Chinese Inter-Center Strain Trial
Aberdeen Plant Materials Center
1995 Progress Report
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INTRODUCTION

The purpose of the Chinese Inter-Center Strain Trial is to compare plants native to northern China with plant materials currently being used or tested in the western United States. Inter-Center strain trials were established at Bridger, Montana, Pullman, Washington, and Aberdeen, Idaho Plant Materials Centers during the spring of 1994 to allow comparison of the plant materials over a broad and ecologically diverse area and to identify plant adaptation and performance. This report describes the progress of the Chinese Inter-Center Strain Trial at the Aberdeen Plant Materials Center during the second year of evaluation.

For a detailed description of the project site characteristics and methods see the Chinese Inter-Center Strain Trial - 1994 Progress Report.

1995 EVALUATIONS AND DISCUSSION

The winter of 1994-95 was mild with above normal temperatures and near normal precipitation. During the months of March through June, precipitation was much above normal and temperatures were cool. By July, temperatures and precipitation returned to near normal. The inter-center strain trial was not irrigated during 1995. The following summarizes precipitation data during the 1995 crop year which was collected at the University of Idaho Aberdeen Research and Extension Center:

Month	Precipitation		Normal	
	(in.)	(mm.)	(in.)	(mm.)
October 1994	1.72	43.7	0.62	15.7
November	0.42	10.7	0.78	19.8
December	1.05	26.7	0.91	23.1
January 1995	1.09	27.7	0.77	19.6
February	0.15	3.8	0.54	13.7
March	2.71	68.8	0.63	16.0
April	1.03	26.2	0.75	19.1
May	1.46	37.1	1.22	31.0
June	4.56	115.8	1.11	28.2
July	0.30	7.6	0.26	6.6
August	0.06	1.5	0.47	11.9
September	0.32	8.1	0.55	14.0
Total	14.87	377.7	8.61	218.7

Observations of the plots during the dormant period indicated that mice had burrowed along each row of the 'Spredor III' alfalfa plots and had chewed on the plant crowns. In addition, 9075986 *Melissitus ruthenicus* appeared to have suffered from winter kill.

Weed control of the shrub and legume block was accomplished by hand hoeing as needed during the growing season. The grass plots were well established and only minimal weed control was needed.

On July 10, plant height and vigor data were collected from all plots. On July 13, forage production data was collected and on August 30, percent stand and regrowth data were collected. Table 1 summarizes the data. Plant height, vigor and percent stand data were collected by the same procedure as in 1994.

Forage samples from the legume plots were collected by hand clipping a 120 x 200 cm frame centered on the middle 2 rows of each plot. The grass plots were harvested with a self propelled, sickle cutter forage harvester loaned to the PMC by the USDA, Agricultural Research Service, Soil and Water Management Research Unit, Kimberly, Idaho. At each end of each grass plot, 1.5 meters were swathed prior to collecting forage samples. The middle 3.0 meter of each row in the plot was then harvested with the forage harvester, weighed, and discarded. Since it was not feasible to separate weed growth from the grass plots, a percentage of weed weight was estimated as the plot was harvested. This percentage was subtracted from the total harvest weight. A small "grab" sample from each plot was bagged, weighed to determine wet weight, and then allowed to air dry to determine dry forage weights. Grab samples were also collected from the legume plots. The grab samples were allowed to air dry with periodic weighing until samples lost no further moisture. Forty days after harvest, the grab samples were weighed and recorded. The percent dry matter content for each plot was used to determine dry matter yield for its respective plot. The average dry matter content of the grass samples and the legume samples was 39.9 percent and 25.0 percent respectively.

Height of the grasses ranged from 52.0 cm for 9057963 *Puccinellia chinempoensis* to 170.7 cm for 9058211 *Elymus exelsus* at the July 10 evaluation. Vigor ranged from 6.3 (poorest) for 540441 *Leymus arenarius* and 9075982 *Puccinellia tenuifolia* to 1.0 (best) for 'Hycrest' crested wheatgrass. Dry matter forage ranged from 0 metric tons per hectare (MT/ha) for 9069758 *Achnatherum splendens*, 540441 *Leymus arenarius* and 9075982 *Puccinellia tenuifolia* to 9.38 MT/ha for Hycrest. Analysis of variance (ANOVA) and means separation using Duncan's Multiple Range Test were completed for the dry matter forage production data and is also shown on Table 1. The accessions which produced no measurable forage were not included in the statistical analysis. The amount and timing of precipitation during the fall of 1994 and in the spring of 1995 favored forage production which appears to be greater than would be expected during a more nearly normal year.

Percent stand and regrowth was evaluated on August 30. Percent stand ranged from 13.7 percent for 9075982 *Puccinellia tenuifolia* to 92.7 percent for 9058210 *Elymus dahuricus*. Regrowth ranged from 0 cm for 9058215 *Roegneria pendulina* and 9005491 *Puccinellia nuttalliana* to 34.3 cm for 9058208 *Agropyron mongolicum*.

Height of the shrubs and legumes at the July 10 evaluation ranged from 33.0 cm for 9075986 *Melissitus ruthenicus* to 85.7 cm for 9057950 *Ceratoides arborescens*. Vigor ranged from 5.3 (poorest) for 9075986 *Melissitus ruthenicus* (9067481 *Krascheninnikovia lanata* did not emerge after planting) to 2.0 (best) for 9057946 *Astragulus adsurgens*.

Dry matter forage production ranged from 1.72 MT/ha for 9075986 *Melissitus ruthenicus* to 8.76 MT/ha for Spredor III alfalfa. The shrubs were not sampled for dry matter yield.

ANOVA and means separation were also completed for the legumes and is shown on Table 1.

Percent stand ranged from 47.0 percent for 9075986 *Melissitus ruthenicus* to 100 percent for Spredor III alfalfa and 9057950 *Ceratoides arborescens*. Regrowth of the legumes ranged from 0 cm for 9075986 *Melissitus ruthenicus* to 53.3 cm for Spredor III alfalfa. Based upon the data gathered during 1995, 9075986 *Melissitus ruthenicus* appears to be the least adapted legume accession in the inter-center strain trial.

The grass and legume plots were mowed to a stubble height of 5 cm in early November to remove current years' growth. We plan to continue evaluating the trial for the next 3 years.

Table 1
Chinese Inter-Center Strain Trial, Field 21 Fish and Game Farm
Summary of 1995 Evaluation

Accession	Genus and Species	Plant Height (cm)	1/ Vigor	2/ Dry Matter Yield MT/ha	Percent Stand	Regrowth (cm)
	Evaluation Date	7/10/95	7/10/95	7/13/95	8/30/95	8/30/95
		Grasses				
Hycrest	Agropyron cristatum X desertorum	120.0	1.0	9.38 a	73.7	24.0
9058211	Elymus exelsus	170.7	1.3	8.56 ab	80.3	18.0
9058210	Elymus dahuricus	169.3	1.7	8.35 abc	92.7	19.7
Rosana	Pascopyrum smithii	99.7	1.7	8.19 abcd	87.7	20.0
9075985	Elymus purpuraristatus	147.3	1.7	7.22 abcde	78.7	24.0
9075955	Elymus cylindricus	162.7	1.3	7.20 abcde	79.3	18.3
9057959	Elymus tangutorum	130.3	2.3	7.16 abcde	81.0	20.3
9058212	Elymus nutans	125.3	1.7	7.02 abcdef	81.3	16.7
9057957	Elymus excelsus	157.3	1.7	6.83 abcdefg	79.3	17.7
Pryor	Elymus trachycaulus ssp. trachycaulus	115.7	2.3	6.78 abcdefg	77.7	16.0
9058209	Agropyron sibiricum	114.7	2.0	6.70 abcdefg	77.0	15.3
9058207	Agropyron desertorum	110.0	1.7	6.69 abcdefg	62.7	13.0
9057956	Elymus excelsus	137.7	2.3	6.67 abcdefg	74.3	14.0
9058214	Roegneria ciliaris	123.3	1.7	6.59 bcdefgh	77.0	17.3
9075984	Elymus cylindricus X dahuricus	155.0	1.3	6.56 bcdefghi	84.7	16.7
9057958	Elymus nutans	106.7	2.3	6.43 bcdefghij	70.3	17.3
Bozoisky	Psathyrostachys juncea	135.0	3.0	5.92 bcdefghij	80.0	34.0
Bannock 3/	Elymus lanceolatus ssp. lanceolatus	107.7	1.7	5.71 cdefghij	81.0	25.0
9075989	Hordeum brevisubulatum	97.3	2.7	5.70 cdefghij	85.3	12.3
9058213	Elymus tangutorum	147.7	3.0	5.68 cdefghij	61.0	19.0
P-27	Agropyron fragile ssp. sibiricum	116.7	2.7	5.53 cdefghij	58.7	15.0
9075983	Leymus chinensis	82.0	3.0	5.52 defghij	82.7	20.3
9058215	Roegneria pendulina	133.0	3.7	4.75 defghijk	62.0	0.0
9057954	Elymus purpurascens	143.7	2.7	4.66 efghijk	63.7	16.3
Schwendimar	Elymus lanceolatus ssp. lanceolatus	113.3	3.3	4.52 efghijk	51.0	25.0
Critana	Elymus lanceolatus ssp. lanceolatus	97.0	2.0	4.26 fghijk	82.0	19.7
9075990	Agropyron sibiricum	101.7	3.0	4.10 ghijkl	53.3	14.3
9058206	Agropyron cristatum	100.0	3.7	3.83 hijklm	67.0	16.3
9057963	Puccinellia chinempoensis	52.0	4.3	3.80 ijklm	48.0	5.0
Lodorm	Nassella viridula	123.3	3.7	3.67 jklm	56.7	21.3

Table 1 continued.
Chinese Inter-Center Strain Trial, Field 21 Fish and Game Farm
Summary of 1995 Evaluation

Accession	Genus and Species	Plant Height (cm)	1/ Vigor	2/ Dry Matter Yield MT/ha	Percent Stand	Regrowth (cm)
	Evaluation Date	7/10/95	7/10/95	7/13/95	8/30/95	8/30/95
			Grasses continued.			
9075991	Agropyron mongolicum	111.0	4.3	2.60 klm	64.3	13.3
Goldar	Pseudoroegneria spicata ssp. spicata	92.3	3.7	2.28 klm	34.3	17.3
9005491	Puccinellia nuttalliana	79.7	3.7	2.10 klm	55.3	0.0
9057962	Agropyron mongolicum	98.0	4.7	1.50 lm	52.7	11.3
9058208	Agropyron mongolicum	89.3	5.3	1.48 lm	52.0	34.3
9058217	Stipa grandis	88.7	3.0	1.18 m	58.7	16.7
9069758	Achnatherum splendens	63.0	3.3	0.00 +	51.3	20.7
540441	Leymus arenarius	63.7	6.3	0.00 +	18.3	10.0
9075982	Puccinellia tenuifolia	66.0	6.3	0.00 +	13.7	6.3
			Mean	5.00		
			CV	25.9 %		
			LSD	2.29		
			Legumes & Shrubs			
Spredor III	Medicago sativa	56.0	3.0	8.76 a	100.0	53.3
Lutana	Astragalus cicer	59.0	3.0	8.45 a	77.0	17.7
9057988	Astragalus adsurgens	46.0	2.3	6.08 ab	76.0	8.0
9057946	Astragalus adsurgens	79.3	2.0	5.65 ab	77.0	16.3
9075986	Melissitus ruthenicus	33.0	5.3	1.72 b	47.0	0.0
			Mean	6.31		
			CV	49.5%		
			LSD	5.52		
9057950	Ceratoides arborescens	85.7	2.3	NA	100.0	NA
9063535	Krascheninnikovia lanata	42.7	3.3	NA	80.0	NA
9067481	Krascheninnikovia lanata	0.0	9.0	NA	0.0	NA

1/ Vigor rated 1-9, 1 Best 9 Worst.
2/ Means within a column followed by the same letter are not significantly different as determined by Duncan's Multiple Range Test, P=0.05. MT/ha x 0.446 = ton (U.S.)/acre
3/ 'Bannock' was previously reported as 9021076 but has since been released by the Aberdeen PMC
+ not included in ANOVA.