Initial Data and Observations Obtained From the Chena Flood Control Project Evaluation Plots Located Near North Pole, Alaska

Presented to

U. S. Army Corps of Engineers

Alaska District

Prepared by

Stoney J. Wright, State Plant Materials Specialist

State of Alaska

Department of Natural Resources

Division of Agriculture

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Introduction:

The Conservation Plant Project at the Alaska Plant Materials Center (PMC), a section of the Alaska Department of Natural Resources, is responsible for developing new plant varieties (cultivars) for land reclamation, habitat enhancement, and erosion control. In addition to the development of new plant varieties, this project also is responsible for developing techniques for erosion control and reclamation, and to provide technical assistance to industry so that this technology is used properly. In order to accomplish these goals, it is beneficial for the PMC to work with industry. Resource extraction and construction activities usually have disturbances on which these new varieties or techniques can be tested and demonstrated.

Purpose:

Mining and Industrial Evaluation Plots are usually designed for reclamation and/or erosion control and are located in diverse geographical and ecological locations. The plots are developed in a manner consistent with the cooperators' intended final management practice, i.e., "Fertilize it once and forget about it." The practice of minimal maintenance is generally necessary for industry to eliminate costly yearly maintenance programs. Therefore, the plots are established with minimal surface preparation and are fertilized only at the time of planting. The plantings are then evaluated for their ability to survive on these harsh sites with no maintenance. Top soil is not used, and the plantings are made on the substrate that is expected to be available when reclamation occurs.

These plots also serve as an advanced evaluation of plant materials that have been selected at the PMC for their outstanding performance. In addition, the program also evaluates new techniques for planting and maintenance which may make the entire reclamation or erosion control process more cost effective.

The cooperator is allowed to set some of the parameters in the testing procedures, so that the test will provide useful data for the cooperator's particular conditions or regulatory guidelines. These plots also allow the PMC to make meaningful recommendations when similar conditions are encountered by someone other than the original cooperator. This class of evaluation plots probably provides the most important and useful information to the Conservation Plant Project.

Management History: Refer to Progress Report, pages 74 - 79.

Methods:

Advanced evaluation plots are evaluated at least once a year. The accessions are rated for vigor, percent stand, and numerous other factors such as hardiness, disease resistance, and related characteristics. However, we have found that vigor and percent stand are reliable indicators of how the different accessions compare with each other.

Figure 1 is an example of the evaluation sheet that will be presented in this report. The following numbers, followed by brief explanations, correspond to numbers on the example evaluation sheet:

1. Location and title of evaluation plot.

2. Number of evaluation blocks--This number may range from one to three blocks.

3. Year of Record--the year that evaluation data was collected.

4. Vigor--this number can range from one to nine. One is best and nine is the worst rating. If possible, this rating is determined by comparison with other accessions of the same species. The rating is based on color, height, health, flowering, and/or seed production, and on the evaluator's knowledge of the plant and its expected performance. If more than one block is planted, this number will be an average of the ratings for each block.

5. Percent Stand--this number represents the percentage of the ground that is covered by the accession. Only live plant material is included; litter from previous year's growth and other species are not included. If more than one block is planted, this number will be an average of the ratings for each block.

6. The accession that is being rated. The accession is identified by its varietal and common name or its common name and its accession number.

1	3									
	2 # of Blocks	4	5							
1	6									1
2	'Merion' Kentucky Bluegrass									2
3	'Banff' Kentucky Bluegrass									3
4	'Park' Kentucky Bluegrass									4
5	etc.									5
6										6
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52										52

Figure 1. Sample Advanced Evaluation Page.

Observations:

Floodway Vegetation Plot

The data collected on September 16, 1986, from the advanced evaluation plot can be found on Figure 2. This information is tentative and must be treated as such. No conclusions or recommendations should be derived from this data since it would be premature.

Adjacent to the advanced evaluation plot, an 'Arctared' Red Fescue and a 'Sourdough' Bluejoint plot was established. Refer to Progress Report, page 75, for details. The 'Arctared' Red Fescue has produced an excellent stand. The stand establishment is approaching 100%. The 'Sourdough' Bluejoint has also produced an excellent stand with 85% cover.

The area at the end of the advanced evaluation plot which was simply disked and fertilized, has generated a very good stand of Fireweed and Brome. The area averaged between 80 and 90% cover.

Silt Blanket Evaluation Plot

The Silt Blanket Evaluation was difficult to evaluate because of the heavy brome cover (Refer to page 75 of the progress report for establishment information). All plots were heavily infested with Brome, and the percent stand measurement referred only to the target species.

Chena Flood Control Project		85		86						
	1 Block of Plantings									
1	'Nugget' Kentucky Bluegrass	5	15	1	30					1
2	'Merion' Kentucky Bluegrass	1	45	3	40					2
3	'Banff' Kentucky Bluegrass	3	20	1	30					3
4	'Park' Kentucky Bluegrass	1	25	3	60					4
5	'Sydsport' Kentucky Bluegrass	1	30	3	70					5
6	'Fylking' Kentucky Bluegrass	7	10	3	20					6
7	'Troy' Kentucky Bluegrass	1	10	5	20					7
8	Big Bluegrass 387931	3	30	1	60					8
9	'Sherman' Big Bluegrass	1	60	3	20					9
10	'Canbar' Canby Bluegrass	5	10	9	15					10
11	'Reubans' Canada Bluegrass	1	70	9	10					11
12	'Tundra' glaucus Bluegrass	3	80	1	100					12
13	Glaucus Bluegrass T08867	1	60	1	100					13
14	Alpine Bluegrass 235492, 236892	1	100	1	100					14
15	'Sodar' Streambank wheatgrass	1	85	9	100					15
16	Bearded wheatgrass 371698	3	75	1	100					16
17	Bearded wheatgrass 236693	3	60	-	-					17
18	'Nordan' Crested wheatgrass	1	80	-	-					18
19	'Fairway' Crested wheatgrass	3	100	9	100					19
20	'Summit' Crested wheatgrass	1	95	7	30					20
21	Violet wheatgrass T12050	5	80	1	100					21
22	Boreal wheatgrass T12048	7	100	3	100					22
23	Yukon wheatgrass T12051	3	100	1	100					23
24	'Critana' Thickspike wheatgrass	1	100	7	100					24
25	'Fults' Alkaligrass	3	95	-	-					25
26	'Vantage' Reed Canarygrass	1	100	5	80					26
27	'Engmo' timothy	3	100	3	85					27
28	'Climax' timothy	1	100	7	10					28
29	Beach wildrye 345978	5	10	1	10					29
30	Siberian wildrye 345600	1	100	1	100					30
31	Siberian wildrye 2144	3	100	3	100					31
32	Siberian wildrye 1996	7	80	5	100					32
33	'Norcoast' Bering hairgrass	3	100	1	100					33
34	Tufted hairgrass 372690	5	70	1	100					34
35	Bluejoint	7	40	3	100					35
36	'Sourdough Bluejoint	5	75	1	100					36
37	Meadow foxtail	1	100	5	100					37
38	Geniculated foxtail 314565	1	100	1	100					38
39	Garrison Creeping foxtail	3	85	7	80					39
40	'Arctared' Creeping red fescue	5	100	1	100					40
41	'Boreal' Creeping red fescue	3	75	1	95					41
42	'Pennlawn' Creeping red fescue	1	95	3	75					42
43	Rough fescue 236849	1	100	1	100					43
44	American Sloughgrass T12053	3	30	1	75					44
45	'Durar' Hard fescue	7	10	3	50					45
46	'Highlight' Sheep fescue	7	10	5	25					46
47	'Covar' Sheep fescue	7	10	5	10					47
48	'Manchar' Smooth Brome	1	100	7	100					48
49	'Carlton' Smooth Brome	3	100	5	100					49
50	'Alyeska' Polar grass	1	55	1	100					50
51	Tellesy Sage T12052	1	75	1	100					51
52	Pumpelly Brome	5	100	1	100					52

Figure 2.

The following stand and vigor measurements were recorded on September 19, 1986:

Species or Plot	% Stand	Vigor
'Arctared' Red Fescue	60	3
'Sourdough' Bluejoint	30	5
Disk & Fertilize (Brome)	100	3
'Engmo' Timothy	70	5
'Garrison' Creeping Foxtail	0	0
Meadow Foxtail	80	3
Sloughgrass	0	0
Disk only (Brome)	100	7

Pile-Driver Slough

The seeding of Beckmannia syzigachne at Pile-driver Slough produced an excellent stand. The seed was supplied by the Alaska Plant Materials Center. This wetland species has created a dense cover along the banks, wet areas and areas that had flooded during the past year.

Recommendations:

The Alaska Plant Materials Center recommends that evaluation continue on all the plots until the autumn of 1988.

At that time, a final report will be provided to the U. S. Army Corps of Engineers. This report will include specific recommendations which could be included in Corps of Engineers specifications, if further revegetation efforts are required at the Chena Flood Control Project.