

Summary:

This trial was started in the spring of 1979 with plot seedings at the Dickinson and Streeter Experiment Stations. In May of 1980 additional seedings were made at the Hettinger Experiment Station and the Dickinson Experiment Station Ranch Headquarters; both were unsuccessful due to drought. In the spring of 1981 plots were reseeded at the Hettinger and Streeter Experiment Stations; both showing good stand establishment and will be harvested starting in the 1982 season. The 1979 seeding at the Dickinson Experiment Station is the only location currently reporting harvest data.

The trial at Dickinson includes 21 varieties of alfalfa and the trials at Streeter and Hettinger have 20 varieties (Ladak was not included in the latter two, due to lack of seed). Varieties from previous trials (Ladak 65, Ladak, Vernal, Thor, Travois, and Kane) were included as a basis for comparison of the newer varieties to the "stand by" varieties of the area.

Plot size at all locations was 25 feet by 10 feet (7.6 x 3 meters). Four replications were harvested at Dickinson by clipping five, quarter meter square frames within each plot. The samples were dried to 65° centigrade and dry weight yield determined.

Production was 1000-1800 pounds (1120 to 2000 kg/ha) more per acre than in 1980 (Table 2), in which production was very low due to drought. This years' production ranged from 1195 lbs/A (1338 kg/ha) for the variety, Ramsey to a high in the variety, Anik of 1978 lbs/A (2215 kg/ha). Fifteen of the varieties produced more than 1400 pounds per acre (1568 kg/ha). Anik, the highest producer in 1981 was the lowest in 1980 harvest and seemed to be non-existent the summer of the seeding.

The least significant difference in forage production at the .05 level was 337 pounds (377 kg). Anik produced significantly more forage than the lowest eighteen varieties. There was no significant difference in production between Anik, D-III, Baker, Kane, and Rangelander when considering the highest producing varieties; but there was no significant difference between the varieties from Ramsey up to Polar I (Table 1).

A hard spring frost seemed to set back many of the alfalfa varieties, except Anik, and caused premature leaf and stem breakage; thereby decreasing forage yields. This may explain why Anik yielded the highest amount of forage. Varietal yield will continue to be monitored at the Dickinson Experiment Station and yield data on the same varieties will start being collected at the Hettinger and Streeter Experiment Stations.

Table 1. Alfalfa Production for 1981*

Variety	Yield		
	Lbs/A	(Kg/ha)	
Anik	1978	(2215)	a
D-III	1747	(1956)	ab
Baker	1662	(1861)	abc
Kane	1655	(1853)	abc
Rangelander	1642	(1839)	abc
Vernal	1572	(1760)	bcd
Norseman	1556	(1742)	bcd
Thor	1554	(1740)	bcd
Polar I	1519	(1701)	bcde
WL-524	1518	(1700)	bcde
WL-520	1485	(1663)	bcde
Vernal	1466	(1641)	bcde
Iriquois	1422	(1592)	bcde
Ladak 65	1422	(1592)	bcde
Agate	1401	(1569)	cde
Ladak 65	1392	(1559)	cde
Nugget	1391	(1557)	cde
Ladak	1364	(1527)	cde
Trek	1362	(1525)	cde
Ladak	1338	(1498)	cde
Spreador II	1289	(1443)	de
Travois	1277	(1430)	de
Ranger	1239	(1387)	de
Ramsey	1195	(1338)	e

* Means followed by the same letter are not significantly different at the .05 level according to Duncan's multiple range test.

ND3902: Bromegrass Trial.**Harold Goetz****Summary:**

In 1979 eleven varieties of smooth brome (*Bromus inermis*), a widely used forage grass in North Dakota, and one selection of meadow brome (*Bromus biebersteinii*), were seeded at the Dickinson Experiment Station to determine their suitability to western North Dakota.

These varieties were seeded in plots 25 feet by 10 feet (7.6 x 3 meters) and replicated four times. The varieties and their seed source are listed in Table 1. The plots were seeded with a cone seeder developed by the ARS Research Station in Mandan, North Dakota. Row skips occurred in the plots due to seed feeding problems with the drill. These row skips did not affect harvestings as the frames were placed such that the same number of rows was harvested in each frame.

In 1981, three, quarter meter square frames were clipped in each plot to determine yields. The clippings were dried to 65° centigrade and dry weight yield determined.

1981 yields were considerably higher than those of the previous year by approximately 1000 pounds. Production ranged from a high of 2975 pounds per acre (3332 kg/ha) in Lancaster smooth brome to 2038 pounds per acre (2282 kb/ha) in Mandan 404 smooth brome, with most varieties producing in the range 2000-2400 pounds per acre (2464-2688 kg/ha). When considering low winter moisture (1980-81) and dry spring condition, this years' yields were quite respectable, but still below their potential. Yield of the varieties will continue to be monitored.

Table 1. Bromegrass Varieties and Seed Sources

Variety	Seed Source
Rebound	South Dakota State Univ.
Lincoln	University of Nebraska
Beacon	Land O Lakes, Webster City, IA
Blair	N. Amer. Plant Breeders
Baylor	N. Amer. Plant Breeders
Barton	Land O Lakes, Webster City, IA
Lyon	University of Nebraska
Lancaster*	University of Nebraska
Fox	University of Minnesota
Manchar	Lincoln Oak Nursery, Bismarck, ND
Mandan 404	SEA-ARS, Mandan, ND
Meadow Brome	Plant Materials Center, Pullman, WA

*Lancaster smooth brome seed is no longer available.

Table 2. Bromegrass Yields

Variety	1980 Yield*		1981 Yield	
	Lbs/A	(Kg/ha)	Lbs/A	(Kg/ha)
Rebound	1557	(1745)	2433	(2725)
Lincoln	1483	(1662)	2380	(2665)
Beacon	1473	(1650)	2364	(2648)
Blair	1443	(1617)	2456	(2751)
Baylor	1441	(1615)	2557	(2864)
Barton	1441	(1615)	2306	(2583)
Lyon	1411	(1581)	2692	(3015)
Lancaster	1395	(1563)	2975	(3332)
Fox	1372	(1537)	2358	(2641)
Manchar	1337	(1498)	2356	(2639)
Mandan 404	1290	(1445)	2038	(2282)
Meadow	<u>1275</u>	<u>(1429)</u>	<u>2194</u>	<u>(2457)</u>
	1410	(1580)	2425	(2716)

*Means were not significantly different at the .95 level.