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## Recent Legume Variety Trials in South Dakota

South Dakota Agricultural Experiment Station

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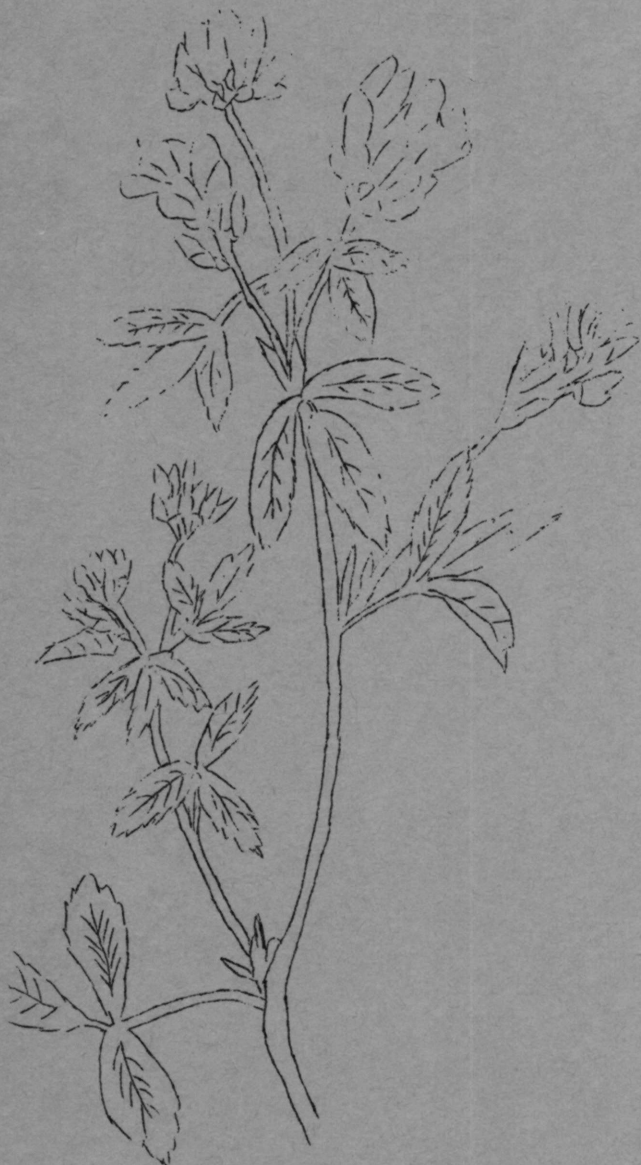
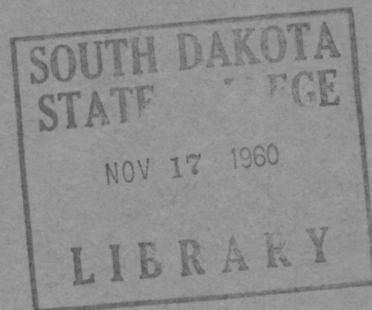
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Pamphlet 56  
November, 1960



RECENT LEGUME VARIETY TRIALS

in

SOUTH DAKOTA

Agricultural Experiment Station  
Agronomy Department  
South Dakota State College  
Brookings, South Dakota

0.7  
7  
56

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Recent Legume Variety Trials in South Dakota

by

M. D. Rumbaugh and R. A. Moore<sup>1/2/</sup>

Varietal tests of the more important forage legume species are conducted on a continuing basis as a part of the forage legume breeding project of the Agronomy Department of the South Dakota Agricultural Experiment Station. While these tests are rather restricted in size and distribution, they do attempt to provide impartial evaluation of the varieties most apt to be widely used in the state. Test locations are, for the most part, concentrated in the areas where these species are used most extensively or where they are well adapted.

Recent results with alfalfa, sweetclover, red clover, and birds-foot trefoil are included in this report. The tests were located in the vicinities of Brookings, Highmore, Menno and Watertown.

The data presented should be interpreted with caution. In many cases they are limited to one or a few years. Differences in winter-hardiness, resistance to diseases and insects, and in quality of forage may not be revealed by short term yield figures. These results are of a preliminary nature and inclusion of a variety in the tests does not indicate that it is recommended for use in South Dakota. A list of legume forage varieties eligible for certification and recommended for use within the state will be found in table 28.

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<sup>2/</sup> The authors wish to extend their appreciation to Dr. M. W. Adams, formerly Agronomist, South Dakota Agricultural Experiment Station, Brookings, for much of the data presented.



Table 1. Alfalfa Variety Test at the Main Experiment Station, Brookings. Seeded 1948.  
Harvested 1949, 1951, 1952 and 1953.

Variety	Tons of dry forage per acre									
	1949		1951		1952		1953		Cumulative Average	
	1st cut	2nd cut	1st cut	2nd cut	1st cut	2nd cut	1st cut	2nd cut	1st cut	2nd cut
Atlantic	3.88	3.21	1.94	1.18	2.14	1.19	2.26	2.56	1.86	3.95
Buffalo	2.98	2.48	1.78	1.32	1.92	1.20	2.33	2.25	1.67	3.50
Grimm	4.46	2.70	2.03	1.16	1.66	1.23	2.28	2.61	1.70	3.88
Kansas Common	4.08	2.20	1.66	1.22	1.52	1.28	2.29	2.39	1.57	3.56
Ladak	5.11	2.92	2.15	1.31	2.17	1.19	2.49	2.98	1.81	4.34
Narragansett	4.80	3.05	2.23	1.24	2.17	1.02	2.42	2.90	1.77	4.23
Oklahoma Common	3.74	2.61	1.54	1.34	1.57	1.08	2.39	2.31	1.68	3.57
Ranger	4.30	2.39	1.97	1.28	1.91	1.14	2.03	2.55	1.60	3.76
Williamsburg	3.54	2.92	1.73	1.29	1.89	1.06	2.37	2.38	1.76	3.70
Average	4.10	2.72	1.89	1.26	1.88	1.15	2.32	2.55	1.71	3.83

1/ Only one cutting obtained.

Table 2. Alfalfa Variety Test at the Main Experiment Station, Brookings. Seeded 1950.  
Harvested 1951, 1952, 1953 and 1954.

Variety	Tons of dry forage per acre					Average seasonal Total	
	1951 1st cut <sup>1/</sup>	1952		1953 1st cut <sup>1/</sup>	1954 1st cut <sup>1/</sup>		
		1st cut	2nd cut	Total			
Atlantic	0.78	2.40	1.14	3.54	2.07	1.47	1.96
Du Puits	0.70	2.27	1.21	3.48	1.74	1.38	1.82
Ladak	0.97	2.91	0.95	3.86	2.00	1.73	2.14
Narragansett	0.84	2.52	1.19	3.71	1.98	1.48	2.00
Nomad	0.79	2.12	0.80	2.92	1.87	1.40	1.74
Ranger	0.75	2.36	1.03	3.39	1.92	1.40	1.86
Sevelra	0.77	2.25	1.10	3.35	2.10	1.51	1.93
South Dakota Common	0.74	2.50	1.19	3.69	2.07	1.62	2.03
Talent	0.63	2.00	1.06	3.06	1.81	1.11	1.65
Williamsburg	0.72	2.26	1.13	3.39	1.95	1.48	1.88
Average	0.77	2.36	1.08	3.44	1.95	1.46	1.90

<sup>1/</sup> Only one cutting obtained.

Table 3. Alfalfa Variety Test at the Central Substation, Highmore. Seeded 1956. Harvested 1957-1960.

Variety	Tons of dry forage per acre							Average Seasonal Total
	1957		1958	1959		1960		
	1st cut	2nd cut	Total	Total	Total	Total		
Arizona Chilean	1.32	1.96	3.28	1.19	.00	.00	1.12	
Buffalo	1.92	2.50	4.41	1.20	.44	.87	1.73	
California Common	1.89	2.23	4.12	1.20	.16	.20	1.42	
Cossack	2.34	2.51	4.85	1.16	.52	1.00	1.88	
Du Puits	2.30	2.65	4.95	1.50	.32	.58	1.84	
Grimm	2.06	2.70	4.76	1.32	.56	1.07	1.93	
Ladak	1.89	2.19	4.08	1.51	.58	1.24	1.85	
Lahontan	1.41	1.96	3.36	1.24	.26	.27	1.28	
Narragansett	2.01	2.70	4.72	1.33	.60	1.10	1.94	
Nomad	1.63	2.00	3.63	1.23	.40	.74	1.50	
Ranger	1.94	2.76	4.70	1.44	.56	1.29	2.00	
Semipalatinsk	1.85	2.03	3.88	1.70	.57	1.19	1.84	
Vernal	2.10	2.17	4.26	1.57	.76	1.30	1.97	
Average	1.90	2.34	4.23	1.35	.44	.83	1.71	
L. S. D. (0.05)					N. S.	N. S.	.42	
(0.01)					N. S.	N. S.	.57	

Table 4. Alfalfa Variety Test at the Southeast Experimental Farm, Menno, South Dakota. Seeded 1956. Harvested 1957-1960.

<u>Variety</u>	<u>Tons dry forage per acre</u>				<u>Average</u>
	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	
Cossack	5.28	1.52	2.17	3.80	3.19
Du Puits	5.37	1.62	1.55	3.06	2.90
Grimm	4.42	1.64	1.72	4.10	2.97
Ladak	5.15	1.43	1.52	3.57	2.92
Lahontan	4.51	1.48	1.52	2.84	2.59
Narragansett	5.17	1.76	2.33	3.66	3.23
Nomad	4.44	1.23	2.14	3.61	2.86
Ranger	5.30	1.59	1.94	3.52	3.09
Rhizoma	5.25	1.68	1.98	3.86	3.19
Terra Verde	5.36	1.79	.71	1.36	2.30
Teton	4.83	1.00	1.53	3.43	2.70
Vernal	5.12	2.00	1.99	4.09	3.30
Average	5.02	1.56	1.76	3.41	2.94
L.S.D. (0.05)	N.S.	.18	.73	.67	N.S.

Table 5. Alfalfa Variety Test at the Northeast Research Farm, Watertown, South Dakota. Seeded 1956. Harvested 1957-1960.

Variety	Tons of dry forage per acre				Average
	1957	1958	1959	1960	
Cossack	3.76	2.68	3.30	1.37	2.03
Du Puits	3.89	2.70	---	---	1.65
Grimm	4.06	2.63	2.75	1.80	2.31
Ladak	4.74	2.79	2.47	1.66	2.42
Lahontan	2.76	1.69	---	---	1.11
Narragansett	4.25	2.88	.38	1.61	2.28
Nomad	3.48	2.22	.08	.83	1.65
Ranger	4.06	2.57	.41	1.75	2.20
Rhizoma	3.62	2.35	.14	.85	1.74
Terra Verde <sup>1/</sup>	---	---	---	---	---
Teton	4.18	2.46	.54	1.96	2.28
Vernal	4.44	3.13	.42	1.63	2.40
Average	3.93	2.55	.32	1.50	2.01
L.S.D. (0.05)	.44	.24	.27	.25	.45
(0.01)	.63	.34	.37	.36	.60

<sup>1/</sup> Winter killed and excluded from averages.

Table 6. Summary of the Performance of Alfalfa Varieties Included in the Five Preceding Tables. Each Mean Represents Four Test Years at the Indicated Location.

Variety	Average tons of dry forage per acre per year				
	Brookings	Brookings	Highmore	Menno	Watertown
Arizona Chilean	3.95	----	1.12	----	----
Atlantic	----	1.96	----	----	----
Buffalo	3.50	----	1.73	----	----
California common	----	----	1.42	----	----
Cossack	----	----	1.88	3.19	2.03
Du Puits	----	1.82	1.84	2.90	1.65
Grimm	3.88	----	1.93	2.97	2.31
Kansas common	3.56	----	----	----	----
Ladak	4.34	2.14	1.85	2.92	2.42
Lahontan	----	----	1.28	2.59	1.11
Narragansett	4.23	2.00	1.94	3.23	2.28
Nomad	----	1.74	1.50	2.86	1.65
Oklahoma common	3.57	----	----	----	----
Ranger	3.76	1.86	2.00	3.09	2.20
Rhizoma	----	----	----	3.19	1.74
Semipalatinsk	----	----	1.84	----	----
Sevelra	----	1.93	----	----	----
South Dakota common	----	2.03	----	----	----
Talent	----	1.65	----	----	----
Terra Verde	----	----	----	2.30	----
Teton	----	----	----	2.70	2.28
Vernal	----	----	1.97	3.30	2.40
Williamsburg	3.70	1.88	----	----	----
Averages	3.83	1.90	1.71	2.94	2.01

Table 7. Red Clover Variety Test at the Main Experiment Station,  
Brookings. Seeded 1951. Harvested 1953.

<u>Variety</u>	<u>Tons of dry forage per acre</u>
Dollard	1.56
Emerson	0.95
Kenland	0.72
Libel	1.26
Mammoth	1.19
Midland	0.90
Ottawa	1.08
Rahn	0.96
Scott	0.65
Van Fossen	0.79
Wegener	1.10
Average	1.01
L. S. D. (0.05)	0.32

Table 8. Red Clover Variety Test at the Southeast Research Farm, Menno. Seeded 1957. Harvested 1958.

<u>Variety</u>	<u>Tons of dry forage per acre</u>	<u>Stand (%)</u>	<u>Height (Inches)</u>
Dollard	1.02	92	16
Kenland	0.97	95	16
La Salle	0.92	90	14
Pennscott	0.83	95	18
Stevens	0.82	95	16
Wisconsin Synthetic	0.92	90	16
Average	0.91	93	16
L. S. D. (0.05)	0.25		



Table 9. Red Clover Variety Test at the Northeast Research Farm, Watertown. Seeded 1956. Harvested 1957-1958.

Variety	Tons of dry forage per acre								
	1957		1958		Cumulative average				
	1st cut	2nd cut	1st cut	2nd cut	1st cut	2nd cut			
Commercial Common	1.02	0.36	1.38	1.83	0.76	2.59	1.42	0.56	1.98
Commercial Mammoth	1.26	0.24	1.49	2.26	0.49	2.75	1.76	0.36	2.12
Dollard	1.56	0.39	1.95	2.80	0.82	3.63	2.18	0.60	2.79
Kenland	1.12	0.44	1.25	2.01	0.41	2.92	1.56	0.68	2.24
La Salle	1.34	0.40	1.75	2.41	0.82	3.24	1.88	0.62	2.50
Pennscott	1.50	0.39	1.89	2.70	0.82	3.52	2.10	0.60	2.70
Wegener	1.56	0.46	2.02	2.80	0.98	3.79	2.18	0.72	2.91
Wisconsin Synthetic	1.38	0.42	1.81	2.49	0.76	3.13	1.94	0.59	2.47
Average	1.34	0.39	1.73	2.41	0.79	3.20	1.88	0.59	2.46

Table 10. Red Clover Variety Test at the Northeast Research Farm, Watertown. Seeded 1957. Harvested 1958.

<u>Variety</u>	<u>Tons of dry forage per acre</u>
Dollard	1.74
Kenland	1.14
La Salle	1.60
Pennscott	1.11
Stevens	1.06
Wisconsin Synthetic	1.50
Average	1.36
L. S. D., (0.05)	0.42



Table 12. Average Annual Tons of Dry Forage Produced by Red Clover Varieties in South Dakota.

Variety	Brookings		Eureka	Manno		Wauertown			Number Harvest Years	Average
	1953	1960	1960	1953	1960	1957	1958	1960		
Chesapeake	----	1.05	.92	----	2.71	----	----	.55	4	1.31
Dollard	1.56	2.11	.72	1.02	3.00	1.95	3.63	1.74	9	1.82
Emerson	.95	----	----	----	----	----	----	----	1	.95
Kenland	.72	1.96	.81	.97	3.30	1.25	2.92	1.14	9	1.53
Lakeland	----	1.79	.39	.92	3.22	1.81	3.13	1.50	8	1.68
La Salle	----	2.64	.56	.92	3.42	1.75	3.24	1.60	8	1.84 <sup>1/</sup>
Libel	1.26	----	----	----	----	----	----	----	1	1.26
Mammoth	1.19	----	----	----	----	1.49	2.75	----	3	1.81
Midland	.90	----	----	----	----	----	----	----	1	.90
Ottawa	1.08	----	----	----	----	----	----	----	1	1.08
Pennscott	----	1.03	.00	.83	2.59	1.89	3.52	1.11	8	1.45
Rahn	.96	----	----	----	----	----	----	----	1	.96
Scott	.65	----	----	----	----	----	----	----	1	.65
Stevens	----	----	----	.82	----	----	----	1.06	2	.94
Van Fossen	.79	----	----	----	----	----	----	----	1	.79
Wegener	1.10	----	----	----	----	2.02	3.79	----	3	2.30
Average	1.01	1.76	.57	.91	3.04	1.73	3.20	1.36		1.57
L.S.D. (0.05)	.32	N.S.	.30	.25	N.S.	N.S.	N.S.	.42		N.S.

<sup>1/</sup> La Salle is a blend of Dollard and Ottawa.

Table 13. Sweetclover Variety Test at the Main Experiment Station,  
Brookings. Seeded 1952. Harvested 1953.

<u>Variety</u>	<u>Tons of dry forage per acre</u>	<u>Height at Harvest</u>	<u>Blackstem score</u> <sup>1/</sup>
Artic	3.15	48"	5.0
Brandon Dwarf	3.56	31"	5.0
Common white	3.47	73"	4.0
Common yellow	3.68	62"	5.0
Evergreen	4.02	85"	3.0
Madrid	3.40	55"	4.0
Spanish	3.90	70"	4.5
Average	3.60	61"	4.4
L. S. D. (0.05)	.47		

<sup>1/</sup> 1 = resistant  
5 = susceptible

Table 14. Yields of Tops and Roots of Sweetclover Varieties at the Main Experiment Station, Brookings. Seeded 1954. Harvested 1953.

Strain	1955 data - pounds of dry matter per acre					
	May 5, 1955		: June 16, 1955		: Sept. 1, 1955	
	Roots	: Tops	: Roots	: Tops	: Roots	: Tops
Spanish	480.2	828.3*	2040.7*	5653.9*	1320.4*	5161.7*
Willamette	1272.4	822.3	1746.6	4219.7	696.2	5233.8
Common White	1602.5	1320.4	1824.6	3283.1	893.3	4045.4
Common Yellow	2586.9	1776.6	2700.9	5419.8	432.1	4705.6
Com. Yel. Sel.	2022.7	1560.5	1668.6	4909.6	540.2	5779.9
Madrid	1500.5	780.3	1686.6	4003.3	576.2	3577.2
Evergreen	1656.5*	708.2	2808.9*	4033.3*	1656.6*	5701.9*
Wis. A46	1182.4	696.2	2911.0	4867.6	972.3	3841.3
N1	1374.5	636.2	1152.4	1944.6	660.2	3493.2
N7	846.3*	144.0*	642.2*	1080.4*	564.2*	2230.8*
N9	1128.4	444.1	1152.4	1320.4	804.3*	3109.1*
<u>M. wolgica</u>	678.2	654.2	1716.6	4033.3	852.3	4141.4
<u>M. taurica</u>	522.2	702.2	1134.4	1842.6	552.2	2460.8

\* Data from one replication only.

Table 15. Yields and Nitrogen Production of Sweetclover Varieties at the Main Experiment Station, Brookings. Seeded 1954. Harvested 1954.

Strain	Tops			:	Roots			:	Total
	:Tons :per A.	:Percent :nitrogen	:Lbs. N :per acre	:	:Lbs. :per A.	:Percent :nitrogen	:Lbs. N :per acre	:	:Lbs. N :per acre
Spanish	2.28	2.99	136.34	:	2929	2.99	87.58	:	223.92*
Willamette	1.79	2.75	98.45	:	1861	2.77	51.55	:	150.00
Common White	0.81	3.13	50.71	:	2377	3.04	72.26	:	122.97
Common Yellow	0.97	3.09	59.95	:	2671	2.69	71.85	:	131.80
Com.Yel. Sel.	1.32	2.85	75.24	:	2443	2.76	67.43	:	142.67
Madrid	1.70	2.93	99.62	:	2533	2.48	62.82	:	162.44
Evergreen	1.68	2.87	96.43	:	2604	2.86	74.47	:	170.90
Wis. A46	1.48	2.71	80.22	:	2605	2.58	67.21	:	147.43
N1	1.57	3.02	94.82	:	1627	3.02	49.14	:	143.96
N7	1.51	3.09	93.32	:	1560	3.14	48.98	:	142.30
N9	1.30	2.98	77.48	:	1597	3.14	50.15	:	127.63
<u>M. wolgica</u>	1.12	3.39	75.94	:	984	2.69	26.47	:	102.41
<u>M. taurica</u>	0.52	2.97	30.89	:	798	3.08	24.58	:	55.47
Israel	2.41	2.48	119.54	:	1200	1.02	12.24	:	131.78
Hubam	1.80	2.64	95.04	:	480	0.64	3.07	:	98.11

\* Data from one replication only.

Table 16. Sweetclover Variety Test at the Main Experiment Station, Brookings. Seeded 1955. Harvested 1955.

<u>Variety</u>	<u>Tons of dry forage per acre</u>	<u>Tons of dry roots per acre</u>	<u>Height (inches)</u>
Common White	1.00	2.23	22
Common Yellow	1.09	2.26	14
Evergreen	1.02	3.29	29
Madrid	1.09	2.64	23
Spanish	1.08	4.14	28
Average	1.06	2.91	23
Golden (annual)	1.29	0.76	40
Israel (annual)	1.03	0.98	47
Average	1.16	0.87	44



Table 17. Sweetclover Variety Test at the Main Experiment Station,  
Brookings. Seeded 1958. Harvested 1958.

<u>Variety</u>	<u>Tons of dry forage per acre</u>
Common White	1.77
Common Yellow	1.98
Erector	0.80
Evergreen	2.42
Goldtop	2.04
Madrid	0.38
Spanish	1.93
Average	1.62
Floranna (annual)	7.53
Hubam (annual)	3.04
Israel (annual)	2.72
Average	3.99

Table 18. Summary of Second Year Notes on the Northern Great Plains  
Observational Sweetclover Nursery at Brookings, South  
Dakota. Seeded 1959. 1 = Most desirable. 5 = Least  
Desirable.

<u>Variety or Strain</u>	<u>June 1, 1960</u>		<u>July 1, 1960</u>	<u>Sept. 7, 1960</u>
	<u>Stand</u>	<u>Vigor</u>	<u>Forage Yield</u>	<u>Seed Yield</u>
N 1	4.0	4.0	4.0	3.5
R 218-1-1	3.5	4.0	3.0	1.0
P 443B4	2.0	2.5	2.5	1.5
T 151-11	2.5	3.0	3.0	1.5
Evergreen	2.0	3.5	2.5	1.0
W-7	2.5	2.5	3.0	1.5
W-31	3.0	2.0	3.0	1.5
Spanish	1.0	1.5	2.0	1.5
Cumino	3.0	4.0	4.5	4.0
Common White	3.0	3.0	3.5	2.5
Arctic	4.0	3.5	3.5	2.0
T 161-2	2.0	3.5	3.5	1.5
S 34-6	3.5	3.5	3.0	1.0
R 218-1	2.5	3.5	3.0	1.5
Erector	1.5	2.0	1.5	2.0
Common Yellow	2.0	2.5	1.5	1.5
N 13	1.5	2.0	2.0	2.0
N 14	1.0	1.0	2.0	2.0
Goldtop	1.0	1.5	1.5	2.5
Madrid	1.0	1.5	1.0	1.0
Average	2.3	2.7	2.7	1.8

Table 19. Summary of Second Year Notes on the Northern Great Plains  
 Observational Sweetclover Nursery at Highmore, South  
 Dakota. Seeded 1959. 1 = Most desirable. 5 = Least desirable.

<u>Entry</u>	<u>May 11, 1960</u>		<u>July 18, 1960</u>	<u>August 10, 1960</u>
	<u>Stand</u>	<u>Vigor</u>	<u>Forage Yield</u>	<u>Seed Yield</u>
N 1	4.5	5.0	3.5	3.0
R 218-1-1	3.5	2.5	2.0	3.0
P443B4	2.0	3.0	1.5	2.5
T151-11	1.0	3.5	1.5	2.5
Evergreen	2.0	2.0	1.5	2.5
W 7	3.5	2.5	2.5	3.0
W 31	2.5	2.0	2.0	3.5
Spanish	3.5	1.5	1.0	1.0
Cumino	2.0	3.5	3.0	4.0
Common White	2.0	2.5	1.5	1.0
Arctic	4.0	2.5	3.0	2.0
T161-2	3.0	1.5	2.0	2.5
S34-6	2.0	2.5	3.0	3.0
R218-1	2.0	3.0	1.5	2.5
Erector	4.5	2.5	2.5	1.5
Common Yellow	2.5	2.0	2.5	1.0
N 13	1.5	1.0	5.0	3.0
N 14	1.5	1.5	5.0	2.5
Goldtop	3.5	3.5	1.0	2.0
Madrid	3.0	3.0	3.5	1.5
Average	2.7	2.6	2.4	2.8

Table 20. Sweetclover Variety Test at the Southeast Research Farm, Menno. Seeded 1956. Harvested 1957.

<u>Variety</u>	<u>Tons of dry forage per acre</u>
Common White	3.24
Common Yellow	4.48
Evergreen	3.72
Goldtop	4.41
Madrid	4.08
Spanish	4.42
Average	4.06

Table 21. Sweetclover Variety Test at the Southeast Research Farm, Menno. Seeded 1957. Harvested 1958.

<u>Variety</u>	<u>Tons dry forage per acre</u>	<u>Stand (%)</u>	<u>Height (Inches)</u>
Evergreen	2.63	90	53
Goldtop	2.54	94	47
Intermediate Coumarin	2.57	92	44
Madrid	1.27	90	38
Spanish	2.39	94	46
Average	2.28	92	46
L. S. D. (0.05)	0.28		

Table 22. Summary of Second Year Notes on the Northern Great Plains Observational Sweetclover Nursery at Presho, South Dakota. Seeded 1959. 1 = Most desirable. 5 = Least desirable.

<u>Entry</u>	<u>May 12, 1960</u>	
	<u>Stand</u>	<u>Vigor</u>
N 1	3.0	5.0
R 218-1-1	5.0	3.0
P443B4	4.0	3.0
T151-11	5.0	4.0
Evergreen	5.0	3.0
W 7	2.0	2.0
W 31	4.0	5.0
Spanish	1.0	1.0
Cumino	5.0	5.0
Common White	3.0	3.0
Arctic	5.0	5.0
T161-2	2.0	2.0
S34-6	4.0	4.0
R 218-1	4.0	2.0
Erector	5.0	5.0
Common Yellow	5.0	4.0
N 13	4.0	3.0
N 14	4.0	3.0
Goldtop	4.0	4.0
Madrid	4.0	3.0
Average	3.9	3.4

Table 23. Average Tons of Dry Matter Produced per acre During the Second Year of Growth by Sweetclover Varieties at Four Locations in South Dakota. Seeded 1959. Harvested 1960.

Variety	Location				Mean
	Cottonwood	Eureka	Menno	Watertown	
Common White	2.10	.82	2.30	1.62	1.71
Common Yellow	2.16	1.12	2.54	1.88	1.92
Evergreen	2.16	.87	2.26	1.77	1.76
Goldtop	2.54	.63	2.95	2.04	2.04
Madrid	2.47	1.14	2.58	1.80	2.00
M. officinalis	2.23	1.36	1.82	1.84	1.81
Spanish	2.13	.96	2.17	1.77	1.76
W 7 Inter. Coumarin	2.12	1.36	2.19	1.77	1.86
W31 Low Coumarin	2.27	1.19	1.56	1.28	1.58
Mean	2.24	1.05	2.41	1.75	1.83
L. S. D. (0.05)	N. S.	N. S.	.41	N. S.	N. S.
(0.01)	N. S.	N. S.	.56	N. S.	N. S.

Table 24. Birdsfoot Trefoil Variety Test at the Main Experiment Station, Brookings. Seeded 1951. Harvested 1952 and 1953.

<u>Variety</u>	<u>Tons of dry forage per acre</u>	
	<u>1952</u>	<u>1953</u>
Cascade	1.90	1.49
Empire	2.66	1.73
Granger	1.90	1.54
Mandan 1116	2.36	1.36
New York Narrowleaf <sup>1/</sup>	1.24	--
Oregon Narrowleaf <sup>1/</sup>	1.35	--
Viking	2.01	1.91
Average	1.92	1.61

<sup>1/</sup> Winterkilled and not harvested in 1953.

Table 25. Birdsfoot Trefoil Test at the Southeast Research Farm, Menno. Seeded 1957. Harvested 1958.

<u>Variety</u>	<u>Tons of dry forage per acre</u>	<u>Stand (%)</u>
Cascade	0.66	80
Empire	0.82	94
French Imported	0.79	92
Granger	0.77	91
Iowa Empire 2297	0.16	85
Iowa Empire 2306	0.67	91
Italian Imported	0.74	95
Leofoil	0.38	92
Mansfield	0.62	86
South Dakota #9	0.12	92
Tana	0.84	91
Viking	1.01	85
Average	0.63	90
L. S. D. (0.05)	0.27	



Table 26 Birdsfoot Trefoil Variety Test at the Northeast Research Farm, Watertown. Seeded 1957. Harvested 1958.

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<u>Variety</u>	<u>Tons of dry forage per acre</u>
Cascade	0.61
Douglas	0.59
Empire F.C. 32080	1.04
Granger	0.45
Imported	0.46
Iowa Empire 2297	0.70
Iowa Empire 2306	0.99
Mansfield	0.74
Tana	0.64
Viking	0.72
Average	0.69
L. S. D. (0.05)	0.34

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Table 27. Average Tons Per Acre of Oven Dry Forage Produced by Birdsfoot Trefoil Varieties at Cottonwood, Menno and Watertown, South Dakota. Seeded 1959. Harvested 1960.

Variety	Cottonwood	Menno		Total	Watertown	Mean
	Total	1st cut	2nd cut		Total	
Cascade	.42	.49	.59	1.08	1.25	.92
Douglas	.50	.63	.52	1.15	1.10	.92
Empire	.48	.30	.37	.67	1.75	.97
Fargo	.40	.27	.33	.60	.98	.66
French	.51	.39	.56	.95	.85	.77
Cranger	.54	.36	.56	.92	1.30	.92
Mansfield	.52	.40	.46	.86	1.08	.82
Tana	.35	.76	.81	1.57	2.50	1.47
Viking	.54	.60	.49	1.09	1.00	.88
Mean	.47	.47	.52	.99	1.31	.92
L. S. D.						
(0.05)	N.S.	N.S.	.26	.17	N.S.	N.S.
(0.01)	N.S.	N.S.	.35	.25	N.S.	N.S.

Table 28. Characteristics of those forage legume varieties eligible for certification and recommended for use in South Dakota in areas where they are adapted.

<u>Variety</u>	<u>Characteristics</u>
<b>Alfalfa:</b>	
1. Ladak	Yields exceptionally well in the first cutting of the season but is inferior to Ranger and Vernal in the second cutting. Ladak has a semiprocumbent habit of growth and becomes dormant during prolonged periods of summer drought and in early fall. Not as resistant to wilt as Ranger and Vernal and frequently subject to foliage diseases. Ladak is very winter hardy.
2. Ranger	A variegated variety in which the growth habit varies from erect to decumbent. Ranger recovers after cutting faster than Ladak and is an excellent seed producer. Susceptible to leaf spot diseases but is wilt resistant. Sufficiently winter hardy for use anywhere in South Dakota under normal conditions.
3. Vernal	An excellent hay variety possessing fine-stemmed, leafy, dark green foliage and relatively broad crowns. Resembles Cossack in recovery after cutting and fall dormancy. Vernal possesses a high level of winter hardiness and resistance to bacterial wilt. It is tolerant to several foliage diseases and is outstanding in its ability to produce high yields of quality forage.
3. Teton	A variety developed primarily for grazing alone or in grass mixtures. Teton has low, wide crowns with aggressive rhizome development. It possesses a satisfactory level of resistance to wilt and to many foliage diseases and is more winter hardy than any of the other varieties recommended for use in South Dakota. Teton will give comparatively high forage yields at the time of the first hay cutting but recovers rather slowly and enters fall dormancy quite early. An excellent variety for use in pasture mixtures.
<b>Red Clover:</b>	
Dollard	Dollard red clover was developed in Canada to meet the need for a strain less subject to winterkilling and with more dependable performance characteristics from year to year. It has more resistance to northern anthracnose than Midland and many other norther strains. Not distinguishable from other double-cut varieties on the basis of vegetative characteristics. Average seed production ability.
<b>Sweetclover:</b>	
1. Madrid	Good seedling vigor, medium height, and comparatively leafy and fine-stemmed. Earlier than most common varieties and a dependable seed producer. A biennial variety.
2. Goldtop	Characteristics similar to Madrid but has the advantage of lower coumarin content. Slightly later in maturity than Madrid and somewhat more resistant to the blackstem disease.
<b>Trefoil: Empire</b>	Empire is an improved variety of birdsfoot trefoil best adapted for use in pasture mixtures in the southeastern part of South Dakota. Trefoil is not as winter hardy as alfalfa and the area of adaptation in the state has not been well defined.