New Red Clover Cultivar for the Northern Great Plains

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There is a need in the Northern Great Plains for a vigorous forage legume adapted to establishment and persistence in overgrazed and otherwise poor condition predominantly introduced cool-season pastures. Red clover, more shade tolerant in the seedling stage than many other legumes, seems a logical choice for pasture renovation. Our objective was to develop, through natural and phenotypic selection, a red clover cultivar for eastern South Dakota.

Eight replicates of 'Marathon', 'Concord', 'Persist', 'RedStar', and SDI29 (bulk seed from sites along the eastern edge of SD) were established in 1994. Seed collected in 1996 and 1997 was bulked across years. All entries contributed. Therefore, the parent population (SDRCO1) consisted of seed produced from open-pollinated persistent plants from 4 cultivars and 1 local population that had survived 2 or 3 winters at Brookings, SD. Cycle 2 was artificial selection for vigor and disease resistance in SDRC01 (SDRCO1 Select) in 1998. Weak and diseased plants were culled. Remaining plants were allowed to cross-pollinate for seed production. Breeders seed collected in 2001 and 2002 was bulked across years. Foundation seed is currently being produced and cultivar release is expected in 2005.

Though not significant, forage production of SDRC01 Select was consistently higher than 8 other cultivars at each harvest (Table 1). To mimic pasture renovation, SDRC01 Select and 7 red clover cultivars were established in a spaced-plant sod nursery at 2 locations in eastern SD in 2003. Winter survival data collected in June 2004, showed 100 percent survival at the Brookings location for all entries. However, the more northern location averaged 59% survival across all entries while SDRC01 Select had 77% survival (Chi-squared = 14.0*). This new cultivar has good forage yield and persistence characteristics in eastern SD, supporting the premise that red clover responds quickly to natural selection and can undergo genetic shifts and adapt to an area in a relatively short period of time.

Table 1. Dry matter forage production of SDRCO1 Select and 8 red clover cultivars in 2002.

Cultivar	June harvest	July harvest	October harvest
	grams DM/plant		
SDRC01 Selected	58.0	33.3	106.6
Redlangraze	56.7	28.6	92.3
Belle	54.1	28.2	104.4
Red Start	52.9	30.0	89.9
Rudolf	52.4	31.6	100.4
Plus	51.8	30.4	98.0
Wildcat	50.8	29.3	96.5
Scarlett	50.3	28.9	103.6
Freedom!	46.8	31.4	97.2