

Field horsetail control two years after initial applications in the Palouse region

Mark Thorne and Drew Lyon

Field horsetail (*Equisetum arvense*) is a member of a prehistoric group of plants in the genus *Equisetum*. Equisetums date back about 350 million years and were forage for dinosaurs and then became a major component of the vegetation that developed into coal during the Carboniferous period. Currently, three *Equisetum* species are common in the Pacific Northwest and include field horsetail, smooth scouringrush, and scouringrush. Field horsetail is a perennial rhizomatous species that produces fertile spore-bearing leafless stems early in the spring followed by vegetative stems that resemble Christmas trees that persist through the rest of the year up to freezing temperatures in the fall. Field horsetail can be found on flood plains and along roads where water collects in ditches and barrow pits.

In the high-rainfall Palouse region of eastern Washington and northern Idaho, field horsetail is a problem weed because it is very persistent, hard to control with tillage or herbicides, and is competitive with all crops grown (Figure 1).

Herbicides that could be effective do not fit well in the commonly used crop rotations because of long plant-back intervals that would injure sensitive crops like canola or pulses. Chlorsulfuron is an herbicide that is labeled on wheat and is effective on other *Equisetum* species like smooth scouringrush but has up to a 36-month plant-back interval to crops other than wheat. Other herbicides that can control field horsetail, e.g., sulfometuron (Oust[®]) or dichlobenil (Casoron[®]), are also not labeled for use in field crops grown in this region because of long soil residual and potential crop injury.



Figure 1. Field horsetail in spring canola.

In this region, crops are generally grown each year without a fallow year in between. Therefore, herbicides are applied either following crop harvest in the fall, preplant in the spring, or to a growing crop. Finesse[®] Cereal and Fallow Herbicide (chlorsulfuron + metsulfuron) is a Group 2 ALS inhibitor herbicide that has been effective on smooth scouringrush when applied during a fallow year, but it has not been well tested on field horsetail. Finesse has a 36-month plantback restriction to peas and a bioassay is recommended for chickpeas and canola. Express XP[®] (tribenuron) is another Group 2 herbicide that has a molecular structure very similar to sulfometuron but has not been tested for field horsetail control; however, Express XP has no plantback restrictions that would affect a crop after 2 months following application. Widematch[®] (clopyralid + fluroxypyr) is a Group 4 synthetic auxin herbicide product that can be applied to wheat up to the flag leaf stage. It is not known if Widematch has any effect on field horsetail

other than to burn down the current year's growth. The Widematch plantback interval to canola is 12 months or 18 months to any pulse crop.

Since field horsetail does not emerge early in the spring, foliar applications to field horsetail need to consider the labeled application window of the crop. Finesse, Express XP, and Widematch can all be applied to wheat when it is tillered up to the flag leaf stage, which is typically when field horsetail emerges in the spring. However, if these herbicides control field horsetail, crop rotations would have to be altered to avoid problems with plantback restrictions.

We initiated a field study September 2023 on the Druffel farm near Pullman, WA for field horsetail control in the high-rainfall (>20" annual precipitation) annual cropping region of the Palouse. The study site is on a floodplain near a creek with a Caldwell silt loam soil type having a pH of 5.4 and soil organic matter of 3.2%. The experimental design was a randomized complete block with four replicates per treatment and 10- by 25-ft plots. In 2023, the field was in spring canola and had been harvested prior to applying treatments on September 9. The soil surface contained canola stubble and green field horsetail stems that were 6 to 12 inches in height. Following treatment applications, the field was seeded to winter wheat in October 2023. Early spring applications were applied on April 2, 2024, when the winter wheat was fully tillered, but field horsetail had not yet emerged. Late spring applications were on May 9, 2024, when the wheat had flag leaves, and the field horsetail had vegetative stems up to 6 inches high but were still emerging. In 2025, the field was planted back to spring canola. All herbicide treatments were applied with a hand-held spray boom with six nozzles on 20-inch spacing and pressurized with a CO₂ backpack. Spray output was 15 gpa at 40 psi through TeeJet[®] AIXR110015 nozzles at 3 mph. All treatments included a nonionic surfactant (NIS) or an organosilicone surfactant (Syl-Coat[®]) (Table 1).

Final evaluations were made June 17, 2025, nearly two years after the initial applications in 2023, in a crop of spring canola (Figure 2). Visual ratings showed only 5% or less control from the fall 2023 Finesse applications, which was unexpected since Finesse has been successful for controlling smooth scouringrush, a related *Equisetum* species for up to three years after treatment. In this study, field horsetail



Figure 2. Field horsetail in spring canola in 2025. Left - Field horsetail in nontreated check. Right - Field horsetail control with Finesse applied in 2024 when winter wheat was near the flag leaf stage.

control in 2024 was >90%, one year after Finesse was applied in September 2023 (Table 1). In contrast, field horsetail control this year (2025) was only 31% and 37% one year after Finesse was applied in 2024 when the wheat was in the flag leaf stage. Additionally, no difference was seen with either an NIS or the Syl-Coat surfactant. This would suggest that Finesse activity on field horsetail is limited to about one year, and that fall applications may be more effective than spring applications when the field horsetail is still emerging from winter. Furthermore, Express XP or Widematch were not effective in long-term control of field horsetail.

Field horsetail is very difficult to control in Palouse fields; however, fall applications of Finesse may be effective when they are applied to actively growing stems. Finesse applied to bare soil is not effective as there appears to be minimal herbicide uptake through the rhizomes. Furthermore, applying Finesse to field horsetail in spring does not appear effective and may be because plants have not yet begun to translocate photosynthates back into the rhizomes. Plant back intervals for sensitive crops should be observed following any Finesse application, and bioassays used if there is any doubt.

Table 1. Field horsetail control two years after initial applications in 2023.

Herbicides*	Timing – wheat stage	Target	Field horsetail control**
			6-17-2025 % of nontreated check
Finesse + NIS	Fall – preplant	Horsetail	5 cd
Finesse + NIS fb Widematch	Fall – preplant fb flag leaf	Horsetail	4 cd
Finesse + NIS	Fall – preplant	Soil	0 d
Finesse + NIS	Early spring – tillered	Soil	11 bc
Express XP + NIS	Early spring – tillered	Soil	3 cd
Express XP + NIS	Late spring – flag leaf	Horsetail	2 cd
Express XP + Syl-Coat	Late spring – flag leaf	Horsetail	0 d
Finesse + NIS	Late spring – flag leaf	Horsetail	31 ab
Finesse + Syl-Coat	Late spring – flag leaf	Horsetail	37 a
Nontreated check	---	---	0

*Applications rates: Express XP = 0.33 oz/A; Finesse in crop = 0.4 oz/A; Finesse in fallow/preplant = 0.5 oz/A; Widematch = 1.33 pt/A; NIS (nonionic surfactant) = 0.5% v/v; Syl-Coat (organosilicone surfactant) = 0.5% v/v.

**Means followed by the same letter in each column are not statistically different ($P \leq 0.05$).