

INTERSEEDED ALFALFA VARIETY RESPONSE TO GRAZING TRIAL

This trial is designed to evaluate the response to grazing pressure at three different time periods of seven pasture type alfalfa varieties and one hay type alfalfa variety which is used as a control. The purpose of this trial is to help determine which alfalfa variety or varieties are suitable for interseeding into rangeland for pasture use. This trial will also test if season of use causes a difference in growth and herbage production from the different varieties.

These plots were established on 13 acres located on the S $\frac{1}{2}$, SE $\frac{1}{4}$, SW $\frac{1}{4}$ Sec. 23, and SW $\frac{1}{4}$, SW $\frac{1}{4}$, SE $\frac{1}{4}$ Sec. 23, T. 140 N., R. 97 W. at the Dickinson Experiment Station. The 48 x 390 foot plots were arranged in a randomized block design with three replications. Each plot was split equally into three grazing treatments of 30 days each for June, July and August. The soils were vebar fine sandy loam, morton silt loam and regent silty clay loam. The range sites were sandy, silty and clayey. The alfalfa varieties that were included were Anik, Drylander, Kane, Prowler, Rangelander, Spredor II, Travois and Vernal. Each variety was seeded on 27 and 28 April 1983 at the rate of 0.50 lbs PLS/row/acre, using three foot row spacing and three inch twisted chisel plow shovels as the furrow openers.

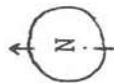
The data that were collected from these plots were: above ground herbage production and alfalfa seedling counts. The above ground herbage production was sampled by clipping the vegetation to ground level in three $\frac{1}{4}$ m² quadrats for each plot on 5 July 1984. The herbage was separated into graminoids, forbs, and shrubs. The samples were oven dried at 80°C. The average herbage production for each category and the total production for each plot were determined. The reported data are means of the three replications for each treatment.

The alfalfa seedling counts were made by counting the number of seedlings along three randomly placed meter sticks for each row of each plot. The mean number of seedlings per meter of row was determined for each treatment. Seedling counts were conducted on 12 July 1984.

Interseeded Alfalfa Variety Response to Grazing Trial

Location:	Dickinson Experiment Station S½, SE¼, SW¼ Sec. 23, T. 140 N., R. 97 W. and SW¼, SW¼, SE¼ Sec. 23, T. 140 N., R. 97 W.	
Replications:	Three	Split Plot Design
Study Size:	392' x 1480'	13.32 acres
Plot Size:	48' x 390'	0.43 acres
Drainage:		3.16 acres
Soils:	Vebar, Morton and Regent	
Range Sites:	Sandy, Silty and Clayey	
Seedling Date:	27-28 Apr 1983	
Seeding Rate:	0.50 lbs. PLS/row/acre	
Row Spacing:	3'	
Chisel Plow Shovel:	3" twisted	
Alfalfa Varieties:	Anik, Drylander, Kane, Prowler, Rangelander, Spredor II, Travois and Vernal.	
Split Treatments:	Three 30 day grazing periods June, July and August	

Figure 3: Interseeded Alfalfa Variety Response to Grazing



	June	July	August
Rep 1	1	Kane	
	2	Prowler	
	3	Travois	
	4	Vernal	
	5	Spredor II	
	6	Drylander	
	7	Rangelander	
	8	Anik	
Rep 2	1	Vernal	
	2	Drylander	
	3	Anik	
	4	Rangelander	
	5	Kane	
	6	Travois	
	7	Spredor II	
	8	Prowler	
			XXXX DRAINAGE XXXX
Rep 3	1	Drylander	
	2	Travois	
	3	Prowler	
	4	Spredor II	
	5	Anik	
	6	Kane	
	7	Vernal	
	8	Rangelander	
			XXXX DRAINAGE XXXX

Figure 3 . Interseeded alfalfa variety response to grazing, seeded 27-28 Apr 1983.

Table 35. Mean Above Ground Herbage Production by Category in Lbs/Acre for each Variety in the Interseeded Alfalfa Variety Response to Grazing Trial at Dickinson Experiment Station, 1984

Clip Categories	Anik	Drylander	Kane	Prowler	Rangelander	Spredor II	Travois	Vernal
Total Grass	1468.4	1571.1	1548.9	1390.7	1731.3	1485.5	1567.9	1197.7
Forbs	203.4	241.0	158.2	154.2	140.0	244.6	227.6	255.7
Shrubs	0.0	49.2	0.0	0.0	0.0	0.0	0.0	0.0
Total	1671.8	1861.3	1707.1	1544.9	1871.2	1730.1	1795.5	1453.4

Table 36. Alfalfa Variety Plant Counts per Meter of Row for the Alfalfa Variety Response to Grazing Trial at the Dickinson Experiment Station, 12 Jul 1984

Variety	Grazing Treatment											
	Jun			Jul			Aug			Mean		
	Seedling	Adult	Total	Seedling	Adult	Total	Seedling	Adult	Total	Seedling	Adult	Total
Anik	0.00	0.21	0.21	0.00	0.13	0.13	0.23	0.08	0.31	0.08	0.14	0.22
Drylander	0.10	0.10	0.21	0.00	0.21	0.21	0.58	0.15	0.73	0.23	0.15	0.38
Kane	0.10	0.52	0.63	0.17	0.35	0.52	0.19	0.38	0.56	0.15	0.42	0.57
Prowler	0.02	0.33	0.35	0.27	1.25	1.52	0.21	0.35	0.56	0.17	0.65	0.81
Rangelander	0.02	0.63	0.65	0.06	0.46	0.52	0.31	0.94	1.25	0.13	0.67	0.81
Spredor II	0.04	0.98	1.02	0.21	0.79	1.00	0.21	0.40	0.60	0.15	0.72	0.88
Travois	0.73	2.50	3.23	0.52	0.73	1.25	0.75	1.02	1.77	0.67	1.42	2.08
Vernal	0.00	0.38	0.38	0.04	0.15	0.19	0.40	0.35	0.75	0.15	0.29	0.44

Table 37. Alfalfa Variety Plant Counts per Foot of Row for the Alfalfa Variety Response to Grazing Trial at the Dickinson Experiment Station, 12 Jul 1984

Variety	Grazing Treatment											
	Jun			Jul			Aug			Mean		
	Seedling	Adult	Total	Seedling	Adult	Total	Seedling	Adult	Total	Seedling	Adult	Total
Anik	0.00	0.06	0.06	0.00	0.04	0.04	0.07	0.02	0.09	0.02	0.04	0.07
Drylander	0.03	0.03	0.06	0.00	0.06	0.06	0.18	0.05	0.22	0.07	0.05	0.12
Kane	0.03	0.16	0.19	0.05	0.11	0.16	0.06	0.12	0.17	0.05	0.13	0.17
Prowler	0.01	0.10	0.11	0.08	0.38	0.46	0.06	0.11	0.17	0.05	0.20	0.25
Rangelander	0.01	0.19	0.20	0.02	0.14	0.16	0.09	0.29	0.38	0.04	0.20	0.25
Spredor II	0.01	0.30	0.31	0.06	0.24	0.30	0.06	0.12	0.18	0.05	0.22	0.27
Travois	0.22	0.76	0.98	0.16	0.22	0.38	0.23	0.31	0.54	0.20	0.43	0.63
Vernal	0.00	0.12	0.12	0.01	0.05	0.06	0.12	0.11	0.23	0.05	0.09	0.13

Table 38. Alfalfa Variety Plant Counts per Meter of Row for the Alfalfa Variety Response to Grazing Trial at the Dickinson Experiment Station, 12 Jul 1984

Variety	Grazing Treatment						Mean
	Jun	Jul	Aug				
Anik	0.21	0.13	0.31				0.22
Drylander	0.10	0.21	0.73				0.35
Kane	0.63	0.52	0.56				0.57
Prowler	0.35	1.52	0.56				0.81
Rangelander	0.65	0.52	1.25				0.81
Spredor II	1.02	1.00	0.60				0.88
Travois	3.23	1.25	1.77				2.08
Vernal	0.38	0.19	0.75				0.44

**Plant Species List of the Alfalfa Interseeding Trial
At the Dickinson Experiment Station, 1984**

Graminoids:

An sc	<i>Andropogon scoparius</i>	Little bluestem
Ag sm	<i>Agropyron smithii</i>	Western wheatgrass
Ag tr	<i>Agropyron trachycaulum</i>	Slender wheatgrass
Ar lo	<i>Aristida longiseta</i>	Red threeawn
Bo gr	<i>Bouteloua gracilis</i>	Blue grama
Bu da	<i>Buchloe dactyloides</i>	Buffalo grass
Ca mo	<i>Calamagrostis montanensis</i>	Plains reedgrass
Ca lo	<i>Calamovilfa longifolia</i>	Prairie sandreed
Ko py	<i>Koeleria pyramidata</i>	Prairie junegrass
Mu cu	<i>Muhlenbergia cuspidata</i>	Plains muhly
Mu sq	<i>Munroa squarrosa</i>	False buffalo grass
Pa ol	<i>Panicum oligosanthos</i>	Scribner panic grass
Po pr	<i>Poa pratensis</i>	Kentucky bluegrass
St co	<i>Stipa comata</i>	Needleandthread
St vi	<i>Stipa viridula</i>	Green needlegrass
Ca el	<i>Carex eleocharis</i>	Needleleaf sedge
Ca fi	<i>Carex filifolia</i>	Threadleaved sedge
Ca he	<i>Carex heliophila</i>	Yellow sedge

Forbs:

Ac mi	<i>Achillea millefolium</i>	Yarrow
Al st	<i>Allium textile</i>	White wild onion
Am re	<i>Amaranthus retroflexus</i>	Rough pigweed
An oc	<i>Androsace occidentalis</i>	Fairy candelabra
An ne	<i>Antennaria neglecta</i>	Pussytoes
An pa	<i>Antennaria parvifolia</i>	Pussytoes
Ar ho	<i>Arabis holboellii</i>	Slim rockcress
Ar dr	<i>Artemisia dracunculus</i>	Green sage
Ar fr	<i>Artemisia frigida</i>	Fringed sage
Ar lu	<i>Artemisia ludoviciana</i>	White sage

Forbs (Continued):

As er	<i>Aster ericoides</i>	White prairie aster
As la	<i>Aster laevis</i>	Smooth blue aster
As ob	<i>Aster oblongifolius</i>	Aromatic aster
As pt	<i>Aster ptarmicoides</i>	White upland aster
As ca	<i>Astragalus canadensis</i>	Little rattlepod
As cr	<i>Astragalus crassicaarpus</i>	Ground plum
As tr	<i>Astragalus triphyllus</i>	Tufted milkvetch
Ce ar	<i>Cerastium arvense</i>	Prairie chickweed
Ch al	<i>Chenopodium album</i>	Lamb's quarters
Ch vi	<i>Chrysopsis villosa</i>	Golden aster
Ci un	<i>Cirsium undulatum</i>	Prairie thistle
Co um	<i>Commandra umbellata</i>	Bastard toadflax
Co ar	<i>Convolvulus arvensis</i>	Field bindweed
Co se	<i>Convolvulus sepium</i>	Large bindweed
Co ca	<i>Conyza canadensis</i>	Horseweed
Ec an	<i>Echinacea angustifolia</i>	Purple coneflower
Er as	<i>Erysimum asperum</i>	Western wallflower
Eu di	<i>Euphorbia dictyosperma</i>	Spurge
Eu ge	<i>Euphorbia geyeri</i>	Geyer's spurge
Ga bo	<i>Galium boreale</i>	Northern bedstraw
Ga co	<i>Gaura coccinea</i>	Gaura
Gl le	<i>Glycyrrhiza lepidota</i>	Wild licorice
Gr sq	<i>Grindelio squarrosa</i>	Gunweed
Gu sa	<i>Gutierrezia sarothrae</i>	Broomweed
Ha sp	<i>Haplopappus spinulosus</i>	Spiny ironweed
He hi	<i>Hedeoma hispida</i>	Rough pennyroyal
He an	<i>Helianthus annuus</i>	Common sunflower
He ri	<i>Helianthus rigidus</i>	Stiff sunflower
Ko sc	<i>Kochia scoparia</i>	Kochia
La ob	<i>Lactuca oblongifolia</i>	Blue wild lettuce
La se	<i>Lactuca serriola</i>	Prickly lettuce
Le de	<i>Lepidium densiflorum</i>	Peppergrass
Li pu	<i>Liatris punctata</i>	Blazing star

Forbs (Continued):

Li ri	<i>Linum rigidum</i>	Stiffstem flax
Li in	<i>Lithospermum incisum</i>	Narrow-leaved puccoon
Lo am	<i>Lotus americanus</i>	Prairie bird's foot trefoil
Ly ju	<i>Lygodesmia juncea</i>	Skeleton weed
Me fa	<i>Medicago falcata</i>	Travois alfalfa
Me of	<i>Melilotus officinalis</i>	Yellow sweetclover
Mu di	<i>Musineon divaricatum</i>	Wild parsley
Ne pa	<i>Neslia paniculata</i>	Ball mustard
Oe bi	<i>Oenothera biennis</i>	Common evening primrose
Op fr	<i>Opuntia fragilis</i>	Brittle prickly pear
Ox la	<i>Oxytropis lambertii</i>	Purple loco
Pe al	<i>Penstemon albidus</i>	White beardtongue
Pe pu	<i>Petalostemon purpureum</i>	Purple prairie aster
Ph ho	<i>Phlox hoodii</i>	Moss phlox
Pl pu	<i>Plantago purshii</i>	Woolly plantain
Po al	<i>Polygala alba</i>	White milkwort
Po co	<i>Polygonum convolvulus</i>	Wild buckwheat
Po pe	<i>Potentilla pensylvanica</i>	Potentilla
Ps ar	<i>Psoralea argophylla</i>	Silverleaf scurfpea
Ps es	<i>Psoralea esculenta</i>	Indian breadroot
Ra co	<i>Ratibida columnifera</i>	Long headed coneflower
Sa ka	<i>Salsola kali</i>	Russian thistle
So mi	<i>Solidago missouriensis</i>	Early goldenrod
So mo	<i>Solidago mollis</i>	Soft goldenrod
So ri	<i>Solidago rigida</i>	Stiff goldenrod
Sp co	<i>Sphaeralcea coccinea</i>	Scarlet globemallow
Ta of	<i>Taraxacum officinale</i>	Dandelion
Tr du	<i>Tragopogon dubius</i>	Large goatsbeard
Ve fa	<i>Vernonia fasciculata</i>	Ironweed
Vi am	<i>Vicia americana</i>	Wild vetch
Vi pe	<i>Viola pedatifida</i>	Prairie violet

Shrubs:

Ar uv	Arctostaphylos uva-ursi	Bearberry
Rh tr	Rhus trilobata	Skunk bush
Ro ar	Rosa arkansana	Prairie wild rose
Sy oc	Symphoricarpos occidentalis	Wolfberry

Lycopods:

Se de	Selaginella densa	Club moss
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Eumycota:

Li spp.	Species of lichens	Lichens
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LITERATURE CITED

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