**Forage Research Update**

## South Dakota - Survival of 11 Populations of Alfalfa in Northwestern South Dakota

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Alfalfa has long been valued for increasing forage production and quality of grasslands; however, persistence under grazing in semiarid regions has been relatively poor. Varieties that can establish and persist in semiarid grazing lands by natural re-seeding are needed. A feral population of predominantly yellow-flowered alfalfa (YFA) was found reproducing naturally by seed on the Grand River National Grassland (GRNG) in northwestern South Dakota. Based on flower color and growth habit, the primary genetics in this population is the yellow-flowered subspecies of alfalfa commonly referred to as falcata.

In May 2006, a mixed-grass prairie study was conducted at the SDSU Antelope Research Station to evaluate persistence and vigor of 11 alfalfa populations, including two populations (SD Coiled and SD Sickle) selected from plants grown from seed collected on the GRNG (Table 1), transplanted into native rangeland. Plants from each population are either grazed or protected from grazing (initiated in August 2007). During 2008, intense one-day grazing of alfalfa and associated vegetation was imposed at monthly intervals.

June 2008 survival data revealed that locally adapted populations with a high percentage of YFA had the greatest survival (Table 1). Populations with less survival, which were naturally or artificially selected in different environments, tended to show less persistence in northwestern South Dakota after two grazing seasons. These 11 populations will continue to be grazed and monitored for survival for several more years. Then, surviving plants will be evaluated for use in developing a new cultivar for improved forage production and quality in the northern Great Plains.

**Table 1.** *Survival under grazing of 11 alfalfa populations in June 2008 at the Antelope Research Station in northwestern South Dakota.*

| Entry | Description | Survival (%) |
|---|---|---|
| SD Coiled | *Predominantly YFA SDSU experimental from feral rangeland population in northwest SD.* | 73 |
| SD Sickle | *Predominantly YFA SDSU experimental from feral rangeland population in northwest SD.* | 71 |
| Falcata | *Predominantly YFA developed by N. Smith, Lodgepole, SD.* | 68 |
| SD 201 | *Pure falcata experimental YFA for forage and wildlife habitat.* | 68 |
| Mandan A9191 | *Experimental from USDA-ARS, Mandan, ND.* | 64 |
| Alfagraze | *Cultivar, Pasture-type.* | 61 |
| Travois | *Cultivar, Pasture-type.* | 61 |
| Don | *Pure falcata cultivar from USDA-ARS, Logan UT, Prostrate-type.* | 55 |
| Vernal | *Cultivar, Conventional Hay-type.* | 54 |
| 6200HT | *Cultivar, Conventional Hay-type.* | 49 |
| 5454 | *Cultivar, Conventional Hay-type.* | 46 |