

## Row Spacing Effect on Alfalfa Yield and Persistence

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Row spacing of new alfalfa stands varies according to type of planting equipment used, environment, and individual preference. Seeding rates are often reduced as row spacing increases based primarily on the assumption that increased competition within a row will reduce stand density over time. The objective of this experiment was to evaluate yield and persistence of alfalfa seeded at different row spacings but at the same seeding rate. Two commercially available alfalfa cultivars ('Hybriforce 400' and '6400HT') were seeded in 2005 near Aurora, SD (Location 1) and South Shore, SD (Location 2). Three row spacings were evaluated (0, 15, and 30-cm). Plots with 0-cm row spacing were seeded with a Brillion-type planter while those with 15- and 30-cm row spacing were planted with a Carter walk-behind drill. Plots for each row spacing were seeded at the same rate (20.2 kg pure live seed PLS/ha). Experimental design consisted of a randomized complete block with four replications. Stand density (plants/m<sup>2</sup>) was determined approximately 30-d after planting, during autumn of the seeding year, and at first cutting the year after establishment by excavating plants from two 0.09 m<sup>2</sup> areas within a plot. Stand counts have not yet been taken at Location 1 in 2006 due to winter injury. Plots were harvested once during the seeding year at both locations but yield was determined only at Location 1. First cut yield the year after establishment was determined at Location 2, but not at Location 1 because of winter injury. There was a row spacing effect ( $P < 0.10$ ) at both locations in the seeding year and at Location 2 the spring after establishment (Table 1). At both locations, stand density was highest for the 15-cm row spacing except at Location 1 in autumn 2005 when stand densities were similar for 0- and 15-cm row spacings. There were no significant yield differences among row spacings or cultivars at Location 1 in 2005; however, yields were higher with 0- and 15-cm row spacings than 30-cm at Location 2 in 2006. We planted additional plots at both locations in 2006 and will continue to monitor alfalfa yield and persistence for several years.

Table 1. Plant density and dry matter yield of alfalfa planted at three row spacings at two locations in eastern South Dakota. Values are averaged across two alfalfa cultivars.

Row spacing (cm)	Location 1			Location 2			
	Stand density		Yield	Stand density		Yield	
	06/27/05	9/22/05	9/14/05	06/27/05	10/1/05	6/7/06	6/7/06
	---- plants/m <sup>2</sup> ----		kg/ha	----- plants/m <sup>2</sup> -----		kg/ha	
0	834	606	2255	355	268	192	5216
15	989	704	2263	639	667	265	4955
30	601	541	2179	439	295	159	4230
p-value	<0.001	0.066	0.7	0.058	<0.001	0.004	0.077
LSD (0.10)	105	112	NS	195	137	47	725