Smooth Scouringrush control with Finesse® Cereal and Fallow Herbicide in winter wheat/ spring wheat/no-till fallow cropping systems

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Smooth scouringrush is a problem in no-till wheat/fallow rotations in the intermediate to low rainfall areas of eastern Washington (Figure 1). In spring wheat, smooth scouringrush has the potential to be more competitive than in winter wheat as the stems can emerge near the same time as the wheat; however, in winter wheat stem emergence often occurs as the wheat plants are jointing and may miss early herbicide applications. We are evaluating control following applications of Finesse (chlorsulfuron + metsulfuron) or Rhonox® (MCPA LV ester) during the no-till fallow phase, and Amber® (triasulfuron) or Rhonox during the crop phase. We have demonstrated that chlorsulfuron, one of the active ingredients in Finesse, is effective for controlling smooth scouringrush for at least two years after application. However, the question remains: is a second application in a subsequent fallow phase needed for continued long-term control? Furthermore, this study evaluates the application of Amber during the crop phases. Amber is molecularly similar to chlorsulfuron and is hypothesized to be a bridge application between the two fallow Finesse applications. Rhonox is a synthetic auxin herbicide (Group 4) that is used for broadleaf weed control in both fallow and grass crops and is effective for quick burndown of smooth scouringrush stems but long-term control is questionable.

Figure 1. Post-wheat harvest at Edwall, WA. Plot with no control of smooth scouringrush on left and control with Finesse on right.

Two trials were initiated in 2019, one near Edwall on the Camp farm, and a second near Steptoe on the Hall farm. Each site is in a no-till winter wheat/spring wheat/fallow rotation. The Edwall site is in a gentle-sloping northwest-facing draw with good moisture and well-drained soil, which is classified as a Broadax silt loam. Soil organic matter and pH measured 2.9% and 5.0, respectively. The Steptoe site is on a low-lying flat with inundated soil during winter and early spring. Soil at Steptoe is classified as a Caldwell silt loam. Soil organic matter and pH measured 3.4% and 7.2, respectively. Both sites average around 16 inches of precipitation per year.

At each site, plots measure 10 by 30 ft and are arranged in a randomized complete block design with four replications per treatment. All herbicide treatments were applied with a hand-held spray boom with six nozzles on 20-inch spacing and pressurized with a CO_2 backpack. Spray output in 2019-2021 was 15 gpa at 25 psi through TeeJet® XR11002 nozzles at 3 mph. In 2022-2024, spray output was 15 gpa at 40 psi through TeeJet AIXR10015 nozzles at 3 mph. Treatment sequences and herbicide rates are presented in Table 1.

Table 1. Herbicide sequences for long-term study for control of smooth scouringrush in winter wheat/spring wheat/fallow cropping systems trials at Edwall and Steptoe, WA.*

Seq	Fallow 2019	WW 2020	SW 2021	Fallow 2022	WW 2023	SW 2024	Fallow 2025
1	Finesse	Amber	Amber	Finesse	Amber	Amber	Final evaluations
2	Finesse	Amber	Rhonox	Finesse	Amber	Rhonox	
3	Finesse	Amber	Amber	Rhonox	Amber	Amber	
4	Finesse	Rhonox	Rhonox	Rhonox	Rhonox	Rhonox	
5	Finesse	Rhonox	Rhonox	Finesse	Rhonox	Rhonox	
6	Rhonox	Rhonox	Rhonox	Rhonox	Rhonox	Rhonox	

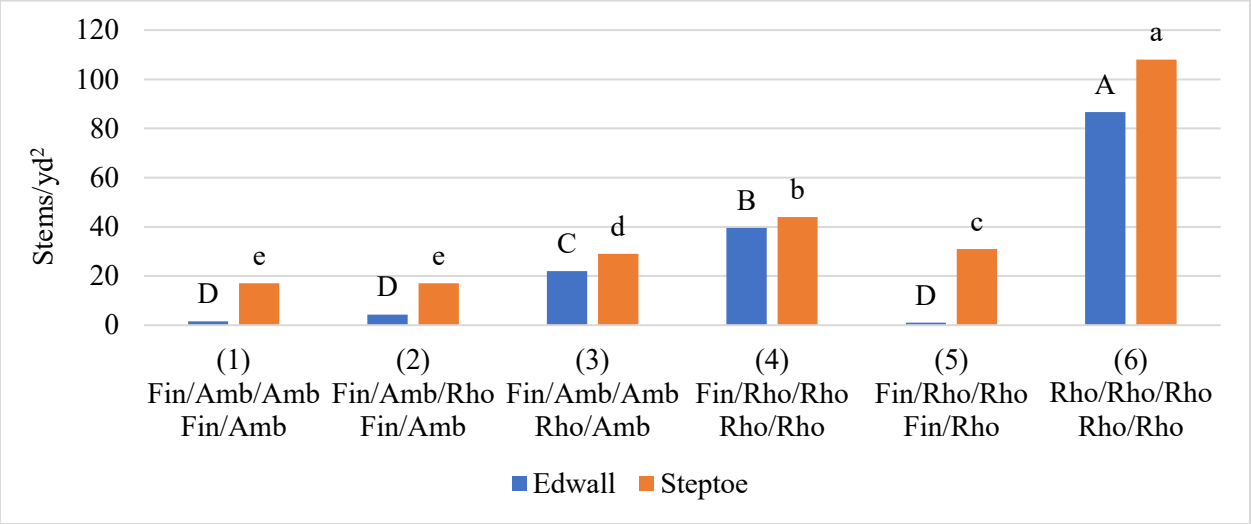
*Seq=sequence; WW=winter wheat; SW=spring wheat
Finesse (chlorsulfuron/metsulfuron) is applied at 0.5 oz/A.
Amber (triasulfuron) is applied at 0.56 oz/A.
Rhonox (MCPA) is applied at 34.6 oz/A in fallow and 24 oz/A in crop.
All treatments include NIS surfactant at 0.33% volume/volume concentration.

In June 2024, smooth scouringrush stem density was assessed in spring wheat before harvest at both locations. This assessment evaluates the cumulative efficacy of all applications from 2019 through 2023 (Table 1). Smooth scouringrush stems were counted in two 1.2-yd^2 quadrats per plot. Stem densities were greatest where Rhonox was applied each year (Table 1, seq 6), which further shows that Rhonox is not effective for long-term control (Figure 2). At the Edwall site, all treatments with Finesse applied in both fallow years had the lowest stem density in 2024. At the Steptoe site, the lowest stem densities were in treatments with Finesse applied in both fallow years and Amber applied in at least one of the crop years. At both sites, Finesse applied only in 2019 followed by Amber in each crop phase (Table 1, seq 3) was more effective than Finesse applied only in 2019 and followed only by Rhonox (Table 1, seq 4).

Spring wheat yields in 2024 differed by location. At Edwall, lowest yields corresponded with sequences where Rhonox was the only herbicide applied (Table 2, seq 6) or where Finesse was applied in 2019 and then followed only by Rhonox (Table 2, seq 4). Sequences 4 and 6 also corresponded with the least smooth scouringrush control (Figure 2). However, at Steptoe, no differences were found between yields. Smooth scouringrush can reduce crop yield if densities are high and crop competitiveness is low. Wheat yields at the Steptoe site tend to be higher than at Edwall likely because of greater soil moisture in the floodplain soil profile.

This research, thus far, indicates the need for Finesse applications in each fallow year of a three-year crop rotation that includes a fallow phase for long-term control of smooth scouringrush.

Figure 2. Smooth scouringrush stem density in 2024 spring wheat in a long-term herbicide rotation study that began in 2019 at Edwall and Steptoe, WA.*



*Herbicide sequences for each rotation are listed below each set of corresponding columns and coded as follows: Fin=Finesse; Amb=Amber; Rho=Rhonox. Means associated with each column are based on four replicates per treatment combined over two locations. Columns for each location with the same letter, case specific, are not significantly different (P≤0.05).

Table 2. Spring wheat yield in 2024 in relation to each herbicide sequence over six years at Edwall and Steptoe, WA.

	Herbicides applied in each phase of the rotation*						Spring wheat yield**	
Seq	2019 Fallow	2020 WW	2021 SW	2022 Fallow	2023 WW	2024 SW	Edwall	Steptoe
							--(bu/A)--	
1	Finesse	Amber	Amber	Finesse	Amber	Amber	46 a	59 a
2	Finesse	Amber	Rhonox	Finesse	Amber	Rhonox	42 ab	55 a
3	Finesse	Amber	Amber	Rhonox	Amber	Amber	45 a	55 a
4	Finesse	Rhonox	Rhonox	Rhonox	Rhonox	Rhonox	36 b	59 a
5	Finesse	Rhonox	Rhonox	Finesse	Rhonox	Rhonox	42 ab	60 a
6	Rhonox	Rhonox	Rhonox	Rhonox	Rhonox	Rhonox	37 b	62 a

*See Table 1 for herbicide and sequence information.
**Means followed by the same letter in each column are not statistically different (P≤0.05).