Morphological and Agronomic Characteristics of a Feral Population of Alfalfa

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There is increasing interest in development of alfalfa cultivars adapted for establishment, persistence, and ability to spread naturally in poor condition grasslands. Yellow-flowered alfalfa (*Medicago sativa* subsp. *falcata*) has shown potential for improving rangeland (1) and stockpiling until July to provide nesting habitat for gamebirds in the northern Great Plains (2). This in mind, seed was collected from about 200 individual plants of a feral alfalfa population on the Grand River National Grassland in SD. The population traces back to introductions of Russian yellow-flowered alfalfa to ranches in that area during the early 1900s by N.E. Hansen (3). Seedlings from half-sib families were transplanted to single-row nurseries at Highmore, SD, Ames, IA, Mandan, ND, and Logan, UT. Data were collected for biomass (Table 1), growth habit, flower color, pod shape, and persistence. 'Vernal' and '5454' were checks. Plots were harvested once/yr at Highmore (July) and Mandan (Aug.) and twice/yr at Logan (June, Aug./Sep.) and Ames. Differences were found among families for biomass (Table 1), flower color (more than 60% of the families contained yellow-flowered plants and 12% were entirely yellow-flowered), growth habit (semi-sprawling to bowl shaped), and pod shape (linear-sickle to >single coil). Morphological characteristics indicated the contribution of adapted *Medicago sativa* ssp. *falcata* to development of this naturally selected hybrid population. Selections made at each location will be evaluated for potential development of new cultivars for renovating depleted grasslands in Midwest and Rocky Mountain areas.

Table 1. Variation in biomass (Mg ha^{-1}) among families from a feral population of alfalfa from northwestern SD and checks in single-row nurseries in SD, ND, and UT.

Location	Year	Harvest	Grand Mean	Family Means	Check Means
SD	2002		2.5	0.7-4.9	2.1, 3.0
	2005		2.1	0.9-4.1	1.6, 1.7
ND	2003		1.1	0.2-2.2	0.7, 1.0
	2004		2.8	1.1-6.0	1.7, 2.9
UT	2004	1	5.6	3.7-8.2	4.6, 6.8
	2004	2	1.9	0.7-3.1	2.8, 2.9
	2005	1	6.9	5.2-8.9	6.0, 7.3
	2005	2	1.4	0.4-3.4	1.8, 2.4

References

1. Berdahl, J. et al. 1989. Survival and agronomic performance of 25 alfalfa cultivars and strains interseeded into rangeland. JRM 42:312-316.
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