

Italian ryegrass control and crop yield in winter peas

Mark Thorne and Drew Lyon

Winter pea (*Pisum sativum* L.) is a legume crop that can be grown in the Palouse region of Washington and Idaho as an alternative to a spring-planted legume crop. Winter peas are planted in the fall and overwinter in a vegetative stage (Figure 1) until spring when they produce extensive above-ground biomass that can overtake and suppress weed growth. Italian ryegrass (*Lolium perenne* L. ssp. *multiflorum*) is a problem weed in the Palouse, especially for spring-planted crops, because of resistance to Group 1 and Group 2 herbicides. Planting winter peas increases the potential for Italian ryegrass control by combining the use of effective fall-applied herbicides with the suppressive competitive winter pea growth in the spring.



Figure 1. Winter pea seedling in November 2023.

A study was initiated north of Pullman, WA in early October 2023 in a field that had produced a winter wheat crop in 2023. The field was prepared for fall-seeding with a chisel plow followed by a harrow. Herbicides were applied on October 7 and winter peas were seeded October 9 and were emerging by October 17. Herbicides were applied with a 10-ft hand-held spray boom with six TeeJet[®] AIXR110015 nozzles on 20-inch spacing and pressurized with a CO₂ backpack. Spray output was 15 gpa at 40 psi with a ground speed of 3 mph.

Herbicides with active ingredients potentially effective on Italian ryegrass included clomazone in Command[®] 3ME (Group 13) and pyoxasulfone in Authority Supreme[®] (Group 15); however, Authority Supreme also contains sulfentrazone (Group 14), which has little cool-season grass activity. Experimental product F9600 contains bixlazine (Group 13), which is being tested for Italian ryegrass control. Spartan Charge[®] (carfentrazone, Group 14; sulfentrazone, Group 14), Express[®] XP (tribenuron, Group 2), and WeatherMax[®] (glyphosate, Group 9) are included for control of weeds other than Italian ryegrass, if present. Currently, Command 3ME and Express XP are not label for use in winter or dry peas.

By November 2023, some bleaching was seen on <2% of winter pea plants in plots treated with Command 3ME (data not shown) (Figure 2); however, this did not persist into the spring as crop injury was not present at the May 14, 2024, visual rating (Table 1). Furthermore, no bleaching or injury was observed on winter peas treated with experimental F9600. Group 13 herbicides block

pigmentation; therefore, injury would present early with bleached or white colored leaves. Winter peas treated with Authority Supreme or Authority Supreme + Express XP had 20 and 22% injury, respectively, as stunted growth at the May 14 rating.

The greatest Italian ryegrass control was 96% with Authority Supreme and 95% with Authority Supreme + Express XP (Table 1). Control with Authority Supreme is likely a function of the pyroxasulfone inhibiting emergence. The 24 oz/A rate of Command 3ME was 60% effective in controlling Italian ryegrass but none of the other treatments resulted in acceptable control.



Figure 2. Bleaching on winter pea leaf in November from a clomazone treatment.

Italian ryegrass did not reduce yields in this study as the nontreated check had the highest yield at 1490 lb/A and was not different from all other treatments except the 24 oz/A rate of Command 3ME yielding 1170 lb/A or the WeatherMax treatment yielding 1170 lb/A. It is possible that the high rate of Command 3ME did cause some crop yield loss, but it is not clear why WeatherMax alone would have reduced yield as all other treatments except the nontreated check included WeatherMax to control weeds or volunteer prior to planting.

In this study, the dense winter pea canopy had smothered any Italian ryegrass or other weeds present; therefore, visual ratings or density counts were not possible after the May ratings or prior to crop harvest. Weed control from competition from the winter pea crop for light and space would likely explain why the nontreated check had a relatively high yield compared with the other treatments. Crop competition plus an effective pre-plant herbicide could be a very effective strategy for controlling Italian ryegrass in a legume crop.

Table 1. Italian ryegrass control with herbicides applied preplant in winter peas, and winter pea injury and yield.

Treatments*	Rates	Visual ratings May 14, 2024		Pea Yield**
		Winter pea injury**	Italian ryegrass control**	
	(oz/A)	-----(% of check)-----		(lb/A)
Nontreated check	---	0	0	1490 a
Command 3ME + Spartan Charge	4 + 8	0 c	15 de	1270 ab
Command 3ME + Spartan Charge	8 + 8	0 c	34 bcde	1290 ab
Command 3ME + Spartan Charge	16 + 8	0 c	23 cde	1490 a
Command 3ME + Spartan Charge	24 + 8	0 c	60 b	1170 b
Authority Supreme	15.4	20 b	96 a	1470 a
Authority Supreme + Express XP	15.4 + 0.5	22 a	95 a	1340 ab
F9600 + Spartan Charge	12.8 + 8	0 c	39 bcd	1210 ab
F9600 + Spartan Charge	25.6 + 8	0 c	49 bc	1300 ab
WeatherMax	32	0 c	11 e	1170 b

*All treatments except the nontreated check included WeatherMax at 32 oz/A at application.

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

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.