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UNITED STATES DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
Ecological Sciences and Technology Division  
Washington, D. C.  
and  
ARIZONA AGRICULTURAL EXPERIMENT STATION  
Tucson, Arizona

NOTICE OF NAMING AND RELEASE OF 'COCHISE' ATHERSTONE LOVEGRASS  
FOR SOIL STABILIZATION AND RANGE FORAGE

The Agricultural Experiment Stations of the University of Arizona and the United States Department of Agriculture, Soil Conservation Service, announce the naming and release of 'Cochise' Atherstone lovegrass, *Eragrostis atherstonei* stapf.<sup>1/</sup>

Origin: 1962; Pretoria, South Africa; Division of Crops & Pastures

Other Identification Used: Cochise has been tested under the following control numbers:

- PI-276033 - National Plant Germplasm System, Germplasm Resources Laboratory, USDA - SEA
- P-15608 - USDA-SCS Western Regional Plant Materials Control Number
- A-16753 - Tucson, Arizona, USDA-SCS Plant Materials Center
- BN-12037-62 - Beltsville, Maryland, USDA-SCS National Plant Materials Center
- PM-NM-500 - Los Lunas, New Mexico, USDA-SCS, Plant Materials Center

Description: 'Cochise' lovegrass is a robust, tufted, perennial bunchgrass. Plants can attain heights up to 48 inches under favorable environments. The species is reported to be sparingly stoloniferous, but this characteristic is rare in Cochise. Cochise lovegrass has some of the characteristics of both weeping lovegrass and Lehmann lovegrass. The leaf blades are grayish green and loosely rolled. Leaf sheaths are pallid or purplish. Leaf vernation is rolled. There are no auricles and leaf sheaths are open. The ligule and collar are hairy extending to 2 mm on margins. There are tufts of spreading hairs at the base of the panicle branches and the rachilla bases are persistent, leaving the rachis prickly in the mature panicle. <sup>1/</sup> & <sup>2/</sup>

Method of Development: Six strains of Atherstone lovegrass were comparatively evaluated against A-68, *Eragrostis lehmanniana*, Lehmann lovegrass, the standard of comparison, on the Plant Materials Center beginning in 1964. Cochise was selected and entered into seed production for field testing in 1965 at the Los Lunas, New Mexico, Plant Materials Center and in 1967 at the Tucson,

<sup>1/</sup> Synonym *Eragrostis trichophora* Coss, and Dur. Re: A Checklist of Names for 3,000 Vascular Plants of Economic Importance, U.S. Department of Agriculture Handbook 505, May 1977,

Arizona, Plant Materials Center. Evaluations were made on ease of germination, drought tolerance, plant vigor, forage production, cold tolerance, and persistence under field conditions.

Area of Adaptation: Cochise lovegrass is found in the tropical to subtropical savannas and low grass veldts of South Africa, where it grows on sandy soils receiving 17 to 30 inches of summer rainfall. It grows in association with *Themeda triandra*, *Eragrostis superba*, *Heteropogon contortus*, and *Aristida* spp. 3/

The full range of 'Cochise' lovegrass adaptation in the United States is not known. Observations have shown it to be adapted from the Mexican border north to the 35th parallel (about to Albuquerque, New Mexico) and from Miami, Texas, (101st Prime Meridian) west to Lockeford, California, at elevation ranges from 1500 to 6000 feet. Cochise has survived -25° F. at Albuquerque, New Mexico, whereas Lehmann lovegrass is cold-sensitive at approximately 15° F. Cochise has become established and performed well in 10 to 20 inch annual precipitation zones. However, it might require an average minimum of 3.5 inches of winter precipitation to persist in these low precipitation zones. This becomes one of the factors limiting its adaptation as one moves eastward into Texas. Cochise is well adapted to sandy through silt loam (medium to coarse textured) soils.

Basically, Cochise overlaps the Lehmann lovegrass area of adaptation with the added benefit of being adapted and more productive at higher elevations and higher rainfall areas. Cochise establishes easier, yields more forage and persists better than Lehmann on identical sites.

Suggested Uses: Cochise was selected for use in rangeland improvement and critical area stabilization. It will provide soil protection from wind and water erosion while yielding high amounts of forage for range livestock and wildlife grazing.

Establishment: One pound of Cochise seed contains approximately 4,000,000 seeds. A standard seeding rate (20 pls/ft<sup>2</sup>) would require about ¼ pound pure live seed per acre; however, because of seed size, one pound pure live seed per acre is the least amount of seed that can be uniformly distributed. Stands are best established by broadcast seeding into freshly prepared seed-beds where competing vegetation has been removed. Water entrapments constructed by root-plowing, pitting, furrowing, plowing and bulldozing are highly beneficial for establishing good grass stands in semiarid 10-12 inch precipitation zones. Equally essential is shallow seed coverage by soil sloughing or other means. Seeds should be planted up to three months prior to the summer rainy season.

Management: New seedlings should be fully protected from grazing for one full year following seedling emergence. After satisfactory establishment, grass should be grazed according to proper grazing use practices. No more than 50% of the season's growth should be utilized at any one time. Seeded areas should be fenced out and managed separately from native rangeland.

Seed Source: Breeder and Foundation seed will be produced by the SCS Tucson Plant Materials Center, Tucson, Arizona. Recognized generations through

which Cochise will be multiplied are Breeders, Foundation and Certified Seed classes. Foundation seed will be available to growers through the Arizona Crop Improvement Association and Natural Resource Conservation Districts. Standards for all classes of seed will be included in the Arizona Seed Certification Handbook.

Suggested release date of Cochise lovegrass is July, 1979. Limited Quantities of Foundation seed will be available immediately for commercial seed production.

References:

1. Chippindall, Lucy K. A., Prof. J. D. Scott, Prof. J. J. Theron, D. Meredith, et al. 1955. The Grasses and Pastures of South Africa. First Edition. Central News Agency, Union of South Africa. 771 pp.
2. McWilliams, Jesse L. 1973. P-15608 Atherstone Lovegrass (*Eragrostis atherstonei*). Descriptive Sheet, USDA, SCS. 2 pp.
3. Rattray, J. M. 1960. The Grass Cover of Africa. Food and Agriculture Organization of the United Nations Pub. No. 49. 168 pp.

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4-15-77  
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4-16-79  
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Table 1

Miscellaneous *Eragrostis atherstonei*, PI-276033, Field Evaluation Planting Plant Performance Data

Genus/species	Identification Number	Planting Date	Evaluation Years	Plant Establishment	Avg. Stand	Average Forage Yield air-dry pounds/acre
Santa Rita Forest and Range Experiment Station; 3,000 ft. elevation; 10.92 annual precipitation; Anthony SL Soil:						
<i>E. atherstonei</i>	276033	68-71	68-71	4	6	-
<i>E. lehmanniana</i>	A-68	68-71	68-71	4	7	-
<i>E. atherstonei</i>	276033	69-71	69-73	5	6	1002
<i>E. lehmanniana</i>	A-68	69-71	69-73	5	7	741
Rancho Sacatol, Willcox, Arizona, 4400 ft. elevation; 12 inch precipitation; sandy loam soil:						
<i>E. atherstonei</i>	276033	1969	69-71	3	5	-
<i>E. superba</i>	'Palar'	1969	69-71	5	6	-
<u>Dink Conner Farm, Cochise County, Arizona; 4200 ft. elevation <sup>1/</sup>:</u>						
<i>E. atherstonei</i>	276033	1974	74-76	-	4	630
<i>E. curvula var. conferta</i>	A-84	1974	74-76	-	8	280
<i>E. superba</i>	Wilman	1974	74-76	-	7	380
Walter Remmers, San Pedro Natural Resource Conservation District; 3450 ft. elevation; Gila loam soil:						
<i>E. atherstonei</i>	276033	1972	72-76	-	5	-
<i>E. curvula var. conferta</i>	Catalina	1972	72-76	-	5	-
<i>E. curvula var. conferta</i>	A-84	1972	72-76	-	-	-
Douglas Airport, Douglas, Arizona; 4300 ft. elevation; 14 inch annual precipitation; loam soil:						
<i>E. atherstonei</i>	276033	1969	69-78	-	4	-
<i>E. curvula var. conferta</i>	A-84	1969	69-78	-	4	-

Legend: 1=excellent; 3=good; 5=fair; 7=poor; 9=very poor  
dash (-) = no data collected

<sup>1/</sup> U/A Cooperative Extension Service; data average of three replications

Table 2

*Eragrostis atherstonei*, PI-276033, Field Evaluation Planting Test Data Summaries Collected in New Mexico <sup>1/</sup>

<u>Genus/species</u>	<u>Accession</u>	<u>Location</u>	<u>Year Planted</u>	<u>Evaluation Years</u>	<u>Soils</u>	<u>Elevation (feet)</u>	<u>Stand</u>	<u>Avg. Forage Yield</u>	<u>Avg. Plant Height (in.)</u>	<u>Avg. Vigor</u>
<i>E. atherstonei</i>	276033	Deming, New Mexico	1966	66-72.	Vekol SCL, Mohave-	4325	6	-	24-30	3
<i>E. lehmanniana</i>	A-68	Deming, New Mexico	1966	66-72	Tucson SL, & Cowan	4325	5	-	15	3
<i>E. atherstonei</i>	276033	Ft. Stanton, New Mexico	1966	66-75	W. Brown Forest	6300	7	5	-	3
<i>E. curvula</i>	A-67	Ft. Stanton, New Mexico	1966	66-75	Group	6300	9	6	-	4
<i>E. atherstonei</i>	276033	Las Cruces, New Mexico	1968	68-70	deep sands	3800	4	-	-	5
<i>E. lehmanniana</i>	A-14107	Las Cruces, New Mexico	1968	68-70		3800	5	-	-	5

<sup>1/</sup> Data supplied by the Los Lunas, New Mexico, Plant Materials Center; data average of three replications

Legend: 1=excellent; 3=good; 5=fair; 7=poor; 9=very poor  
dash (-) = no data collected

Table 3

Stand Densities and Forage Yields of *E. atherstonei* and *E. lehmanniana* at Bowie, Arizona  
 (mesquite site; 3500 ft. elevation; silt loam to loam soils; 9.5 inches precipitation annually) <sup>1/</sup>

<u>Accession</u>	<u>Genus/species</u>	<u>Planting Date</u>	<u>Year of Evaluation</u>	<u>Stand <sup>2/</sup> Plants/100 ft. <sup>2</sup></u>	<u>Forage Yield <sup>2/</sup> lbs./acre</u>
PI-276033	<i>Eragrostis atherstonei</i>	1970	1970	139	-
			1971	33	530
			1972	44	1097
A-68	<i>Eragrostis lehmanniana</i>	1970	1970	96	-
			1971	59	378
			1972	50	731

<sup>1/</sup> University of Arizona, School of Renewable Natural Resources

<sup>2/</sup> All data an average of three replications

Table 4

Stand Densities and Forage Yields of *E. atherstonei* and *E. lehmanniana* at Bowie, Arizona  
 (creosote site; 3500 ft. elevation; silt loam - loam soils; 9.5 inches of precipitation annually) <sup>1/</sup>

<u>Accession</u>	<u>Genus/species</u>	<u>Planting Date</u>	<u>Year of Evaluation</u>	<u>Stand <sup>2/</sup> Plants/100 ft. <sup>2</sup></u>	<u>Forage Yield <sup>2/</sup> lbs./acre</u>
PI-276033	<i>Eragrostis atherstonei</i>	1971	1971	240	-
			1972	52	414
A-68	<i>Eragrostis lehmanniana</i>	1971	1971	165	-
			1972	46	213

<sup>1/</sup> University of Arizona, School of Renewable Natural Resources

<sup>2/</sup> All data an average of three replications

Table 5

Stand Densities and Forage Yields of *E. atherstonei* and *E. Zehmanniana* at San Simon, Arizona  
 (3500 feet elevation; silt loam to loam soils; 9.5 inches of precipitation annually) <sup>1/</sup>

<u>Accession</u>	<u>Genus/species</u>	<u>Planting Date</u>	<u>Year of Evaluation</u>	<u>Stand <sup>2/</sup>/ Plants/100 ft. <sup>2</sup></u>	<u>Forage Yield <sup>2/</sup>/ lbs/acre</u>
PI-276033	<i>Eragrostis atherstonei</i>	1969	1969	163	-
			1970	65	395
			1971	23	502
			1978	31	469
A-68	<i>Eragrostis Zehmanniana</i>	1969	1969	210	-
			1970	188	419
			1971	161	821
			1978	26	34
PI-276033	<i>Eragrostis atherstonei</i>	1971	1971	195	470
			1972	152	1594
			1978	80	1710
A-68	<i>Eragrostis Zehmanniana</i>	1971	1971	232	415
			1972	156	1155
			1978	124	338
PI-276033	<i>Eragrostis atherstonei</i>	1972	1972	24	-
			1978	5	114
9-68	<i>Eragrostis lehmanniana</i>	1972	1972	29	-
			1978	5	41

<sup>1/</sup> University of Arizona, School of Renewable Natural Resources

<sup>2/</sup> All data an average of three evaluations

Table 6

Various *Eragrostis atherstonei*, PI-276033, vs. *E. lehmanniana* A-68, Arizona SCS Field Trial Test Results

Test Location	Soils	Average Stand			Average Vigor	
		1976 Plantings	1977 data	A-68	PI-276033	A-6%
Safford	Gila SL	3100	3	5	7	5
Sasabe	Pima SCL	1598	5	7	7	7
Mammoth	Pinaleno	2350	5	7	3	3
Kearney	Grabe-Gilman SL	2500	3	3	5	5
Benson	Gila loam	3576	3	3	3	1
Douglas	Cruces FSL	-	1	7	3	1
Willcox	Pima Loam	-	1	1	3	1
Douglas	Rillino Gravelly FSL	4400	3	3	3	1
					5	3
1977 Plantings - 1978 data <sup>1/</sup>						
Florence	Anthony SL	1700	3	7	1	5
Apache Junction	Mohall L	1950	3	9	3	7
Buckeye	Antho SL	1800	3	7	7	9
Gila Bend	Antho SL	1600	7	9	9	9
Wickenburg	-	2100	5	-	7	-
Red Rock	Mohall CL	1867	9	9	9	9
Congress Junction	Vekol Mohave Cmplx	2760	7	5	3	3

Legend: 1=excellent; 3=good; 5=fair; 7=poor; 9=very poor  
dash (-) = no data collected

<sup>1/</sup> all data average of three replications