

South Dakota - Yellow-Flowered Alfalfa Shows Promise in SD

by Arvid Boe, Lan Xu, Roger Gates and Patricia Johnson, South Dakota State University

Yellow-flowered (YFA) and predominantly yellow-flowered (PYFA) alfalfas, both commonly referred to as 'falcata', are more drought tolerant, winter hardy, and grazing tolerant; and are better suited for stockpiling for forage, nesting habitat, and biomass production than conventional alfalfa, especially in semiarid regions (Table 1). Research on YFA and PYFA at SDSU includes:

1. Selection for persistence under grazing in inter-seeded rangeland near Buffalo, SD;
2. Determining the ecological impact of feral PYFA on rangeland near Lodgepole, SD;
3. Determining genetic variation for agronomic traits in mixtures with cool-season grasses at Highmore and Brookings, SD.

Some preliminary results from experiments at Brookings are presented in Table 1. The objective of this experiment is solely to determine variation among populations of alfalfa for forage production in competition with cool-season grass swards. Alfalfas were transplanted into perennial cool-season grass swards in June 2006, with 1' between plants within a row and 3' between rows (Table 1).

For ease of harvesting the alfalfa, the grass is periodically mowed between the rows of alfalfa and is not included when determining forage production. In grass swards, stockpiled YFA and PYFA were more productive than conventional alfalfa in mid July, demonstrating a forage yield advantage for the former in mixtures with grasses in a delayed-first-harvest system. Maturity at harvest ranged from late flower to early pod. A greater than two-fold yield difference (1470 vs. 640 lb/ac) occurred between locations due to soil moisture differences. However, the yield advantage of YFA and PYFA over conventional types was consistent across both locations.



Photo 1. Rows of SD 201 yellow-flowered alfalfa (left) and Vernal (right) transplanted in a perennial cool-season grass sward at Brookings, SD.

Table 1. Dry matter yields from alfalfa stockpiled until July 15, 2007 at two locations near Brookings, SD.

Entry	Description	Developer or Marketer	DM Yield
			lb/ac
Falcata	PYFA developed by N. Smith, Lodgepole, SD, for inter-seeding range	Wind River Seed Co.	1570
SD 201	Experimental YFA for forage and wildlife	SDSU	1460
SD 202	PYFA experimental from feral rangeland in NW SD	SDSU	1330
SD 203	PYFA experimental from feral rangeland in NW SD	SDSU	1230
Mandan A9191	Experimental from Mandan, ND	USDA-ARS	1220
Vernal		Univ. of Wisconsin	1160
AOU21	Experimental YFA from Logan, UT	USDA-ARS	960
Travois		SDSU	830
6200 HT		Garst Seed Co.	770
Alfagraz		America's Alfalfa	570
5454		Pioneer Hi-Bred Int'l.	540
LSD 0.05			500