSpec + Silwet L77	1.5 + 0.25	186 a

*Means are based on four replicates per treatment. Means within a column followed by the same letter are not significantly different at the 95% probability level, which means that we are not confident that the difference is the result of treatment rather than experimental error or random variation associated with the experiment.