

Long-term Control of Smooth Scouringrush with Finesse® in Winter Wheat/Spring Wheat/No-till Fallow Cropping Systems

Mark Thorne and Drew Lyon

Smooth scouringrush is a problem in no-till wheat/fallow rotations in the intermediate to low rainfall areas of eastern Washington. 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 (Figure 1). 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. Smooth scouringrush stems emerging in winter wheat near Edwall, WA.

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 are applied with a hand-held spray boom with six nozzles on 20-inch spacing and pressurized with a CO₂ backpack. Spray output in 2019-2021 was 15 gpa at 25 psi through TeeJet® XR11002 nozzles at 3 mph. In 2022, 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 in eastern Washington.

Edwall and Steptoe herbicide sequences*							
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.

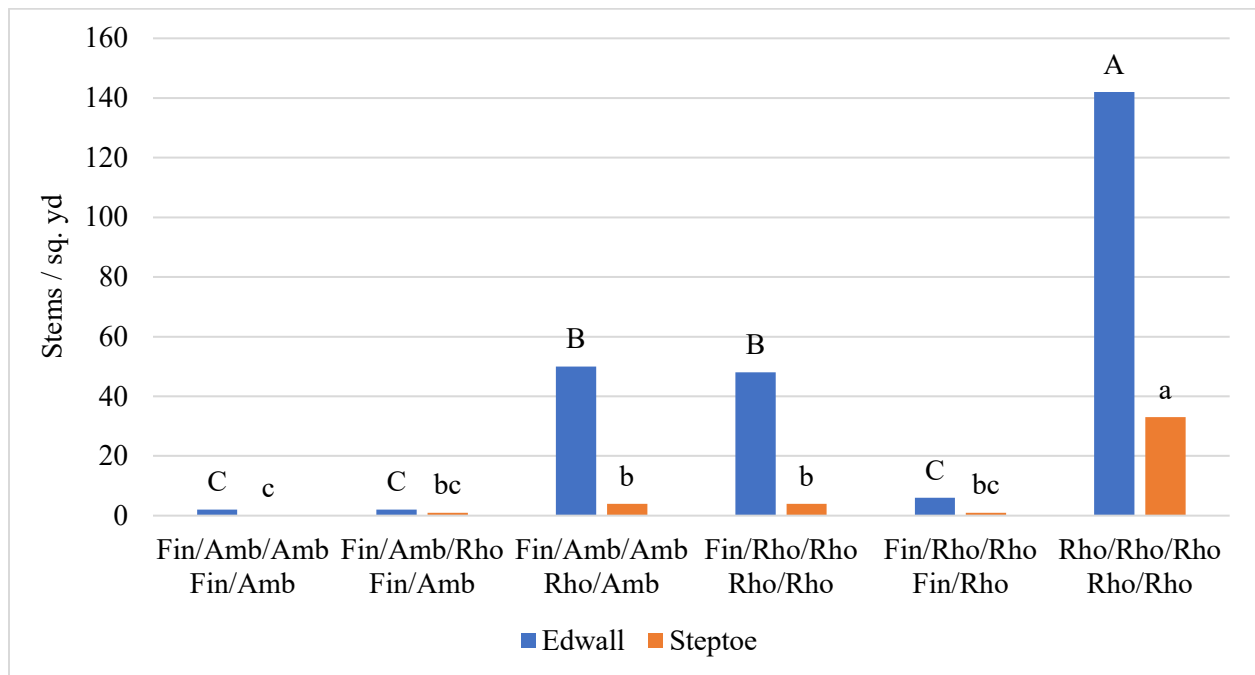
Amber (triasulfuron) is applied at 0.56 oz/A.

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 July 2023, smooth scouringrush stem density was assessed in winter wheat before harvest at both locations. This evaluation followed fallow applications in 2022, which marked the beginning of the second rotation cycle of the study that began in 2019 (Table 1). Smooth scouringrush stems were counted in two 1.2-yd² quadrats per plot. Stem densities were greatest in the treatment where only Rhonox was applied each year, which further shows that Rhonox is not effective for long-term control (Figure 2). At the Edwall site, all treatments with Finesse applied in 2022 had the lowest stem density in 2023. At the Steptoe site, only the treatment with Finesse in both fallow years and Amber in the crop years had significantly less stem density than the treatments without Finesse in 2022; however, the Steptoe site had flooded over winter which appeared to have reduced emergence. At both locations, it was evident that a single application of Finesse was still effective after three years, but that continued control requires a second Finesse application in a subsequent fallow year. Also, Amber applied in the crop phases did not appear to affect smooth scouringrush density (Figure 2). Winter wheat yields at both locations were in the 100 bu/A range (data not shown); however, smooth scouringrush density in the nontreated check at Edwall was great enough (Figure 2) to reduce yield down to 85 bu/A compared to the highest average yield of 101 bu/A. At Steptoe, there were no differences in yield across treatments.

Figure 2. Smooth scouringrush stem density in 2023 winter 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 are not significantly different at the 95% probability level, which may have resulted from similar treatment effects, but also from experimental or random error associated with the trial.