

Fall-applied Eptam[®] 7E herbicide for Italian ryegrass control in spring pulse crops

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Controlling annual ryegrass (*Lolium perenne* L. ssp. *multiflorum*) in spring crops is a challenge in areas where Italian ryegrass has developed resistance to Group 1 (ACCase inhibitors) and Group 2 (ALS inhibitors) herbicides. We tested alternate herbicide strategies including Group 3 (microtubule assembly inhibitors) Sonalan[®] HFP, or Group 15 herbicides Eptam 7E, Far-Go[®], or Zidua[®] SC that inhibit synthesis of very-long-chain fatty acids; however, Eptam 7E and Far-Go require mechanical incorporation and all of these soil active herbicides require rainfall for activation. The lack of rainfall after application can limit their efficacy when applied in the spring prior to crop planting. Fall application guarantees there will be sufficient moisture to activate soil-applied herbicides, but it is not clear if herbicides applied in the fall will still be active the following spring.

We initiated a follow up study in September 2024, similar to one we conducted in in 2023, to compare fall and spring applied herbicides for controlling Italian ryegrass in pulse crops. Spring wheat stubble left from the 2024 crop was flail mowed to help with soil preparations. On October 17, the field site was cultivated to a depth of 4 inches to expose enough soil to intercept the herbicides. On October 18, Eptam 7E was applied alone and in tank mixes with other soil-active herbicides (Table 1) following rains that moistened the soil enough for cultivation and to absorb the herbicides. Following herbicide applications, the study site was roller packed to help seal the soil to keep the Eptam 7E from volatilizing (Figure 1). 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.



Figure 1. Field site following Eptam 7E application and roller packing.

The Eptam 7E label allows for fallow applications at a minimum of 45 days prior to planting of a crop not labeled for Eptam 7E application; therefore, the application timing was within label requirements because it was in the fallow period between spring wheat harvest and spring planting. Fall-applied tank mixes with Eptam 7E included Far-Go, Zidua SC (pyroxasulfone, Group 15), and Sonalan HFP. Spring applications of Zidua SC and Sonalan HFP followed fall-applied Eptam 7E. Applications of Far-Go above 1.5 qt/A, Sonalan HFP above 2 pt/A, or Zidua SC applied preplant in the spring on lentils or dry peas are experimental off-label applications.

Table 1. Italian ryegrass control in spring pulse crops following fall and spring-applied soil-active herbicides.

Treatment	Rate	Timing	Italian ryegrass control			
			4/10/25	6/17/25**		
			Preplant	Peas	Chickpeas	Lentils
			----- (percent of nontreated check) -----			
Nontreated	---	---	0	0	0	0
Eptam 7E	7 pt/a	Fall	34 d	29 ed	8 c	9 e
Eptam 7E	7 pt/a	Fall	70 c	18 e	11 c	10 de
Far-Go	2 qt/a	Fall				
Eptam 7E	7 pt/a	Fall	80 b	65 abc	51 ab	47 abc
Far-Go	4 qt/a	Fall				
Eptam 7E	7 pt/a	Fall	39 d	49 bcd	26 bc	32 bcd
Far-Go	1.5 qt/a	Spring				
Eptam 7E	7 pt/a	Fall	86 b	67 abc	45 ab	55 ab
Zidua SC	4 oz/A	Fall				
Eptam 7E	7 pt/a	Fall	34 d	72 ab	51 ab	56 ab
Zidua SC	2.5 oz/A	Spring				
Eptam 7E	7 pt/a	Fall	91 a	79 a	57 a	65 a
Sonalan HFP	4.5 pt/a	Fall				
Eptam 7E	7 pt/a	Fall	35 d	37 cde	20 c	22 cde
Sonalan HFP	2 pt/a	Spring				

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

**Crops were seeded on April 25, 2025.

On April 4, 2025, Roundup PowerMAX® (glyphosate) was applied at 32 oz/A to control volunteer wheat, Italian ryegrass, and other winter annual weeds that had germinated since fall applications of 2024. Italian ryegrass density averaged 860 plants/yd². On April 6, 2025, spring preplant treatments of Zidua SC, Far-Go, and Sonalan HFP were applied; however, the soil was too wet for mechanical incorporation, therefore, treatments were purposely applied just ahead of a rainfall event to facilitate movement and incorporation into the soil, which totaled 0.8 inches over two days. On April 24, a preplant treatment of Roundup PowerMAX was applied at 32 oz/A to control Italian ryegrass that had germinated since the earlier April 4 application. On April 25,

spring peas (160 lb/A), chickpeas (130 lb/A), and lentils (45 lb/A) were direct-seeded across each plot with a Great Plains® drill with double-disc openers on 10-inch spacing.

Herbicide efficacy was evaluated visually as percent of the nontreated check plots on April 10, 2025, prior to applying the spring treatments and crop seeding, and again on July 17 when the Italian ryegrass was headed and could be easily identified in the crops. Crop injury from the herbicides was not evident so visual ratings were not made.

Italian ryegrass control through the winter and into early spring was evaluated on April 10. Control was 91% with fall-applied Eptam 7E tank mixed with Sonalan HFP, which was greater than all other treatments (Table 1). Tank mixes with Far-Go at 4 qt/A and Zidua SC resulted in 80 and 86% control, respectively. The 2 oz/A rate of Far-Go was less effective than the 4 oz/A rate, resulting in only 70% control. Eptam 7E alone averaged only 34% control of Italian ryegrass but controlled at least 90% of volunteer wheat (data not shown).

By June 17, all three crops were flowering, and the Italian ryegrass was headed. The peas were approximately 16 to 20 inches high while the chickpeas were 12 to 14 inches and the lentils were 8 to 10 inches high. Italian ryegrass had reestablished since the preplant glyphosate treatment and control varied by crop as competition from the peas was greater than from the chickpeas or lentils. Control in all three crops was greatest with fall-applied tank mixes of Eptam 7E with Sonalan HFP, Far-Go at 4 qt/A, or Zidua SC, or the fall-applied Eptam 7E followed by spring-applied Zidua SC. The fall-applied Eptam 7E alone resulted in the least Italian ryegrass control in all three crops but was not different than the fall tank mix with Far-Go at 2 qt/A or the spring application of Sonalan HFP. The spring application of Far-Go resulted in slightly better control than just the fall-applied Eptam 7E in only the lentil crop.

Fall-applied Eptam 7E in our trial only marginally reduced Italian ryegrass density into the following spring prior to planting, but control was improved with tank mixes of Sonalan HFP, Zidua SC, or Far-Go at the higher rate. Eptam 7E has the potential of volatilizing if soil moisture is too high following application, and the wet 2024-25 fall and winter may have contributed to reduced control compared with the similar study conducted the previous year. However, of the more effective treatments in this study, only fall-applied Eptam 7E plus Zidua SC would be a labeled application. Spring-applied Far-Go or Sonalan HFP may have been more effective if they could have been mechanically incorporated and followed by rainfall to activate the herbicides, but that was not possible in this study. On a cautionary note, applying Zidua SC in the fall following a wheat crop where it may have been also applied is not recommended. Zidua SC is one of the few herbicides still active on Italian ryegrass and applications two years in a row may increase the possibility of developing resistance. Successfully incorporating other modes of action for Italian ryegrass control is critical for managing herbicide resistance, therefore, more work is needed to include herbicides such as Eptam 7E.

Off-Label or Experimental-Use Disclaimer

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