

Onion Planting Configuration/Cover Crop Trial, Carrington, 2002. (Hatterman-Valenti and Hendrickson)

**Objective:** Evaluate the effects of planting configuration and cover crops on the grade and yield of 'Teton' onion.

**Methods:** The study was conducted at the NDSU Carrington Research Extension Center on a loam soil previously planted to spring wheat. Onions 'Teton' were planted at 104,000 seeds/acre in two double rows, spaced 16 inches apart on May 17. Onion planting configuration treatments were; spring bed, spring bed followed by a dammer-diker, ridge till, flat ground, and flat ground followed by a dammer-diker. Spring beds were 24 inches wide by 15 inches high on 60-inch centers. For the ridge till plots, a 5-foot wide chisel plow was used to create 2 ridges spaced 16 inches apart. A spade was used to simulate the action of a dammer-diker on July 11. Planting configuration treatments were the main plots and were arranged in a randomized complete block design with three replications. Cover crops were the split plots within each planting configuration. The cover crop treatments were; no cover, barley, and canola. One row of barley or canola was planted May 17 between the two onion rows at 60 and 5 lb/acre, respectively. Individual plots were 5 ft wide by 22 ft long. On June 24, 1.5 pt Prowl + 1.5 pt Buctril + 0.6 pt Goal was applied to 2.5-leaf onion, and 16-inch tall barley and canola. Assure II at 10 oz/A + 1 % v/v crop oil concentrate was applied to 3.5- to 4-leaf onion and 16-inch tall barley on July 2. A second application of Buctril + Goal was applied on July 12 to 5.5 leaf onion and 24-inch tall, blooming canola. On October 8 the onions were pulled, topped, and cured in a forced air drier. The onions were graded October 14-15. Split and diseased bulbs were graded as culls regardless of diameter.

**Results:** The center of each ridge was flattened by the planter press-wheels. This created a poor seedbed and resulted in reduced harvestable bulbs and total yield (Table 1). The canola cover crop also reduced the number of harvested bulbs and total yield due label application restrictions with Buctril and Goal (Table 2). Both herbicides cannot be applied to onions less than the 2-true leaf stage, which enabled the canola to grow beyond a controllable size. Raised beds produced more jumbo onions (3-4 inch) than other planting configurations. The dammer-diker application increased jumbo onions and total yield, but the trend was not statistically significant.

*Table 1.* Effect of planting configuration on onion yield and grade when averaged over cover crop treatments.

Planting Configuration	Yield				Culls	# of Bulbs 1000s/A
	<2 1/4"	2 1/4 to 3"	3 - 4"	Total		
	cwt/A					
Raised bed / dammer-diker	10.4	84.7	133.2	228.3	0.8	58
Raised bed	12.5	79.6	124.4	216.5	1.4	57
Flat ground / dammer-diker	30.0	107.6	74.3	211.9	0.8	67
Flat ground	28.3	107.1	65.7	201.1	0.2	65
Ridge till	13.6	74.3	72.0	159.9	0.2	44
Mean	19.0	90.7	93.9	203.5	0.7	58
LSD (0.05)	8.9	NS	33.2	44.0	0.6	11

*Table 2.* Effect of cover crops on onion yield and grade when averaged over planting configuration treatments.

Cover Crop	Yield				Culls	# of Bulbs 1000s/A
	<2 1/4"	2 1/4 to 3"	3 - 4"	Total		
	cwt/A					
No cover	6.0	102.1	175.3	283.3	0.7	63
Barley	20.6	112.4	103.1	236.1	0.9	65
Canola	30.4	57.5	3.4	91.3	0.5	46
Mean	19.0	90.7	93.9	203.5	0.7	58
LSD (0.05)	8.9	24.8	25.7	34.0	NS	9