

Triazine tolerant spring canola may add an additional option for Italian ryegrass control

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Italian ryegrass and other weeds such as common lambsquarters can be difficult to control in spring canola. Currently, there are six modes of action with products labeled for weed control in spring canola and they include the following:

Group 1, ACCase inhibitors, e.g. clethodim, quizalofop

Group 2, ALS inhibitors, e.g. imazamox

Group 3, mitosis inhibitors, e.g. ethalfluralin, trifluralin

Group 4, synthetic auxins, e.g. clopyralid

Group 9, EPSPS inhibitors, e.g. glyphosate

Group 10, glutamine synthase inhibitors, e.g. glufosinate

Of these, Italian ryegrass has developed resistance to Group 1 and 2 herbicides in eastern Washington and northern Idaho. Group 4, clopyralid, is not effective for grass weed control. Italian ryegrass has also developed resistance to Group 9 and 10 herbicides in other areas, which could become a reality for growers in eastern Washington and northern Idaho. Lastly, Group 3 herbicides are only effective if they are incorporated into the soil and there is an adequate amount of precipitation ($\geq 0.25''$) shortly after application to activate the herbicide for uptake by the seedling roots of weeds. If all these herbicide options fail, then tillage followed by delayed seeding is a last resort.

Triazine herbicides, Group 5, photosynthesis inhibitors, e.g., simazine and atrazine, have some activity on Italian ryegrass and are very effective on many broadleaf weeds. Spring canola cultivars have been developed with resistance to triazine herbicides; however, the use of triazine herbicides on canola is not yet labeled. We conducted a



Figure 1. Triazine tolerant spring canola 52 days after seeding. Left - Photosyntech NCC-25-TZ-07 spring canola. Right - Photosyntech NCC-25-TZ-412 spring canola. Photos taken June 17, 2025.

trial on the WSU Cook Agronomy Farm evaluating yield of two triazine tolerant cultivars, Photosyntech NCC-25-TZ07 and NCC-25-TZ-412, and atrazine herbicide (AAtrex[®] 4L) for control of Italian ryegrass control.

Prior to seeding, liquid fertilizer was applied at 110-20-0-25-0.3-0.3 N-P-K-S-Zn-B lb/A and then cultivated with a field cultivator to incorporate the fertilizer into the soil. Canola varieties were seeded April 27, 2025, in two non-randomized blocks with a Great Plains direct-seed drill at a seeding rate of 8 seeds/ft² at a depth of 0.75 to 1.0 inches into moist soil. Each cultivar block was 30 by 120 feet and was divided into three non-randomized 10-ft strips lengthwise for herbicide treatments. Herbicide treatments included a nontreated check, AAtrex 4L applied post-plant pre-emergence (PRE) at 56 fl oz/A, and AAtrex 4L applied at 28 fl oz/A PRE and again post-emergence (POST) at 28 fl oz/A (Table 1) when the canola had 3 to 5 leaves and the Italian ryegrass had 1 leaf to 3 tillers. In addition, common lambsquarters had germinated and was 0.5 to 2 inches in diameter. The PRE treatments were applied on May 1 and the POST treatments were applied on May 27, 2025. All AAtrex 4L applications included Crop Oil M at 1% v/v. All 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.

Table 1. Italian ryegrass and common lambsquarters control in triazine tolerant spring canola with AAtrex 4L atrazine herbicide.

#	Herbicide*	Rate	Timing**	Visual control ratings***				Canola Yield
				IR 5/27	LQ 5/27	IR 6/17	LQ 6/17	
		fl oz/A		----- % of nontreated check -----				lb/A
1	AAtrex 4L	56	PRE	10	95	68	95	2200
2	Nontreated	---	---	0	0	0	0	2070
3	AAtrex 4L	28	PRE + POST	10	87	45	100	2110

*All AAtrex 4L treatments included Crop Oil M at 1% v/v

**PRE=post-plant, pre-emergence; POST=post-emergence when the canola had 3 to 5 leaves.

***IR=Italian ryegrass; LQ=common lambsquarters.

Visual assessments of Italian ryegrass and common lambsquarters control were made May 27, when the POST treatments were applied, to evaluate early control from the PRE treatments. Statistical analysis was not performed because the study was non-randomized; however, evaluations were similar within each cultivar, therefore averaged together. Italian ryegrass had emerged following the PRE treatments and was only controlled 10% from AAtrex 4L at either

the 56 or 28 oz/A rates. However, common lambsquarters control was 95% with the 56 oz/A rate and 87% with the 28 oz/A rate (Table 1). On June 17, Italian ryegrass and common lambsquarters control averaged 68% and 95%, respectively, from the 56 oz/A PRE treatment, and 45% and 100%, respectively, with the split 28 oz/A PRE + POST treatments. Canola yield was similar between cultivars and averaged between 2070 and 2200 lb/A and was not affected by either of the AAtrex 4L treatments.

Overall, Italian ryegrass was not controlled early as plants emerged following the PRE treatments. This was likely due to lack of rainfall after planting; however, control improved as the crop matured. The split PRE + POST treatment with 28 oz/A PRE did not appear to be quite as effective as the 56 oz/A PRE treatment. AAtrex 4L was very effective at controlling common lambsquarters as control on June 17 was 95% from the 56 oz/A PRE treatment and 100% with the split PRE + POST treatment. It is likely that a POST application on broadleaf weeds is effective because of direct foliar uptake.

Both cultivars yielded well given the drought conditions and lack of rain following seeding. Furthermore, the cultivars appeared to be very tolerant of atrazine as no obvious differences were seen between the AAtrex 4L treatments and the nontreated check strips. Italian ryegrass density averaged approximately 20 plants/yard² in the nontreated check strips on May 27, which was not dense enough to reduce yield, however, common lambsquarters was more prevalent and continued to emerge in the nontreated check strips as the crop matured. The success of atrazine for controlling Italian ryegrass appears only moderate, but adding a Group 3 herbicide as second mode of action may increase efficacy.

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