

RELEASE NOTICE

OF

**ANTELOPE GERMPLASM
SLENDER WHITE PRAIRIECLOVER
DALEA CANDIDA**

TESTED CLASS OF NATURAL GERMPLASM

by the

USDA-NRCS BRIDGER PLANT MATERIALS CENTER

and the

USDA-NRCS BISMARCK PLANT MATERIALS CENTER

and the

MONTANA AGRICULTURAL EXPERIMENT STATION

and the

NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

and the

WYOMING AGRICULTURAL EXPERIMENT STATION

This announces the release of 'Antelope germplasm' of slender white prairieclover (*Daleacandida*), a legumes native to the mid and short grass prairies of the Northern Great Plains in the United States and the southern portion of the Prairie Provinces of Canada. There are no other releases of this species.

Description: Slender white prairieclover *Dalea candida* Willd., formerly *Petalostemon candidum* (Willd.) Michx., syn. *Petalostemon oligophyllum* (Torr.) Rydb. (*Fabaceae* family), is a perennial herb with slender leafy stems 45-60 cm tall. The multiple stems rise from a woody base with a strong, deep, poorly-branched taproot. The branches are usually upright and spreading, but occasionally prostrate. The leaves are alternate, odd-pinnate, the 5-9 leaflets glandular-dotted. The leaflets of slender white prairieclover are larger than those of purple prairie clover *Dalea purpera* Vent. The flowers are in terminal spikes that are compact and cylindrical. The white flowers develop in July and August, with seed maturing in late August or September. The plants die back to the base each year.

This native legume is found on dry to mesic sites, usually on gravelly, rocky, shallow soils. Plant abundance ranges from a minor forb component in short and mid-prairies to nearly pure stands on steep rocky slopes. Its natural range extends from the southern portions of the Canadian Prairie Provinces south to Mexico, Texas and Louisiana. The prairieclovers are considered to be one of the most important groups of legumes of the Great Plains.

Origin: The original germplasm of 'Antelope' slender white prairieclover was collected 16 km west of Dickinson, (Stark County) North Dakota during the summer of 1947. Originally given the accession number of NDO-26-47, it was later given the number NDL-56 when established in Initial Evaluation Trials at the Soil Conservation Service Nursery at Mandan, North Dakota by Jesse L. McWilliams. This germplasm was sent to the newly established Bridger, Montana Plant Materials Center in 1960. It was first evaluated as NDL-56, later given a temporary number (T15903) while making application for a permanent Plant Introduction No. PI-478834.

Uses: Slender white prairieclover is palatable and nutritious for all classes of livestock, and an important forb for antelope, deer, upland gamebirds, and particularly sharp-tail grouse. In addition, the prairieclovers fix nitrogen, making it available to associated grasses. Slender white prairieclover can be used as a forb/legume component in reclamation, range renovation, and Conservation Reserve Plantings (CRP). This small native legume can be included in any seeding mixtures for wildlife habitat restoration or wildlife enhancement areas within other types of plantings. In plantings requiring native plant materials, this is one of the few native species that would be commercially available.

Area of Adaptation: This release of slender white prairieclover will potentially be used for inclusion in seed mixtures on range sites, drastically disturbed sites, and native landscaping throughout the northern Great Plains states and south-central prairie Provinces. Although this release originated in North Dakota, initial tests have found it to be adapted to range sites and stripmine reclamation sites in Montana and Wyoming east of the Continental Divide. The natural range of this species is greater than the aforementioned states, thus this release may potentially be adapted further south into South Dakota, Nebraska, Colorado, and Utah and northward into Saskatchewan, Alberta, and Manitoba.

Testing:

Initial Evaluation Plantings (IEP) The initial testing of any new collection usually begins with Initial Evaluation Plantings (IEP's). This involves the establishment of single rod rows (16.5 ft—5 meters) in comparison with other collections of the same or similar species and released cultivars of the same or similar species as Standards of Comparisons.

IEP--Mandan, ND 1948 This particular germplasm was first tested in a legume Initial Evaluation Planting (1948 – 1953) at the SCS Nursery at Mandan, North Dakota. In comparison to a white prairieclover and a purple prairieclover obtained from the Manhattan, Kansas SCS Nursery, it was found to be shorter, leafier, more decumbent, but was noted to show the most promise of the three prairieclovers (McWilliams 1955).

IEP- Briduer PMC 1961 It was planted in its first IEP at the Bridger Plant Materials Center in 1961. In this first IEP there were no other local collections of slender white prairie clover to compare it to, but it was compared to the white and purple prairieclovers from Manhattan, Kansas, just as in the Mandan IEP. In the 1963 Bridger PMC Annual Technical Report (ATR) it was noted that this accession of slender white prairieclovers showed promise and should be increased for seeding trials under native range conditions. It exhibited good vigor and excellent seed production.

IEP—Bridaer PMC 1976 On May 18, 1976 an IEP was established to evaluate the performance of 116 accessions of legumes for their adaptation to mined-land reclamation. Included in this study were three accessions of slender white prairieclover and seven accessions of purple prairieclover. 'Antelope' slender white prairie clover, along with 'Kaneb' purple prairieclover, had the best overall performance in Stand, Vigor, Forage Production, Seed Production, Ground Cover, Spring Recovery, Height, and Plant Uniformity as recorded in the 1976 ATR (Appendix Table 1), 1977 ATR (Appendix Table 2), 1978 ATR (Appendix Table 3), and 1979 ATR (Appendix Table 4).

Arid-Lands IEP 1980-1982 In the spring and fall of 1980 and 1981 IEP's were established on coal strip-mine spoils on the Bridger Coal Mine near Rock Springs, Wyoming and in the spring and fall of 1981 and 1982 similar IEP's were established on bentonite mine spoils on the Dresser Minerals mine near Greybull, Wyoming. Both sites received less than 200 mm of annual precipitation. Antelope slender white prairieclover had some emergence and survival at Rock Springs in the Spring-80, and Spring-81 plantings and at Greybull in the Spring-81 planting. All other plantings failed to exhibit any emergence (Appendix Table 5). On the plantings where there was emergence the plants did not survive into the second growing season. These sites were too severe for the establishment of this native legume by direct seeding.

IEP—Bridaer PMC 1980 IEP's were established at the Bridger PMC on May 13, and November 18, 1980 as part of the Arid-Lands project to evaluate the performance of grasses and forbs of mined-land reclamation in arid areas of Wyoming and Montana. Antelope was compared to Kaneb purple prairieclover and an Wyoming collection of slender white prairieclover (Appendix Table 6).

Field Evaluation Plantings (FEP) Once larger quantities of seed are available it is used to establish plantings on a larger scale at field test sites throughout Montana and Wyoming. These plantings are established and maintained by the Bridger PMC.

Bighorn Ranch FEP--1976 On April 14, 1976 evaluation rows (5 meters with 1 meter row spacing) were established on a plowed rangeland site 25 km south of Buffalo, Wyoming in cooperation with SUNOCO Energy Development Company. The site on the Bighorn Ranch was a moderately deep fine loamy soil, received an average of 350 mm of annual precipitation, and was at an elevation of 1,463 meters. Antelope slender white prairieclover was compared to Kaneb and PI-421523 purple prairieclover (Appendix Table 7). Antelope had better vigor and forage production over the seven years of evaluation.

Cordero Mine FEP--1978 On April 11, 1978 plots of 18 different accessions of grasses and legumes were drill seeded (each plot 2 meters X 45 meters) on a disturbed site at the Cordero coal strip-mine 35 km southeast of Gillette, Wyoming. The Cordero mine site was a deep clay-loam site, received an average of 355 mm of precipitation, and was at an elevation of 1,410 meters. The site was not true topsoiled mine spoils, but rather a disturbed site resulting from the development of rail spur and coal loading facilities. Antelope slender white prairieclover and Kaneb purple prairieclover had initial stands of 75% and 87% respectively (Appendix Table 8). By the second year the stands had decreased slightly to 70% and 73%, and by the fourth year stands had deteriorated to 47% and 68%.

Tom Carev Ranch FEP-1980 To evaluate the potential for rangeland renovation and establishment of dryland pastures for early spring and fall use, two evaluation sites were established on the Tom Carey Ranch in the Boulder River Valley 25 km north of Cardwell, Montana. The east site was in gentle rolling hills at 1,524 meters elevation and receives 300-350 mm annual precipitation. This site was dominated by Rocky Mountain juniper *juniperus scopulorum* and big sagebrush *Artemisia tridentata* and was classified as a silty range site. The west site was on a large alluvial fan at 1,400 meters elevation and receives 200-250 mm annual precipitation. This site was a gravelly clay-loam that was dominated by bluegrama *Bouteloua gracilis* and western wheatgrass *Pascopyrum smithii*. The east site was broken up the previous year and summer-fallowed, while the west site was broken up two months before the October 21-22, 1980 seeding dates. Antelope slender white prairieclover and Kanab purple prairieclover had poor initial emergence and vigor at the east site and good emergence at the west site (Appendix Table 9). By the second and third year the stands of both slender white and purple prairieclover had deteriorated to only a few surviving plants.

Field Plantings Seed is made available to cooperators for establishing field plantings that are established with the help of NRCS field office personnel and evaluated by NRCS field offices. Seed is also made available to other PMC's, universities, and private researchers (Table 1).

Table 1. Seed distribution of Antelope (NDL-56 ,PI—478834) slender white prairieclover from the Bridger Plant Materials Center since 1966.

<u>Year</u>	<u>MT-SCS</u>	<u>WY-scs</u>	<u>PMC's</u>	<u>Other</u>	<u>TOTAL</u>
1966	10			49	59 lbs.
1968	14			51	65
1969				26	26
1970		1		100	101
1971				50	50
1972				11	11
1974	10	1		14	25
1975		17	2	22	41
1976		2		4	6
1977		1			1
1978		3		85	88
1979	30				30
1980			60	3	63
1981	11		17	2	31
1982	19	20	2		41
1983	16	21		1	38
1984	14				14
1985		4			4
1986	3	10			13
1995				1	1
1997	2				2
1998	1		1	1	3
1999	5			1	6

Field Plantings were established on a variety of sites throughout Montana and Wyoming (Appendix Table 10.) Of the sixteen planting for which significant evaluation data is available, six of them were considered failures. Of these six, two were attempts to interseed into existing native range sites. This practice has not proven successful even with

more vigorous native and introduced forage and reclamation species. With the other four failures it was noted that the establishment year was extremely hot and dry, with added desiccation of grasshoppers and livestock grazing. This ecotype of slender white prairieclover was successfully established on coal stripmines, a rock quarry, and abandoned mine sites. Most of the other successful plantings were seeded into standing wheat stubble. On two plantings the stands were spotty because of the difficulty in metering a uniform amount of seed through the drill. A alfalfa box or box designed to handle smaller sized seed will be helpful in alleviating this problem.

Seed Increase Seed harvested from this IEP row (6 meter long) yielded at the rate of 650 kg/ha (730 lbs/A) in 1962 and 807 kg/ha (907 lbs/A) in 1963. On May 10, 1964 the seed collected for the IEP rows was used to establish the first seed increase field.

There are 613,000 seeds/kilogram (278,000 seeds/pound). At the Bridger PMC seed is harvested during the first two weeks of September. The stand is swathed into windrows, allowed to dry, and then combined. In processing the seed the harvested material is run through a hammermill or barley debearder to remove the capsule from around the individual kidney-shaped seeds. Broadleaf weeds and annual grasses are a problem in seed production fields. Although there are no chemicals specifically labeled for use on slender white prairieclover, many of the chemicals used on alfalfa can be successfully used on the prairieclovers, e.g., Poast (*sethoxydim*) and Select (Clethodim) can be used for annual grasses such as green foxtail and barnyard grass, Pursuit (*imazethapyr*), Plateau (pyridinecarboxylic acid), and Butyrac (*2,4-DB*) can be used for broadleaf weed control.

<u>Planting Date</u>	<u>Field Size</u>	<u>Year</u>	<u>Harvest Yields</u>
May 10, 1964	.13 ha (.33 acres)	1965	650 kg/ha (730 lbs./A)
		1966	200 kg/ha (224 lbs./A)
March 15, 1974	.31 ha (.76 acres)	1975	24 kg/ha (27 lbs./A)
May 16, 1984	.26 ha (.64 acres)	1985	181 kg/ha (203 lbs./A)
		1986	157 kg/ha (176 lbs./A)
		1987	297 kg/ha (333 lbs./A)
		1988	129 kg/ha (145 lbs./A)
April 17, 1996	.14 ha (.35 acres)	1997	64 kg/ha (72 lbs./A)
		1998	110 kg/ha (124 lbs./A)
		1999	146 kg/ha (164 lbs./A)

There are 613,000 seeds/kilogram (278,000 seeds/pound). At the Bridger PMC seed is harvested during the first two weeks of September. The stand is swathed into windrows, allowed to dry, and then combined. In processing the seed the harvested material is run through a hammermill or barley debearder to remove the capsule from around the individual kidney-shaped seeds. Broadleaf weeds and annual grasses are a problem in seed production fields. Although there are no chemicals specifically labeled for use on slender white prairieclover, many of the chemicals used on alfalfa can be successfully used on the prairieclovers, e.g., Poast (*sethoxydim*) and Select (Clethodim) can be used for annual grasses such as green foxtail and barnyard grass, Pursuit (*imazethapyr*), Plateau (pyridinecarboxylic acid), and Butyrac (*2,4-DB*) can be used for broadleaf weed control.

Once fields of slender white prairieclover were established, it was noted that there were numerous small wasps that showed up when the plants were in full bloom. In August of 1965 Chuck Mowry, Soil Conservationist at the Bridger PMC used a sweep-net to sample the insects in the stand during full bloom. The mounted insects were sent to Dr. Norman Anderson in the Zoology Department at Montana State University-Bozeman. He identified 18 different wasps and bees, other than honey and bumble bees (Table 2.)

Table 2. Pollinator insects sampled from a stand of slender white prairieclover growing at the Bridger Plant Materials Center. August 11, 1965.

<u>Order</u>	<u>Family</u>	<u>Genus & Species</u>	
Hymenoptera	Sphecidae	Sphex pubidorus	wasp
		Sphex ichneumoneus	wasp
		Ammophila sp.	wasp
		Podalonia communis	wasp
		Epibembix amoena	bee
		Tachytes fulviventris	bee
		Stizoides uncinatus	black wasp
	Apidae	Bombus griseocollis	bee
		Bombus centralis	bee
		Apis mellifera	bee
		Anthophora walshii	bee
	Anderenidae	Halictus sp.	wasp
	Vespidae	Rygchium sp.	wasp
		Polistes sp.	wasp
		Cerceris sp.	wasp
		Eucerceris sp.	wasp
		Monobia sp.	wasp
	Megachilidae	Megachile lippiae	bee

Environmental Considerations Slender white prairieclover (*Dalea candida*) is a native legume, endogenous to most of the prairie states and prairie provinces. It is usually found as a minor component in late seral grasslands, but can be a pioneer species of shallow soils or gravels. The plant has a taproot so will not spread vegetatively. The seed is heavy and will not travel far from the parent plant. It is not competitive with other native forbs and will not compete with any of the more aggressive grass species (see attached Environmental Assessment). It is utilized as forage by all classes of livestock and most ungulate wildlife, game birds, and songbirds. It does not have any known toxic affect on livestock or wildlife. Historically, the roots and leaves were used by Native Americans for food and medicine.

There are no other releases of slender white prairie clover. There is presently a large demand for native forbs, and legumes in particular, for inclusion in native seed mixtures for Conservation Reserve Program plantings and wildlife plantings. At the present time native harvested seed is the only available source of this species and that is very limited.

Availability of Plant Materials: GO seed (equivalent to Breeder seed) will be maintained by the USDA-NRCS Plant Materials Center at Bridger, Montana and will be available through the Foundation Seed Program at Montana State University-Bozeman or University of Wyoming.

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Appendix Table 1. Initial Evaluation Planting. Seedling year performance of 115 legume accessions at the Bridger PMC being evaluated for reclamation of mined land.

Species	Accession	Stand %	Seedling			Plant Height in.	Emerge Date	Origin
			Vigor 1/	Forage 1/	Seed 1/			
Petalostemon candidum	M-626	50	3	4	5	15	6/8/76	Fallon Co., MT
Petalostemon candidum	NDL-56	40	3	4	4	10	6/8/76	Stark Co., ND
Petalostemon candidum	M-1147	20	3	6	5	12	6/8/76	Chouteau Co., MT
Petalostemon purpureum	M-627	30	5	7	--	5	6/8/76	Fallon Co., MT
Petalostemon purpureum	M-1034	20	3	5	--	4	6/8/76	Fergus Co., MT
Petalostemon purpureum	M-1059	25	3	5	7	7	6/8/76	Roosevelt Co., MT
Petalostemon purpureum	M-1067	40	3	5	7	9	6/8/76	Sheridan Co., MT
Petalostemon purpureum	NDL-54	60	1	2	5	15	6/8/76	Bismarck PMC
Petalostemon purpureum	Kaneb	80	2	2	5	10	6/8/76	Riley Co., KS
Petalostemon sp.	WY-582	40	3	5	3	12	6/8/76	Sheridan Co., WY

1/ Rated 1-9 with 1 best.

Appendix Table 2. Initial Evaluation Planting. Seedling year performance of 115 legume accessions at the Bridger PMC being evaluated for reclamation of mined land. 1977.

Species	Accession	Stand	Vigor	Forage	Spread	Seed	Uniform	Ground Cutting		Spring Recovery	Plant Height	Bloom Date	Maturity Date
								Cover	Recovery				
Peca	M-626	5	2	4	0	3	4	4	6	4	15	6/30	8/15
Peca	NDL-56	5	1	2	0	2	2	2	6	2	18	7/3	8/19
Peca	M-1147	9	3	4	0	3	4	4	6	5	20	7/11	8/12
Pepu	M-627	8	5	6	0	7	2	6	7	5	12	7/22	8/24
Pepu	M-1034	9	5	7	0	6	6	7	0	6	6	7/21	8/19
Pepu	M-1059	8	2	4	0	3	2	4	5	3	14	7/4	8/12
Pepu	M-1067	6	2	3	0	3	2	3	5	3	15	7/6	8/15
Pepu	NDL-54	4	1	2	0	5	3	2	4	3	24	7/28	8/30
Pepu	Kaneb	2	1	2	0	3	1	2	3	2	23	7/29	9/7
Pesp.	WY-582	6	1	2	0	2	1	2	9	1	16	7/9	8/15

Rated 1-9 with 1 best.

Appendix Table 3. Initial Evaluation Planting. Seedling year performance of 115 legume accessions at the Bridger PMC being evaluated for reclamation of mined land. 1978.

Species	Accession	Stand	Vigor	Forage	Spread	Seed	Uniform	Ground Cover	Spring Recovery	Plant Height	Bloom Date	Heading Date
Peca	M-626	9	3	6	0	3	7	5	6	15	7/21	7/1
Peca	NDL-56	5	1	3	0	3	3	3	5	18	7/28	7/1
Peca	M-1147	9	3	7	0	4	7	6	6	17	7/21	7/1
Pepu	M-627	0							0			
Pepu	M-1034	0							0	0		
Pepu	M-1059	8	1	4	0	3	4	4	4	14	7/25	7/1
Pepu	M-1067	6	1	4	0	3	2	3	4	17	7/28	7/1
Pepu	NDL-54	4	1	3	0	4	3	3	4	22	8/10	7/28
Pepu	Kaneb	3	1	3	0	3	2	3	4	23	8/10	7/28
Pesp.	WY-582	6	1	5	0	3	4	5	5	16	7/21	7/1

Rated 1-9 with 1 best.

Appendix Table 4. Initial Evaluation Planting. Seedling year performance of 115 legume accessions at the Bridger PMC being evaluated for reclamation of mined land. 1979.

Species	Accession	Stand	Vigor	Forage	Spread	Seed	Uniform	Ground Cover	Plant Height cm.	Bloom Date
Peca	M-626	9	5	8	0	8	5	2	32	7/11
Peca	NDL-56	5	2	6	0	3	4	7	43	7/18
Peca	M-1147	9	3	6	0	5	4	7	43	7/16
Pepu	M-627	0								
Pepu	M-1034	0								
Pepu	M-1059	8	4	6	0	5	4	6	32	7/13
Pepu	M-1067	5	1	4	0	4	3	5	36	7/14
Pepu	NDL-54	5	2	5	0	6	2	5	52	8/3
Pepu	Kaneb	3	1	4	0	4	1	5	52	8/4
Pesp.	WY-582	6	2	6	0	5	6	7	38	7/11

Rated 1-9 with 1 best.

Appendix Table 5. Initial Evaluation Planting. Plant performance of accessions planted for reclamation of mined land and range revegetation in areas with less than 10 inches of annual precipitation. Rock Springs and Greybull, Wyoming. 1980-81.

Species	Accessions	Rock Springs										Greybull					
		Spring 1980					Fall 1980					Spring 1981			Spring 1981		
		Stand 6/80	Stand 10/80	Stand 4/81	Stand 10/81	Vigor 10/81	Stand 6/81	Vigor 6/81	Stand 10/81	Vigor 10/81	Stand 6/81	Vigor 6/81	Stand 10/81	Vigor 6/81	Stand 10/81	Vigor 10/81	
		%	%	%	%	%	%	%	%	%	%	%	%				
Peca	T15903	45	5	--	--	--	--	--	--	75	3	--	--	85	3	1	5
Peca	T19175									10	5	--	--	15	5	--	--
Pepu	Kaneb	60	5	--	--	--	--	--	--	70	3	--	--	65	4	1	5

Appendix Table 6. Initial Evaluation Planting. Plant performance of accessions planted for reclamation of mined lands and range revegetation in areas with less than 10 inches of annual precipitation. Bridger PMC, 1981.

PI or T Number	Accession	Genus /Species	Stand %	Vigor 1/	Foliage Abundance 1/	Foliage Uniformity 1/	Seed Production 1/	Ground Cover 1/
<u>Seeded May 13, 1980</u>								
T15903	NDL-56	Petalostemon candidum	70	3	5	3	3	5
PI-421523	Kaneb	Petalostemon purpureum	70	3	5	3	4	5
<u>Seeded November 18, 1980</u>								
T15903	NDL-56	Petalostemon candidum	40	3	3	--	9	--
T19175	WY-750	Petalostemon candidum	10	5	5	--	9	--

1/ Rated 1-9 with 1 best.

Appendix Table 7. Big Horn Ranch Field Evaluation Planting. Performance of 73 accessions of grasses, legumes, forbs, and shrubs grown on a dryland site at Buffalo, Wy. Planted 4/14/76

Species	Accession	Stand	Vigor	Forage Production	Seed Production	Plant Uniformity	Ground Cover	Drought Resistance	Plant Height
<u>1977 Evaluation</u>									
Petalostemon candidum	NDL-56	3	4	3	--	2	6	1	10
Petalostemon purpureum	Kaneb	3	3	6	--	2	6	1	10
Petalostemon purpureum	NDL-54	4	3	6	--	1	6	1	11
<u>1978 Evaluation</u>									
Petalostemon candidum	NDL-56	4	1	4	7	2	5	--	20
Petalostemon purpureum	Kaneb	3	1	5	--	3	6	--	13
Petalostemon purpureum	NDL-54	5	1	6	--	3	6	--	12
<u>1979 Evaluation</u>									
Petalostemon candidum	NDL-56	65	3	3	--	5	5	--	--
Petalostemon purpureum	Kaneb	80	2	3	--	3	5	--	--
Petalostemon purpureum	NDL-54	75	2	3	--	4	5	--	--
<u>1980 Evaluation</u>									
Petalostemon candidum	NDL-56	65	3	--	--	--	5	--	--
Petalostemon purpureum	Kaneb	75	4	--	--	--	6	--	--
Petalostemon purpureum	NDL-54	20	7	--	--	--	8	--	--
<u>1982 Evaluation</u>									
Petalostemon candidum	NDL-56	40	3	5	0	5	--	--	--
Petalostemon purpureum	Kaneb	20	5	5	0	5	--	--	--
Petalostemon purpureum	NDL-54	5	5	5	0	5	--	--	--

Appendix Table 8. Cordero Mine Field Evaluation Planting. Forage production of 18 accessions on a dryland site at the Cordero Mine, Gillette, Wv. 1979-1982. Planted 4/11/78.

Appendix Table 8. Cordero Mine Field Evaluation Planting. Forage production of 18 accessions on a dryland site at the Cordero Mine, Gillette, Wyoming, 1979-1982. Planted 4/11/78.

Species	Accession	<u>Stand</u>	<u>Stand</u>	1979	<u>Forase Production</u>	
		1980	1981		1980	1981
		%	%			
Petalostemoncandidum	NDL-56	70	47	**	**	**
Petalostemonpurpureum	Kaneb	73	68	**	**	**

** Stands not thick enough to harvest with plot harvester.

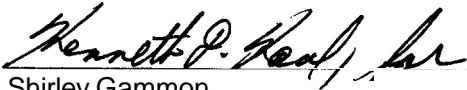
Appendix Table 9. Tom Carey Field Evaluation Planting. Accessions established in single, 20 foot observation rows at the East Site in the Boulder River Valley.

Species	Accession	1982	<u>Visor</u>	1984	1982	<u>Stand</u>	1984
			1983			1983	
Petalostemoncandidum	NDL-56	0	9	8	0	9	9
Petalostemonpurpureum	Kaneb	5	9	8	6	9	8

Appendix Table 10. Summary of Field Plantings of 'Antelope' slender white prairieclover established in Montana and Wyoming with seed distributed from the Bridger Plant Materials Center, Bridger, Montana.

<u>COOPERATOR</u>	<u>LOCATION</u>	<u>PLANTING NO.</u>	<u>PLANTING DATE</u>	<u>RATING</u>	<u>SOIL TYPE</u>	<u>SEEDBED</u>	<u>REMARKS</u>
<u>WYOMING</u>							
Kerr McGee	Douglas, WY	72-75	10/76	Failure	Clayey loam, shallow	mine spoils	dry year, cattle grazing 1 st year
Guernsey Stone Co.	Wheatland, WY	74-51	4/25/74	EX-Good	finer from crusher and topsoil	topsoil resurfacing	good stands until buried
Albert Goertz	Wheatland	82-24	5/26/82	Good-Fair		wheat stubble	heavy sweetclover infestation
Bill Long	Ranchester	82-29	4/30/82	Fair-Good	mine spoils	reshaping	RAMP project
Verle Ellis	Lusk, WY	82-165	10/15/82	Fair-Poor	fine sandy loam	wheat stubble	
Joe Feeley	Sundance	86-163	10/17/86	Failure	loamy	wheat stubble	
Meike Ranch	Kaycee	86-173	4/86	Failure	loamy	interseeding in range	blue grama sod w/ cacti
<u>MONTANA</u>							
Western Energy	Colstrip, MT	74-33	11/15/75	Fair	mine spoils	reshaping	
Decker Coal	Decker, MT	79-63	5/79	Good	Clay loam topsoil	resurfaced spoils	very dry year
Lloyd Carroll	Ekalaka, MT	81-159	10/81	Poor		summerfallow	hot, dry 1 st summer
Ted Millholin	Forsyth, MT	81-160	10/29/81	Good	loamy	wheat stubble	poor uniformity drilling, cheaty
Jack Perkins	Deer Lodge, MT	82-123	5/83	Failure	loamy	fallow	seeded as mix, dry 1 st year
Harold Kuehne	Circle, MT	82-145	10/82	Fair	loamy	standing stubble	
Dale Grose	Twin Bridges, MT	83-062	4/19/83	Fair	loamy	wheat stubble	spotty -poor drill feed
Gene Smith	Plentywood, MT	84-031	4/16/84	Failure	Clay loam	interseeded in range	JD powerdrill
June Rafferty	Powderville, MT	84-132	11/02/85	Failure	Sandy loam	barley stubble	brillion drill, hot, grasshoppers

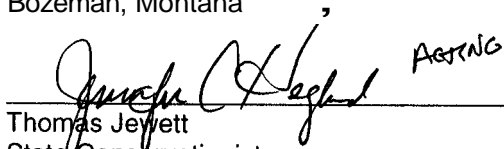
SIGNATURES FOR RELEASE OF
Antelope germplasm slender white prairieclover (Dalea candida)



Shirley Gammon
State Conservationist
NRCS
Bozeman, Montana

2-23-00

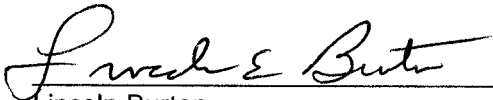
Date

 Agrng

Thomas Jewett
State Conservationist
NRCS
Bismarck, North Dakota

4/11/2000

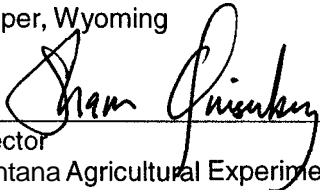
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Lincoln Burton
State Conservationist
NRCS
Casper, Wyoming

3-14-2000

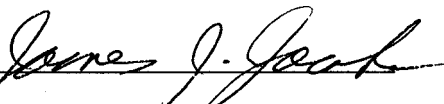
Date



Director
Montana Agricultural Experiment Station
Bozeman, Montana

2/25/00

Date



Director
Wyoming Agricultural Experiment Station
Laramie, Wyoming

3/27/00

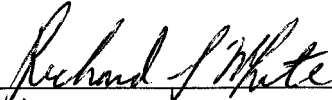
Date



Director
North Dakota Agriculture Experiment Station
Fargo, North Dakota

4/17/00

Date



Director
Ecological Sciences Division
NRCS
Washington, DC

Date