

Influence of Fallow Tillage on Jointed Goatgrass Emergence and Competition in Winter Wheat. Exp.#99-190 and #00-190. At the Columbia Basin Agricultural Research Center near Moro, Oregon (12 inch annual precipitation), a study was established to evaluate the effects of post-harvest tillage on jointed goatgrass (JGG) emergence and competition in winter wheat. Plots were established in September 1998 on a field of winter barley stubble, and a second series of plots were established in September 1999 adjacent to the first site. Both sites had no previous history of JGG infestation. The study sites were arranged in a RCB split-plot design with 5 replications. Main treatments consisted of six post-harvest stubble tillage timings: 1) Early post-harvest disking, 2) disking in October, 3) disking in March, 4) disking in May, 5) disking at all tillage timings, and 6) No tillage. Main plots were 40 ft. by 50 ft. in size. Sub-plots consisted of a low or high JGG density, and were seeded in the fall of 1998 and on the second site in fall of 1999 with a drop type seed spreader. Sub-plots were 20 ft by 50 ft in size. The target densities of 5 and 75 JGG joints per m² were seeded into standing winter barley stubble on 4 September 1998 and at the second site on 13 September 1999. Post-harvest stubble tillage treatments consist of disking standing grain stubble twice with a John Deere 620 tandem disk with 20-inch discs at 7.5 inch spacings. No glyphosate has been applied to wheat stubble in the fall on any treatments due to dry autumn conditions. Glyphosate is applied in spring immediately prior to primary tillage to establish summer fallow. After the disking treatments, fallow operations consist of chisel plowing, cultivation, and rodweeding after completion of the final tillage (stubble disking) operation.

There were slight differences in JGG plant counts and biomass from tillage timing date, intensity, or no-till (Table), but these were not related to differences in wheat grain yield or JGG dockage (contamination of harvested grain). The study will continue through another cycle in the wheat-fallow crop rotation to determine if small differences in JGG populations due to tillage timing can have an effect over time.

Table. Influence of tillage timing and jointed goatgrass density (low/high) on jointed goatgrass counts in winter wheat. Moro, OR. 2000. (First study site).

Tillage timing ¹	JGG plant counts 3/27/00		JGG plant counts 11/2/00		JGG biomass 7/7/00		Wheat grain yield		JGG dockage	
	Low	High	Low	High	Low	High	Low	High	Low	High
	----- plants/m ² -----				---- gm/m ² ----		----- bu/A -----		---- % -----	
September	0	3	0	6	0.7	5.1	64	58	0.02	0.17
October	0	4	0	6	0.1	9.1	62	58	0.01	0.17
March	1	4	2	16	0.2	11.4	65	61	0.01	0.18
May	1	4	1	18	1.3	8.7	66	60	0.02	0.17
All times	0	4	0	2	0.1	9.9	63	61	0.02	0.18
No tillage	0	3	1	14	0.0	8.3	63	58	0.03	0.19
LSD (0.05)	ns	ns	ns	3	3.9		4		ns	ns

¹ Winter wheat seeded on 10/25/99, and harvested on 7/25/00. September disking on 9/15/00. October disking on 10/30/00.