

Evaluation of preemergence herbicides for the control of tumble mustard in fall-sown peas

Henry Wetzel and Drew Lyon

A field study was conducted at the Lind Dryland Research Station near Lind, WA to evaluate crop safety and broadleaf weed control in fall-sown peas with various herbicides. The study area followed a fallow period. 'Blaze' fall-sown peas were seeded on August 28, 2019 at the rate of 110 lb/A with a Valmar air seeder, with a modified deep furrow configuration, on a 12-inch row spacing. Seeds were placed 2 inches into moist soil. Soil at this site is a silt loam with 1.1% organic matter and a pH of 6.4. On August 30th, treatments were applied with a CO₂-powered backpack sprayer set to deliver 15 gpa at 48 psi at 2.3 mph. The air temperature was 83°F, relative humidity was 36% and the wind was out of the southwest at 6 mph. At the time of application, the peas had just begun imbibing water from the soil. The trial area was harvested with a Kincaid 8XP plot combine on July 14, 2020.



Winter annual broadleaf weeds have been the most problematic weeds in fall-sown winter peas. They can emerge with the crop, and they compete with the crop longer than warm season weeds that emerge in the spring. Tumble mustard was the predominant species present in this study and occurred at a moderate level. Tansy mustard was present at a very low level.

Two rainfall events on the 9th and 11th of August, totaled 0.65 inches, and another 0.52 inches was received on September 8th, which must have triggered germination of downy brome as it significantly infested the trial site. On October 10th, the trial area was sprayed with 5.33 fl oz/a of Section[®] Three (clethodim) plus McGregor's Crop Oil M (1% v/v) to control the downy brome. The September 8th rain event was enough to activate the broadleaf herbicides in a timely fashion. These rainfall events were not enough to germinate broadleaf weeds after the crop emerged and the field dried out mid-September through the end of November. The trial area began to pick up regular precipitation in December and in general the site experienced an open winter, suggesting that tumble mustard may have emerged late winter or early spring.

Crop injury was not observed with any of the treatments in this study. The majority of the treatments in this study provided good to excellent control of the tumble mustard (Table). The exceptions were Valor[®] SX + Dual Magnum[®], BroadAxe[®] XC and Spartan[®] Charge, which provided fair control. Compound X is a product that is currently in development, but the parent company prefers to keep its identity confidential. There was a significant difference among the two rates evaluated, and the higher rate of 4.1 fl oz/a provided fair control. None of the treatments affected yield when compared to the nontreated check.

		4/16	5/14	7/14
		Tumble mustard		Yield
Treatment	Rate	control		
	fl oz/a	-----%-----		lb/A
Nontreated Check	--	--	--	1570 a
Spartan [®] Charge	7.75	39 c ¹	54 ef	1850 a
Authority [®] Supreme	11.6	83 ab	85 a-c	2490 a
BroadAxe [®] XC	32.0	43 c	61 d-f	1930 a
Pursuit [®]	3.0	99 a	95 a	2170 a
Pursuit + Lorox [®] DF	3.0 + 20.0 oz	98 a	93 a	2140 a
Sharpen [®] + TriCor [®] DF	2.0 + 8.0 oz	94 ab	84 a-c	2040 a
Sharpen + TriCor DF + Lorox DF	2.0 + 8.0 oz + 20.0 oz	98 a	96 a	2090 a
Valor [®] SX + Dual Magnum [®]	2.0 oz + 21.0	74 b	74 b-d	2040 a
Prowl [®] H ₂ O + TriCor DF	32.0 + 8.0 oz	91 ab	90 ab	1980 a
Compound X	2.5	40 c	43 f	2070 a
Compound X	4.1	81 ab	68 c-e	1870 a

¹ Means, based on three replicates, within a column, followed by the same letter are not significantly different at P = 0.05 as determined by Fisher's protected LSD test, which means that we are not confident that the difference is the result of treatment rather than experimental error or random variation associated with the experiment.