Forage Cultivar Trials

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FORAGE CULTIVAR TRIALS: 1990 BULLETIN

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Cover:

Dunvegan Bridge over the Peace River in north-west Alberta

with insets of red fescue and red clover

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CONTENTS

INTRODUCTION

This bulletin provides information on the performance of forage cultivars in the Peace River region of Canada. It is the thirteenth in a series of reports published cooperatively by Agriculture Canada's Research Station at Beaverlodge and Alberta Agriculture.

The primary objective is to provide agronomic information on the seed production potential of forage cultivars certified by the Organization for Economic Co-operation and Development (OECD) for moving in international trade. This information assists Canadian primary producers and agribusiness in developing contracts for the production of seed of these OECD-certified, foreign cultivars; the seed being destined primarily for export from Canada to countries where the cultivar is adapted for herbage production or amenity use.

The secondary objective is to identify OECD-certified forage cultivars that are suitable for herbage and/or amenity use within Canada.

ACKNOWLEDGMENTS

The trials were supported financially by Agriculture Canada and Alberta Agriculture. They were established and conducted under the supervision of Murray Howe until April 1989. They were conducted with the technical assistance of Tom Cramer, Ashley Heggelund, Lois Connelly, Marlene Probst, Margaret Baird, Candice Collins and Kim White, and with the secretarial assistance of Jose Woods, Barbara Neumeier and Faye Swanson. Land was provided by Norm Foster of Beaverlodge. Agrometeorological data were provided by Peter Mills, Ben Siemens and George Clayton of Agriculture Canada. Each contribution is gratefully acknowledged.

ABBREVIATIONS AND NOMENCLATURE

In the tables of results, the code letters used for the countries of origin are in the Alpha-3 format designated by the International Organization for Standardization. These codes are specified in their publication: "Codes for the representation of names of countries", i.e., their Reference No. ISO 3166-1974(E). The number given in parentheses after the three-letter country-of-origin code identifies the maintainer, or agent, of the seed of the cultivar. The addresses pertaining to these code numbers are given in Appendix I.

CULTIVAR INDEX

NOTE:

THE CHECK CULTIVAR WITHIN EACH SPECIES IS IDENTIFIED BY AN '*' IN PARENTHESES AFTER THE CULTIVAR NAME.

THE MAINTAINER OR AGENT FOR THE SEED OF EACH CULTIVAR CAN BE DETERMINED FROM THE NUMBER GIVEN IN PARENTHESES AFTER THE COUNTRY OF ORIGIN OF EACH CULTIVAR. PLEASE REFER TO APPENDIX I FOR THE NAMES AND ADDRESSES OF EACH SEED MAINTAINER OR AGENT.

Legumes:

TYPES OF TRIALS AND EXPERIMENTAL PROCEDURES

Two types of cultivar trials were conducted, Screening Trials and Evaluation Trials, and specific details for each of these are given below. This bulletin contains results for completed trials only, i.e. those seeded in 1988 that have now been harvested for two production years. At each site, the legume species were pollinated by unintroduced insects (Bombus and Megachile spp., and Apis). In addition, at the Beaverlodge Research Station site, leafcutting bees (Megachile rotundata) were provided.

SCREENING TRIALS:

These were conducted at Beaverlodge Research Station (55 12'N, 119 24'W) on a soil classified as a Dark Gray Solod (Esher clay) to Dark Gray Luvisol (Hythe fine loam) which had been fallow for at least two crop years. The objective was to determine the basic adaptation and agronomic suitability of each cultivar for seed production in the Peace River region of Canada. Selected cultivars, with winter hardiness ratings greater than 5 (see below for scale), are then advanced for more extensive assessment in the Evaluation Trials.

The experimental design was a randomized complete block with three replications. Individual experimental plots were comprised of two rows, each 6.1 m long, spaced 30.5 cm apart. Information was recorded for two production years after the year of seeding, including: a spring rating of winter hardiness (scale 0 to 9 with the latter being complete survival); mature plant height (from soil to tip of uppermost extended seedhead, or to tip of uppermost extended leaf if plants had no seedheads); date of seed maturity (and harvest); and cleaned seed yield from the total area of each individual plot.

Weeds were controlled by inter-row cultivation. Nitrogen fertilizer (as 34:0:0) was applied in the autumn of 1989, just prior to soil freeze-up, at a rate of 55 kg/ha N.

EVALUATION TRIALS:

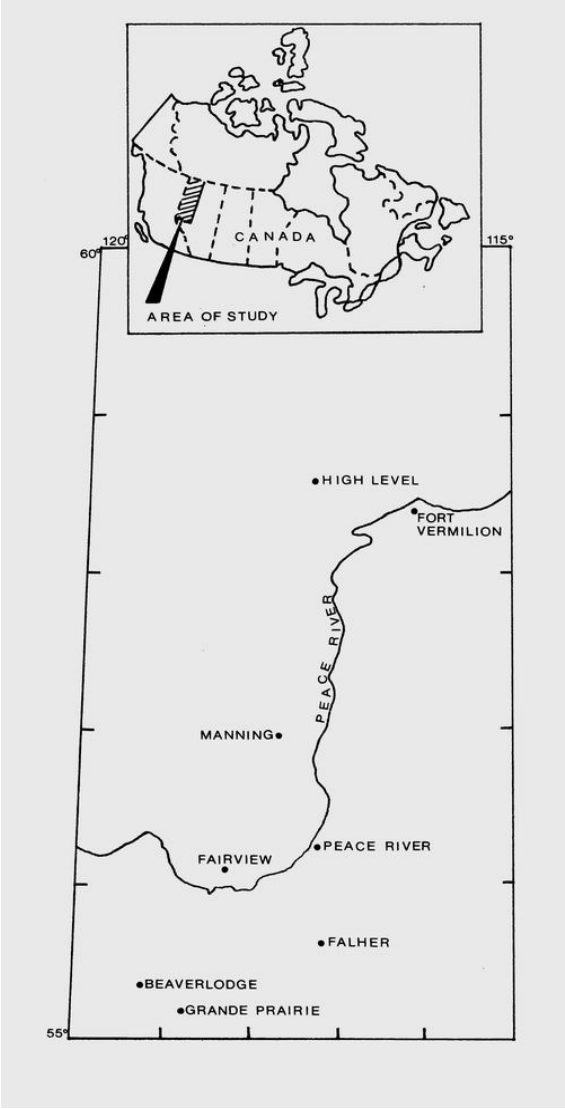
These were conducted at three sites in the region: at Beaverlodge Research Station as for the Screening Trials above; at Foster's Farm near Beaverlodge (55 10'N, 119 23'W) on a soil classified as an Orthic Humic Gleysol (Goose fine loam to Codner clay); and at Fort Vermilion Experimental Farm (58 23'N, 116 02'W) on a soil classified as a Dark Gray Luvisol (Leith coarse loam) to an Orthic Gray Luvisol (Culp coarse loam). Previous cropping, weed control and fertilizer application at each location was as for the Screening Trials.

The experimental design at each location was a randomized complete block with four replications. Individual experimental plots were comprised of four rows, each 6.1 m long, spaced 30.5 cm apart. Information on both seed and herbage production was recorded for two production years after the year of seeding. Seed production information was collected from two of the four rows in each experimental plot as described above for the Screening Trials. Herbage production information was collected, on two occasions in each production year, from the other two rows in each experimental plot.

DATA ANALYSIS:

Experimental results were analyzed statistically using Genstat 5 Release 1.3 (Lawes Agricultural Trust, Rothamsted Experimental Station). The models used for the analyses of variance compensate automatically for missing values. This has allowed estimates of treatment means to be included in multi-year/single site or multi-year/multi-site tables of results for a cultivar where no information was available for at least one of the year/site combinations. Where the inclusion of such a value has been deemed inappropriate (for biological reasons), no value has been reported and a '-' has been inserted in the table in place of the treatment mean. The same symbol has been used for truly missing values and where no information could be collected because the plants had died from natural causes.

GEOGRAPHICAL LOCATION OF THE STUDY SITES



AGROMETEOROLOGICAL INFORMATION FOR BEAVERLODGE RESEARCH STATION

YEAR	MONTH	DAILY AIR TEMPERATURE(C) MEAN	MAXIMUM	MINIMUM	MEAN DAILY SOIL TEMPERATURE (C AT 10cm)	PRECIPITATION(mm) RAIN	SNOW(water)	TOTAL	MEAN DAILY SUN(h)	WIND(km)
1988	JANUARY	-12.2	-7.6	-16.9	-4.4	0.0	37.5	37.5	2.2	142
1988	FEBRUARY	-9.0	-3.7	-14.3	-3.3	0.0	29.8	29.8	3.5	198
1988	MARCH	1.1	6.0	-3.8	0.1	0.3	9.3	9.6	4.9	182
1988	APRIL	6.3	12.7	0.0	4.3	5.3	0.0	5.3	8.0	249
1988	MAY	10.9	18.1	3.6	10.0	28.1	0.0	28.1	8.4	274
1988	JUNE	13.3	19.0	7.5	14.0	101.6	0.0	101.6	8.4	219
1988	JULY	14.7	21.1	8.3	15.2	64.4	0.0	64.4	9.0	230
1988	AUGUST	14.9	22.1	7.7	14.3	45.5	0.0	45.5	8.1	209
1988	SEPTEMBER	10.4	16.9	3.8	10.8	34.1	0.3	34.4	6.6	211
1988	OCTOBER	6.4	13.2	-0.4	6.1	3.4	0.6	4.0	5.5	174
1988	NOVEMBER	-6.2	-2.2	-10.1	-0.2	6.5	16.6	23.1	1.4	154
1988	DECEMBER	-7.8	-3.3	-12.4	-3.6	0.0	15.8	15.8	2.5	146
1988	JAN.-DEC.	3.6	9.4	-2.2	5.3	289.2	109.9	399.1	5.7	198
1989	JANUARY	-9.2	-4.7	-13.8	-4.6	0.0	25.1	25.1	2.8	267
1989	FEBRUARY	-13.5	-7.6	-19.3	-6.1	0.0	6.2	6.2	5.5	130
1989	MARCH	-11.1	-5.3	-16.9	-5.0	0.0	25.3	25.3	5.5	142
1989	APRIL	5.2	12.0	-1.6	3.0	0.0	6.3	6.3	9.4	193
1989	MAY	9.7	16.4	3.0	9.1	57.4	1.6	59.0	8.7	261
1989	JUNE	14.6	21.6	7.6	14.6	68.4	0.0	68.4	10.5	214
1989	JULY	15.6	22.1	9.2	17.4	101.4	0.0	101.4	10.5	172
1989	AUGUST	14.8	20.5	9.2	17.0	103.8	0.0	103.8	6.3	156
1989	SEPTEMBER	10.3	16.5	4.2	11.1	62.0	0.0	62.0	5.7	179
1989	OCTOBER	3.5	8.9	-2.1	5.2	9.4	10.6	20.0	4.1	169
1989	NOVEMBER	-3.7	1.3	-8.6	1.0	2.4	14.4	16.8	3.3	198
1989	DECEMBER	-5.6	-0.9	-10.3	-1.2	0.4	17.3	17.7	2.0	175
1989	JAN.-DEC.	2.6	8.5	-3.2	5.2	405.2	106.8	512.0	6.2	188
1990	JANUARY	-10.4	-6.3	-14.5	-2.8	0.3	32.9	33.2	2.3	188
1990	FEBRUARY	-11.6	-5.0	-18.2	-4.4	0.0	9.6	9.6	3.7	204
1990	MARCH	0.3	5.7	-5.1	-0.7	0.0	5.5	5.5	6.6	177
1990	APRIL	3.4	9.4	-2.6	2.2	9.5	3.4	12.9	7.1	211
1990	MAY	9.7	15.9	3.5	8.8	44.2	22.7	66.9	7.7	245
1990	JUNE	13.3	19.6	7.0	13.6	189.9	0.0	189.9	10.0	241
1990	JULY	16.3	23.1	9.4	17.5	58.7	0.0	58.7	11.5	164
1990	AUGUST	15.8	22.3	9.3	16.6	45.5	0.0	45.5	8.9	203
1990	SEPTEMBER	12.3	19.2	5.4	11.8	16.6	0.0	16.6	7.9	229
1990	OCTOBER	2.0	6.2	-2.3	4.0	17.5	15.3	32.8	4.0	220
1990	NOVEMBER	-10.6	-6.6	-14.7	-0.2	0.0	55.2	55.2	2.5	177
1990	DECEMBER	-14.6	-8.8	-20.4	-1.6	1.4	51.5	52.9	1.6	190
1990	JAN.-DEC.	2.2	8.0	-3.5	5.5	383.6	196.1	579.7	6.2	204

AGROMETEOROLOGICAL INFORMATION FOR FORT VERMILION EXPERIMENTAL FARM

YEAR	MONTH	DAILY AIR TEMPERATURE(C) MEAN	MAXIMUM	MINIMUM	MEAN DAILY SOIL TEMPERATURE (C AT 10cm)	PRECIPITATION(mm) RAIN	SNOW(water)	TOTAL	MEAN DAILY SUN(h)	WIND(km)
1988	JANUARY	-19.5	-15.5	-24.1	-2.4	0.0	31.6	31.6	*	*
1988	FEBRUARY	-14.2	-9.5	-18.8	-1.9	0.0	14.6	14.6	*	*
1988	MARCH	-4.3	1.9	-9.6	-0.9	0.0	27.2	27.2	*	*
1988	APRIL	3.5	9.7	-2.5	0.2	4.2	4.2	8.4	*	*
1988	MAY	9.3	15.1	3.4	6.8	36.0	0.3	36.3	*	*
1988	JUNE	15.5	21.1	9.8	14.0	67.6	0.0	67.6	*	*
1988	JULY	16.1	21.7	11.4	16.4	59.0	0.0	59.0	*	*
1988	AUGUST	15.7	22.1	9.8	15.4	87.2	0.0	87.2	*	*
1988	SEPTEMBER	8.6	14.7	2.7	9.9	22.2	0.0	22.2	*	*
1988	OCTOBER	*	*	*	*	35.1	2.5	37.6	*	*
1988	NOVEMBER	-12.4	-9.1	-16.4	-1.0	48.5	5.0	53.5	*	*
1988	DECEMBER	-15.7	-11.7	-20.6	-3.4	11.7	1.5	13.2	*	*
1988	JAN.-DEC.	*	*	*	*	371.5	86.9	458.4	*	*
1989	JANUARY	-21.0	-15.7	-26.4	-1.6	0.0	17.4	17.4	*	*
1989	FEBRUARY	-14.9	-8.9	-21.6	-2.8	0.0	2.0	2.0	*	*
1989	MARCH	-14.9	-8.1	-21.5	-2.6	0.0	13.7	13.7	*	*
1989	APRIL	1.9	8.6	-5.2	-0.3	0.0	9.2	9.2	*	*
1989	MAY	10.8	17.3	3.8	6.9	60.2	1.0	61.2	*	*
1989	JUNE	16.0	22.4	10.1	14.6	30.2	3.6	33.8	*	*
1989	JULY	18.5	25.0	11.9	17.2	40.8	0.0	40.8	*	*
1989	AUGUST	17.3	23.1	12.1	16.3	59.0	4.6	63.6	*	*
1989	SEPTEMBER	8.8	15.2	2.8	10.0	13.6	9.0	22.6	*	*
1989	OCTOBER	1.4	6.1	2.9	4.3	18.4	13.2	31.6	*	*
1989	NOVEMBER	-15.4	-11.0	-20.2	1.1	1.6	39.7	41.3	*	*
1989	DECEMBER	-17.6	-13.0	-22.1	-0.8	0.6	9.2	9.8	*	*
1989	JAN.-DEC.	-0.8	5.1	-6.1	5.3	224.4	122.6	347.0	*	*
1990	JANUARY	-16.9	-12.2	-21.6	-1.9	0.0	*	*	*	*
1990	FEBRUARY	-21.1	-15.0	-27.1	-2.6	0.0	*	*	*	*
1990	MARCH	-4.6	2.9	-12.0	-1.2	0.0	*	*	*	*
1990	APRIL	2.3	8.5	-3.8	7.2	0.0	*	*	*	*
1990	MAY	11.8	18.7	5.1	13.9	19.0	0.0	19.0	*	*
1990	JUNE	15.8	22.8	8.7	16.6	31.2	0.0	31.2	*	*
1990	JULY	18.9	25.6	12.0	14.3	12.4	0.0	12.4	*	*
1990	AUGUST	14.9	21.3	8.3	10.2	35.4	0.0	35.4	*	*
1990	SEPTEMBER	10.2	17.0	3.5	*	33.6	0.0	33.6	*	*
1990	JAN.-SEPT.	*	*	*	*	131.6	*	*	*	*

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: BROMEGRASS, MEADOW (Bromus biebersteinii Roem. et Schult.) LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 PRODUCTION YEAR: 1989

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(15th June) kg/ha	CUT 1 (% check)	CUT 2(21st Sept) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
CARLTON(*)	CAN(1**)	6.5	97	1211	100	39	1910	100	3195	100	5105	100
FLEET	CAN(1)	7.8	96	1443	119	24	2409	126	3961	124	6370	125
PADDOCK	CAN(1)	7.3	92	1058	87	28	2097	110	5256	165	7353	144
REGAR	USA(2)	7.3	94	591	49	24	1848	97	4311	135	6159	121
STANDARD ERROR OF DIFFERENCE =		0.3	4	94	-	0	203	-	568	-	505	-

CROP: BROMEGRASS, MEADOW (Bromus biebersteinii Roem. et Schult.) LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 PRODUCTION YEAR: 1990

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(18th June) kg/ha	CUT 1 (% check)	CUT 2(20th Aug) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
CARLTON(*)	CAN(1**)	7.0	112	557	100	31	3375	100	992	100	4368	100
FLEET	CAN(1)	8.0	111	557	100	26	3608	107	1247	126	4855	111
PADDOCK	CAN(1)	7.5	115	507	91	26	5297	157	1798	181	7095	162
REGAR	USA(2)	7.5	113	284	51	26	4156	123	1577	159	5733	131
STANDARD ERROR OF DIFFERENCE =		0.4	4	59	-	1	750	-	204	-	897	-

CROP: BROMEGRASS, MEADOW (Bromus biebersteinii Roem. et Schult.) LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
CARLTON(*)	CAN(1**)	6.8	104	884	100	35	2642	100	2094	100	4736	100
FLEET	CAN(1)	7.9	104	1000	113	25	3009	114	2604	124	5613	119
PADDOCK	CAN(1)	7.4	104	783	89	27	3697	140	3527	168	7224	153
REGAR	USA(2)	7.4	104	437	49	25	3002	114	2944	141	5946	126
STANDARD ERROR OF DIFFERENCE =		0.3	3	55	-	1	389	-	302	-	515	-

* CHECK CULTIVAR [Bromegrass, Smooth (Bromus inermis Leyss.)]
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: BROMEGRASS, MEADOW (Bromus biebersteinii Roem. et Schult.) LOCATION: BEAVERLODGE (FOSTER'S FARM)
SEEDING YEAR: 1988 PRODUCTION YEAR: 1989

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(15th June) kg/ha	CUT 1 (% check)	CUT 2(14th Sept) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
CARLTON(*)	CAN(1**)	7.8	93	1216	100	39	2689	100	6053	100	8743	100
FLEET	CAN(1)	8.8	91	1391	114	28	3211	119	5304	88	8516	97
PADDOCK	CAN(1)	8.8	91	1141	94	28	3043	113	4857	80	7900	90
REGAR	USA(2)	9.0	97	699	57	24	2844	106	5864	97	8708	100
STANDARD ERROR OF DIFFERENCE =		0.3	2	64	-	0	247	-	537	-	703	-

CROP: BROMEGRASS, MEADOW (Bromus biebersteinii Roem. et Schult.) LOCATION: BEAVERLODGE (FOSTER'S FARM)
SEEDING YEAR: 1988 PRODUCTION YEAR: 1990

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(19th June) kg/ha	CUT 1 (% check)	CUT 2(20th Aug) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
CARLTON(*)	CAN(1**)	7.0	108	674	100	33	3614	100	1276	100	4890	100
FLEET	CAN(1)	7.5	113	623	93	30	3233	89	1474	116	4707	96
PADDOCK	CAN(1)	7.8	110	547	81	26	3221	89	1012	79	4232	87
REGAR	USA(2)	8.0	103	253	37	30	3000	83	1439	113	4439	91
STANDARD ERROR OF DIFFERENCE =		0.2	4	84	-	0	229	-	205	-	211	-

CROP: BROMEGRASS, MEADOW (Bromus biebersteinii Roem. et Schult.) LOCATION: BEAVERLODGE (FOSTER'S FARM)
SEEDING YEAR: 1988 PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
CARLTON(*)	CAN(1**)	7.4	100	945	100	36	3152	100	3665	100	6816	100
FLEET	CAN(1)	8.1	102	1007	107	29	3222	102	3389	92	6611	97
PADDOCK	CAN(1)	8.3	100	844	89	27	3132	99	2935	80	6066	89
REGAR	USA(2)	8.5	100	476	50	27	2922	93	3651	100	6574	96
STANDARD ERROR OF DIFFERENCE =		0.2	2	53	-	0	168	-	287	-	367	-

* CHECK CULTIVAR [Bromegrass, Smooth (Bromus inermis Leyss.)]
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: BROMEGRASS, MEADOW (Bromus biebersteinii Roem. et Schult.) LOCATION: FORT VERMILION EXPERIMENTAL FARM
SEEDING YEAR: 1988 PRODUCTION YEAR: 1989

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 (20th June) kg/ha	CUT 1 (% check)	CUT 2 (11th Sept) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
CARLTON(*)	CAN(1**)	8.0	132	237	100	25	3646	100	1214	100	4860	100
FLEET	CAN(1)	8.0	135	310	131	25	3917	107	1386	114	5303	109
PADDOCK	CAN(1)	7.5	135	355	150	25	5246	144	1445	119	6691	138
REGAR	USA(2)	8.0	132	170	72	25	4067	112	1394	115	5461	112
STANDARD ERROR OF DIFFERENCE =		0.2	6	54	-	0	452	-	51	-	469	-

CROP: BROMEGRASS, MEADOW (Bromus biebersteinii Roem. et Schult.) LOCATION: FORT VERMILION EXPERIMENTAL FARM
SEEDING YEAR: 1988 PRODUCTION YEAR: 1990

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 (25th June) kg/ha	CUT 1 (% check)	CUT 2 (22nd Aug) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
CARLTON(*)	CAN(1**)	8.8	118	208	100	16	2943	100	363	100	3307	100
FLEET	CAN(1)	8.8	113	349	167	16	2283	78	557	153	2840	86
PADDOCK	CAN(1)	7.8	114	274	132	16	2791	95	322	89	3113	94
REGAR	USA(2)	9.0	106	47	23	16	1778	60	453	125	2231	67
STANDARD ERROR OF DIFFERENCE =		0.4	5	71	-	0	488	-	93	-	484	-

CROP: BROMEGRASS, MEADOW (Bromus biebersteinii Roem. et Schult.) LOCATION: FORT VERMILION EXPERIMENTAL FARM
SEEDING YEAR: 1988 PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
CARLTON(*)	CAN(1**)	8.4	125	223	100	21	3295	100	789	100	4083	100
FLEET	CAN(1)	8.4	124	329	148	21	3100	94	972	123	4072	100
PADDOCK	CAN(1)	7.6	125	315	141	21	4019	122	884	112	4902	120
REGAR	USA(2)	8.5	119	109	49	21	2923	89	923	117	3846	94
STANDARD ERROR OF DIFFERENCE =		0.2	4	45	-	0	333	-	53	-	337	-

* CHECK CULTIVAR [Bromegrass, Smooth (Bromus inermis Leyss.)]
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: BROMEGRASS, MEADOW (Bromus biebersteinii Roem. et Schult.) LOCATION: THREE-SITE MEAN
SEEDING YEAR: 1988 PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
CARLTON(*)	CAN(1**)	7.9	113	584	100	28	3223	100	2227	100	5450	100
FLEET	CAN(1)	8.3	113	668	114	25	3161	98	2180	98	5342	98
PADDOCK	CAN(1)	7.9	112	579	99	24	3575	111	1909	86	5484	101
REGAR	USA(2)	8.5	110	292	50	24	2922	91	2287	103	5210	96
STANDARD ERROR OF DIFFERENCE =		0.2	2	35	-	0	186	-	146	-	249	-

* CHECK CULTIVAR [Bromegrass, Smooth (Bromus inermis Leyss.)]
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: FESCUE, RED (Festuca rubra L.) — LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1989

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(5th July) kg/ha	CUT 1 (% check)	CUT 2(21st Sept) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
BOREAL(*)	CAN(1**)	6.5	41	295	100	18	769	100	2544	100	3313	100
B7733	CAN(3)	6.5	41	280	95	20	614	80	2736	108	3351	101
CONDOR	DEU(4)	6.8	36	128	43	18	628	82	2735	108	3363	102
FERUMA	ROM(5)	6.3	32	14	5	19	308	40	3141	123	3449	104
FLYER	NLD(6)	7.0	32	94	32	18	293	38	2619	103	2911	88
LIPROSA	DEU(7)	6.0	32	75	26	14	272	35	3302	130	3574	108
ROTOP	DEU(8)	7.0	28	44	15	18	340	44	2759	108	3099	94
ZW42-158	NLD(9)	6.0	30	51	17	18	173	23	2658	104	2831	85
STANDARD ERROR OF DIFFERENCE =		0.4	4	54	-	0	162	-	269	-	279	-

CROP: FESCUE, RED (Festuca rubra L.) — LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1990

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(18th June) kg/ha	CUT 1 (% check)	CUT 2(20th Aug) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
BOREAL(*)	CAN(1**)	8.0	87	1356	100	23	3628	100	718	100	4346	100
B7733	CAN(3)	7.3	81	1384	102	23	3519	97	657	92	4176	96
CONDOR	DEU(4)	7.8	87	1063	78	23	3478	96	716	100	4194	97
FERUMA	ROM(5)	8.0	84	564	42	23	3600	99	1188	166	4788	110
FLYER	NLD(6)	7.8	80	1010	75	23	3528	97	715	100	4243	98
LIPROSA	DEU(7)	7.8	76	214	16	19	2324	64	909	127	3233	74
ROTOP	DEU(8)	7.8	81	419	31	23	2438	67	991	138	3429	79
ZW42-158	NLD(9)	7.8	74	773	57	23	2945	81	671	93	3616	83
STANDARD ERROR OF DIFFERENCE =		0.5	3	91	-	0	316	-	194	-	407	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

CROP: FESCUE, RED (Festuca rubra L.) LOCATION: BEAVERLODGE (FOSTER'S FARM)
SEEDING YEAR: 1988 PRODUCTION YEAR: 1989

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(30th June) kg/ha	CUT 1 (% check)	CUT 2(14th Sept) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
BOREAL(*)	CAN(1**)	9.0	54	581	100	19	2656	100	4596	100	7252	100
B7733	CAN(3)	9.0	54	884	152	24	2929	110	5187	113	8116	112
CONDOR	DEU(4)	9.0	52	420	72	19	2543	96	4735	103	7278	100
FERUMA	ROM(5)	9.0	51	98	17	19	1913	72	5550	121	7463	103
FLYER	NLD(6)	8.8	52	356	61	19	2062	78	4632	101	6694	92
LIPROSA	DEU(7)	8.3	37	195	34	24	1505	57	4134	90	5639	78
ROTOP	DEU(8)	9.0	50	139	24	24	1614	61	4732	103	6346	88
ZW42-158	NLD(9)	8.5	46	490	84	24	1654	62	5195	113	6849	94
STANDARD ERROR OF DIFFERENCE =		0.2	3	72	-	0	198	-	360	-	433	-

CROP: FESCUE, RED (Festuca rubra L.) LOCATION: BEAVERLODGE (FOSTER'S FARM)
SEEDING YEAR: 1988 PRODUCTION YEAR: 1990

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(19th June) kg/ha	CUT 1 (% check)	CUT 2(20th Aug) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
BOREAL(*)	CAN(1**)	8.3	80	500	100	24	2903	100	960	100	3863	100
B7733	CAN(3)	9.0	78	605	121	24	2785	96	1031	107	3816	99
CONDOR	DEU(4)	8.5	81	432	86	23	2879	99	668	70	3547	92
FERUMA	ROM(5)	8.8	79	157	31	24	2631	91	1861	194	4492	116
FLYER	NLD(6)	8.8	75	331	66	23	2893	100	1146	119	4039	105
LIPROSA	DEU(7)	8.8	73	64	13	23	1824	63	776	81	2600	67
ROTOP	DEU(8)	9.0	75	32	6	24	2225	77	1170	122	3395	88
ZW42-158	NLD(9)	8.0	70	347	69	23	2441	84	1252	130	3692	96
STANDARD ERROR OF DIFFERENCE =		0.3	3	69	-	0	191	-	332	-	461	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: FESCUE, RED (Festuca rubra L.) — LOCATION: FORT VERMILION EXPERIMENTAL FARM
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1989

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(20th June) kg/ha	CUT 1 (% check)	CUT 2(11th Sept) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
BOREAL(*)	CAN(1**)	6.8	90	744	100	26	3677	100	1206	100	4883	100
B7733	CAN(3)	6.8	83	927	125	26	2868	78	1035	86	3903	80
CONDOR	DEU(4)	6.8	90	633	85	26	3100	84	1282	106	4383	90
FERUMA	ROM(5)	6.8	93	283	38	26	3006	82	1596	132	4602	94
FLYER	NLD(6)	6.5	88	485	65	26	2594	71	1183	98	3777	77
LIPROSA	DEU(7)	6.3	77	189	25	26	1786	49	816	68	2602	53
ROTOP	DEU(8)	7.0	92	272	37	26	2324	63	1421	118	3746	77
ZW42-158	NLD(9)	7.0	79	457	61	26	2611	71	1144	95	3755	77
STANDARD ERROR OF DIFFERENCE =		0.3	4	87	-	0	332	-	196	-	364	-

CROP: FESCUE, RED (Festuca rubra L.) — LOCATION: FORT VERMILION EXPERIMENTAL FARM
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1990

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(25th June) kg/ha	CUT 1 (% check)	CUT 2(22nd Aug) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
BOREAL(*)	CAN(1**)	7.5	71	165	100	16	2287	100	375	100	2662	100
B7733	CAN(3)	7.8	68	149	91	16	1984	87	243	65	2227	84
CONDOR	DEU(4)	7.8	72	64	39	16	2018	88	290	77	2308	87
FERUMA	ROM(5)	7.3	69	21	13	16	2571	112	433	115	3004	113
FLYER	NLD(6)	8.0	65	87	53	16	2233	98	236	63	2470	93
LIPROSA	DEU(7)	7.5	68	21	13	16	1436	63	205	55	1641	62
ROTOP	DEU(8)	8.5	74	24	15	16	1681	73	258	69	1938	73
ZW42-158	NLD(9)	7.8	65	91	55	16	1826	80	340	91	2166	81
STANDARD ERROR OF DIFFERENCE =		0.6	2	26	-	0	289	-	65	-	315	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: FESCUE, RED (Festuca rubra L.)
SEEDING YEAR: 1988

LOCATION: BEAVERLODGE RESEARCH STATION
PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
BOREAL(*)	CAN(1**)	7.3	64	826	100	21	2199	100	1631	100	3829	100
B7733	CAN(3)	6.9	61	832	101	22	2067	94	1697	104	3764	98
CONDOR	DEU(4)	7.3	61	595	72	21	2053	93	1726	106	3779	99
FERUMA	ROM(5)	7.1	58	289	35	21	1954	89	2164	133	4119	108
FLYER	NLD(6)	7.4	56	552	67	21	1910	87	1667	102	3577	93
LIPROSA	DEU(7)	6.9	54	145	18	17	1298	59	2105	129	3403	89
ROTOP	DEU(8)	7.4	55	231	28	21	1389	63	1875	115	3264	85
ZW42-158	NLD(9)	6.9	52	412	50	21	1559	71	1664	102	3224	84
STANDARD ERROR OF DIFFERENCE =		0.3	3	53	-	0	177	-	166	-	247	-

CROP: FESCUE, RED (Festuca rubra L.)
SEEDING YEAR: 1988

LOCATION: BEAVERLODGE (FOSTER'S FARM)
PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
BOREAL(*)	CAN(1**)	8.6	67	541	100	22	2780	100	2778	100	5558	100
B7733	CAN(3)	9.0	66	745	138	24	2857	103	3109	112	5966	107
CONDOR	DEU(4)	8.8	67	426	79	21	2711	98	2701	97	5413	97
FERUMA	ROM(5)	8.9	65	127	24	22	2272	82	3706	133	5978	108
FLYER	NLD(6)	8.8	63	343	63	21	2478	89	2889	104	5366	97
LIPROSA	DEU(7)	8.5	55	129	24	24	1665	60	2455	88	4120	74
ROTOP	DEU(8)	9.0	63	85	16	24	1919	69	2951	106	4870	88
ZW42-158	NLD(9)	8.3	58	419	77	24	2047	74	3223	116	5270	95
STANDARD ERROR OF DIFFERENCE =		0.2	2	50	-	0	137	-	245	-	316	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: FESCUE, RED (Festuca rubra L.)
SEEDING YEAR: 1988
LOCATION: FORT VERMILION EXPERIMENTAL FARM
PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
BOREAL(*)	CAN(1**)	7.1	80	454	100	21	2982	100	791	100	3773	100
B7733	CAN(3)	7.3	76	538	118	21	2426	81	639	81	3065	81
CONDOR	DEU(4)	7.3	81	348	77	21	2559	86	786	99	3346	89
FERUMA	ROM(5)	7.0	81	152	34	21	2789	94	1014	128	3803	101
FLYER	NLD(6)	7.3	77	286	63	21	2414	81	710	90	3123	83
LIPROSA	DEU(7)	6.9	72	105	23	21	1611	54	511	65	2122	56
ROTOP	DEU(8)	7.8	83	148	33	21	2003	67	840	106	2842	75
ZW42-158	NLD(9)	7.4	72	274	60	21	2218	74	742	94	2961	78
STANDARD ERROR OF DIFFERENCE =		0.4	2	45	-	0	220	-	103	-	241	-

CROP: FESCUE, RED (Festuca rubra L.)
SEEDING YEAR: 1988
LOCATION: THREE-SITE MEAN
PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
BOREAL(*)	CAN(1**)	7.9	74	497	100	21	2881	100	1784	100	4665	100
B7733	CAN(3)	8.1	71	641	129	23	2642	92	1874	105	4515	97
CONDOR	DEU(4)	8.0	74	387	78	21	2635	91	1744	98	4379	94
FERUMA	ROM(5)	7.9	73	140	28	21	2530	88	2360	132	4890	105
FLYER	NLD(6)	8.0	70	315	63	21	2446	85	1799	101	4245	91
LIPROSA	DEU(7)	7.7	64	117	24	22	1638	57	1483	83	3121	67
ROTOP	DEU(8)	8.4	73	117	23	23	1961	68	1895	106	3856	83
ZW42-158	NLD(9)	7.8	65	346	70	22	2133	74	1983	111	4115	88
STANDARD ERROR OF DIFFERENCE =		0.2	2	34	-	0	130	-	133	-	199	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: FESCUE, TALL (Festuca arundinacea Schreb.) — LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1989

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(5th July) kg/ha	CUT 1 (% check)	CUT 2(21st Sept) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
AROLA	DEU(4**)	7.5	65	350	146	28	1141	93	1189	70	2331	79
BAR 315	NLD(10)	7.5	71	332	138	28	1298	106	2648	155	3946	134
BROOKSTON	USA(11)	7.0	69	191	79	28	842	68	1129	66	1971	67
CIGALE	FRA(12)	8.0	73	274	114	28	1180	96	1708	100	2888	98
FALCON	USA(13)	7.8	66	390	162	30	1045	85	1249	73	2294	78
FESTORINA	NLD(6)	7.8	71	415	173	29	938	76	1389	81	2326	79
HOUNDOG	USA(11)	6.3	66	462	192	28	1079	88	1098	64	2177	74
JOHNSTONE	USA(14)	8.5	70	384	160	24	1485	121	1824	107	3309	113
KENTUCKY 31(*)	USA(14)	5.3	68	240	100	22	1230	100	1711	100	2940	100
MUSTANG	USA(15)	7.8	67	352	146	29	1179	96	1056	62	2235	76
ORINO	NLD(16)	7.8	71	343	143	31	970	79	1592	93	2562	87
STANDARD ERROR OF DIFFERENCE =		0.7	4	96	-	1	291	-	294	-	351	-

CROP: FESCUE, TALL (Festuca arundinacea Schreb.) — LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1990

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(18th June) kg/ha	CUT 1 (% check)	CUT 2(20th Aug) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
AROLA	DEU(4**)	8.0	108	1070	159	26	2648	85	662	101	3310	88
BAR 315	NLD(10)	8.0	107	891	133	24	2583	83	993	151	3576	95
BROOKSTON	USA(11)	7.8	100	878	131	26	1791	58	649	99	2441	65
CIGALE	FRA(12)	7.8	108	940	140	26	2794	90	737	112	3532	94
FALCON	USA(13)	7.8	100	1062	158	26	1958	63	560	85	2518	67
FESTORINA	NLD(6)	8.0	110	1137	169	26	2644	85	668	102	3312	88
HOUNDOG	USA(11)	7.0	97	1135	169	26	1799	58	482	73	2280	60
JOHNSTONE	USA(14)	8.8	109	1291	192	26	2854	92	704	107	3558	94
KENTUCKY 31(*)	USA(14)	6.3	102	672	100	19	3115	100	657	100	3772	100
MUSTANG	USA(15)	7.8	100	970	144	26	1733	56	504	77	2237	59
ORINO	NLD(16)	7.8	104	969	144	33	2052	66	730	111	2781	74
STANDARD ERROR OF DIFFERENCE =		0.4	3	95	-	0	250	-	85	-	288	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: FESCUE, TALL (Festuca arundinacea Schreb.) — LOCATION: BEAVERLODGE (FOSTER'S FARM)
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1989

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(30th June) kg/ha	CUT 1 (% check)	CUT 2(14th Sept) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
AROLA	DEU(4**)	8.0	66	268	106	32	868	63	6136	111	7004	102
BAR 315	NLD(10)	8.8	73	381	151	31	1742	127	6413	116	8155	118
BROOKSTON	USA(11)	8.1	64	112	44	32	308	23	6039	109	6347	92
CIGALE	FRA(12)	8.5	70	207	82	34	968	71	5791	105	6760	98
FALCON	USA(13)	8.8	67	433	171	31	1387	101	5697	103	7084	103
FESTORINA	NLD(6)	8.5	67	355	140	34	1032	75	5446	99	6478	94
HOUNDOG	USA(11)	8.0	66	367	145	34	775	57	4833	88	5608	81
JOHNSTONE	USA(14)	9.0	72	426	169	31	1188	87	6304	114	7491	109
KENTUCKY 31(*)	USA(14)	6.8	72	253	100	24	1368	100	5521	100	6889	100
MUSTANG	USA(15)	9.0	63	482	191	34	1349	99	4546	82	5895	86
ORINO	NLD(16)	8.8	72	201	79	34	949	69	6233	113	7182	104
STANDARD ERROR OF DIFFERENCE =		0.3	3	136	-	0	339	-	606	-	763	-

CROP: FESCUE, TALL (Festuca arundinacea Schreb.) — LOCATION: BEAVERLODGE (FOSTER'S FARM)
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1990

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(19th June) kg/ha	CUT 1 (% check)	CUT 2(20th Aug) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
AROLA	DEU(4**)	8.0	89	729	150	30	1985	81	899	55	2884	71
BAR 315	NLD(10)	8.3	96	858	177	26	1941	79	1702	104	3642	89
BROOKSTON	USA(11)	7.4	83	490	101	30	1476	60	800	49	2276	56
CIGALE	FRA(12)	8.3	95	551	113	30	1387	57	958	59	2345	58
FALCON	USA(13)	8.0	87	771	159	30	1676	68	656	40	2332	57
FESTORINA	NLD(6)	8.0	91	841	173	30	1447	59	675	41	2122	52
HOUNDOG	USA(11)	7.8	85	945	195	30	1719	70	696	43	2415	59
JOHNSTONE	USA(14)	8.0	91	888	183	30	1369	56	937	58	2306	57
KENTUCKY 31(*)	USA(14)	7.3	91	486	100	23	2447	100	1629	100	4075	100
MUSTANG	USA(15)	8.3	87	792	163	30	1585	65	760	47	2345	58
ORINO	NLD(16)	8.0	86	683	141	30	1565	64	1017	62	2581	63
STANDARD ERROR OF DIFFERENCE =		0.3	3	99	-	0	330	-	226	-	452	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: FESCUE, TALL (Festuca arundinacea Schreb.) — LOCATION: FORT VERMILION EXPERIMENTAL FARM
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1989

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(20th June) kg/ha	CUT 1 (% check)	CUT 2(11th Sept) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
AROLA	DEU(4**)	6.3	122	1219	232	25	2900	82	1221	93	4121	85
BAR 315	NLD(10)	6.8	126	902	172	25	4563	129	1904	145	6467	133
BROOKSTON	USA(11)	6.8	117	1002	190	25	3491	98	1376	105	4867	100
CIGALE	FRA(12)	6.3	134	886	168	25	3242	91	1539	117	4781	98
FALCON	USA(13)	7.0	112	1394	265	25	3348	94	1063	81	4412	91
FESTORINA	NLD(6)	6.3	128	1177	224	25	3907	110	1507	115	5414	111
HOUNDOG	USA(11)	7.0	114	1330	253	25	3743	105	1172	89	4915	101
JOHNSTONE	USA(14)	5.3	125	906	172	25	3285	93	1551	118	4836	99
KENTUCKY 31(*)	USA(14)	5.8	108	526	100	25	3550	100	1316	100	4866	100
MUSTANG	USA(15)	7.0	118	1479	281	25	4229	119	1130	86	5360	110
ORINO	NLD(16)	5.3	121	1106	210	25	2372	67	1161	88	3533	73
STANDARD ERROR OF DIFFERENCE =		0.6	6	212	-	0	627	-	218	-	757	-

CROP: FESCUE, TALL (Festuca arundinacea Schreb.) — LOCATION: FORT VERMILION EXPERIMENTAL FARM
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1990

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(25th June) kg/ha	CUT 1 (% check)	CUT 2(22nd Aug) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
AROLA	DEU(4**)	6.5	95	492	125	16	2295	112	368	144	2663	115
BAR 315	NLD(10)	6.8	102	425	108	16	2371	116	470	184	2841	123
BROOKSTON	USA(11)	5.8	90	394	100	16	2017	98	360	141	2377	103
CIGALE	FRA(12)	6.3	104	514	131	16	2241	109	365	143	2606	113
FALCON	USA(13)	5.3	98	428	109	16	1517	74	360	141	1877	81
FESTORINA	NLD(6)	4.5	97	531	135	16	2635	128	438	171	3073	133
HOUNDOG	USA(11)	5.8	85	513	130	16	2387	116	394	154	2781	121
JOHNSTONE	USA(14)	5.5	106	529	134	16	2253	110	384	150	2637	114
KENTUCKY 31(*)	USA(14)	6.3	87	394	100	16	2051	100	256	100	2306	100
MUSTANG	USA(15)	5.8	91	405	103	16	2169	106	363	142	2532	110
ORINO	NLD(16)	5.8	93	429	109	16	1874	91	353	138	2227	97
STANDARD ERROR OF DIFFERENCE =		0.9	6	106	-	0	467	-	63	-	504	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: FESCUE, TALL (Festuca arundinacea Schreb.)
SEEDING YEAR: 1988
LOCATION: BEAVERLODGE RESEARCH STATION
PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
AROLA	DEU(4**)	7.8	86	710	156	27	1895	87	926	78	2820	84
BAR 315	NLD(10)	7.8	89	611	134	26	1941	89	1820	154	3761	112
BROOKSTON	USA(11)	7.4	84	534	117	27	1317	61	889	75	2206	66
CIGALE	FRA(12)	7.9	90	607	133	27	1987	91	1223	103	3210	96
FALCON	USA(13)	7.8	83	726	159	28	1501	69	904	76	2406	72
FESTORINA	NLD(6)	7.9	91	776	170	27	1791	82	1028	87	2819	84
HOUNDOG	USA(11)	6.6	82	799	175	27	1439	66	790	67	2228	66
JOHNSTONE	USA(14)	8.6	89	837	184	25	2170	100	1264	107	3434	102
KENTUCKY 31(*)	USA(14)	5.8	85	456	100	21	2172	100	1184	100	3356	100
MUSTANG	USA(15)	7.8	83	661	145	27	1456	67	780	66	2236	67
ORINO	NLD(16)	7.8	87	656	144	32	1511	70	1161	98	2672	80
STANDARD ERROR OF DIFFERENCE =		0.4	2	68	-	1	192	-	153	-	227	-

CROP: FESCUE, TALL (Festuca arundinacea Schreb.)
SEEDING YEAR: 1988
LOCATION: BEAVERLODGE (FOSTER'S FARM)
PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
AROLA	DEU(4**)	8.0	78	499	135	31	1426	75	3517	98	4944	90
BAR 315	NLD(10)	8.5	85	620	168	29	1841	97	4057	113	5898	108
BROOKSTON	USA(11)	7.7	74	301	81	31	892	47	3420	96	4312	79
CIGALE	FRA(12)	8.4	83	379	103	32	1178	62	3375	94	4552	83
FALCON	USA(13)	8.4	77	602	163	31	1531	80	3177	89	4708	86
FESTORINA	NLD(6)	8.3	79	598	162	32	1239	65	3061	86	4300	78
HOUNDOG	USA(11)	7.9	75	656	178	32	1247	65	2764	77	4011	73
JOHNSTONE	USA(14)	8.5	81	657	178	31	1278	67	3620	101	4898	89
KENTUCKY 31(*)	USA(14)	7.0	82	369	100	24	1907	100	3575	100	5482	100
MUSTANG	USA(15)	8.6	75	637	173	32	1467	77	2653	74	4120	75
ORINO	NLD(16)	8.4	79	442	120	32	1257	66	3625	101	4882	89
STANDARD ERROR OF DIFFERENCE =		0.2	2	84	-	0	237	-	323	-	443	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: FESCUE, TALL (Festuca arundinacea Schreb.) — LOCATION: FORT VERMILION EXPERIMENTAL FARM
SEEDING YEAR: 1988 — PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
AROLA	DEU(4**)	6.4	109	856	186	21	2598	93	794	101	3392	95
BAR 315	NLD(10)	6.8	114	664	144	21	3467	124	1187	151	4654	130
BROOKSTON	USA(11)	6.3	104	698	152	21	2754	98	868	110	3622	101
CIGALE	FRA(12)	6.3	119	700	152	21	2741	98	952	121	3693	103
FALCON	USA(13)	6.1	105	911	198	21	2433	87	712	91	3144	88
FESTORINA	NLD(6)	5.4	112	854	186	21	3271	117	973	124	4243	118
HOUNDOG	USA(11)	6.4	100	922	200	21	3065	109	783	100	3848	107
JOHNSTONE	USA(14)	5.4	116	718	156	21	2769	99	968	123	3736	104
KENTUCKY 31(*)	USA(14)	6.0	97	460	100	21	2800	100	786	100	3586	100
MUSTANG	USA(15)	6.4	105	942	205	21	3199	114	747	95	3946	110
ORINO	NLD(16)	5.5	107	768	167	21	2123	76	757	96	2880	80
STANDARD ERROR OF DIFFERENCE =		0.6	4	119	-	0	391	-	113	-	455	-

CROP: FESCUE, TALL (Festuca arundinacea Schreb.) — LOCATION: THREE-SITE MEAN
SEEDING YEAR: 1988 — PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
AROLA	DEU(4**)	7.2	93	677	163	26	2012	85	2156	99	4168	92
BAR 315	NLD(10)	7.6	99	642	155	25	2654	113	2622	120	5276	116
BROOKSTON	USA(11)	7.0	89	499	120	26	1823	77	2144	98	3967	87
CIGALE	FRA(12)	7.3	101	539	130	26	1960	83	2163	99	4123	91
FALCON	USA(13)	7.3	91	756	182	26	1982	84	1944	89	3926	87
FESTORINA	NLD(6)	6.8	96	726	175	26	2255	96	2017	92	4272	94
HOUNDOG	USA(11)	7.1	88	789	190	26	2156	92	1774	81	3930	87
JOHNSTONE	USA(14)	6.9	98	687	166	26	2024	86	2294	105	4317	95
KENTUCKY 31(*)	USA(14)	6.5	90	415	100	22	2354	100	2180	100	4534	100
MUSTANG	USA(15)	7.5	90	789	190	26	2333	99	1700	78	4033	89
ORINO	NLD(16)	6.9	93	605	146	26	1690	72	2191	100	3881	86
STANDARD ERROR OF DIFFERENCE =		0.3	2	73	-	0	229	-	170	-	318	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: ORCHARDGRASS (Dactylis glomerata L.) — LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1989

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(5th July) kg/ha	CUT 1 (% check)	CUT 2(21st Sept) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
ANGELKAMP	DEU(17**)	5.3	58	7	85	24	865	93	4843	112	5708	109
APELSVOLL	NOR(18)	6.0	64	39	469	24	1139	123	2976	69	4115	78
COMET	USA(19)	5.3	43	0	0	-	867	94	4611	106	5478	104
FILIPPA	DNK(20)	6.5	46	0	0	-	928	100	4947	114	5875	112
HAKA	FIN(21)	7.0	67	16	194	24	1543	167	3012	69	4555	87
HATTFJELLDAL	NOR(22)	7.3	69	25	300	24	1010	109	2332	54	3342	64
KAY(*)	CAN(1)	6.3	65	8	100	24	926	100	4334	100	5261	100
MOBITE	NLD(23)	5.8	44	0	0	-	429	46	4584	106	5013	95
NIVA	CSK(24)	7.3	49	0	0	-	978	106	4790	111	5768	110
STANDARD ERROR OF DIFFERENCE =		0.9	4	6	-	0	271	-	717	-	739	-

CROP: ORCHARDGRASS (Dactylis glomerata L.) — LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1990

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(18th June) kg/ha	CUT 1 (% check)	CUT 2(20th Aug) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
ANGELKAMP	DEU(17**)	7.3	114	487	78	23	2457	93	855	82	3312	90
APELSVOLL	NOR(18)	7.8	111	980	157	19	3353	127	714	69	4067	111
COMET	USA(19)	7.8	108	335	54	23	3521	133	1315	127	4836	131
FILIPPA	DNK(20)	7.5	104	166	27	24	1405	53	1016	98	2422	66
HAKA	FIN(21)	8.0	117	849	136	23	2767	105	804	77	3571	97
HATTFJELLDAL	NOR(22)	7.8	119	958	154	19	3431	130	673	65	4104	112
KAY(*)	CAN(1)	7.3	119	623	100	23	2639	100	1039	100	3679	100
MOBITE	NLD(23)	7.0	117	199	32	24	1879	71	1136	109	3016	82
NIVA	CSK(24)	8.0	108	187	30	24	1555	59	1165	112	2719	74
STANDARD ERROR OF DIFFERENCE =		0.4	3	85	-	0	387	-	129	-	408	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: ORCHARDGRASS (Dactylis glomerata L.) LOCATION: BEAVERLODGE (FOSTER'S FARM)
SEEDING YEAR: 1988 PRODUCTION YEAR: 1989

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(30th June) kg/ha	CUT 1 (% check)	CUT 2(14th Sept) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
ANGELKAMP	DEU(17**)	6.5	60	1	17	24	980	77	5859	81	6839	81
APELSVOLL	NOR(18)	7.3	60	58	663	24	1542	121	5602	78	7144	84
COMET	USA(19)	5.5	48	0	0	-	912	72	6911	96	7823	92
FILIPPA	DNK(20)	4.5	42	0	0	-	486	38	6733	94	7220	85
HAKA	FIN(21)	7.8	66	9	107	24	1378	108	5270	73	6648	78
HATTFJELLDAL	NOR(22)	8.0	75	57	652	24	1363	107	4153	58	5516	65
KAY(*)	CAN(1)	8.0	67	9	100	24	1272	100	7198	100	8470	100
MOBITE	NLD(23)	5.0	52	0	0	-	571	45	5516	77	6087	72
NIVA	CSK(24)	3.7	46	0	0	-	498	39	6284	87	6782	80
STANDARD ERROR OF DIFFERENCE =		0.7	6	21	-	0	241	-	743	-	763	-

CROP: ORCHARDGRASS (Dactylis glomerata L.) LOCATION: BEAVERLODGE (FOSTER'S FARM)
SEEDING YEAR: 1988 PRODUCTION YEAR: 1990

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(19th June) kg/ha	CUT 1 (% check)	CUT 2(20th Aug) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
ANGELKAMP	DEU(17**)	8.0	112	314	72	24	1239	79	1590	138	2828	104
APELSVOLL	NOR(18)	9.0	112	806	185	23	2800	178	1136	99	3936	144
COMET	USA(19)	8.3	106	225	52	24	1330	85	1814	158	3145	115
FILIPPA	DNK(20)	7.5	101	35	8	24	568	36	1305	113	1873	69
HAKA	FIN(21)	8.0	110	458	105	24	1659	105	885	77	2544	93
HATTFJELLDAL	NOR(22)	9.0	111	1002	231	23	2884	183	887	77	3770	138
KAY(*)	CAN(1)	8.0	116	435	100	24	1573	100	1151	100	2725	100
MOBITE	NLD(23)	7.5	118	193	45	24	1171	74	1276	111	2447	90
NIVA	CSK(24)	7.0	104	71	16	24	506	32	1047	91	1553	57
STANDARD ERROR OF DIFFERENCE =		0.4	3	88	-	0	265	-	252	-	438	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: ORCHARDGRASS (Dactylis glomerata L.) — LOCATION: FORT VERMILION EXPERIMENTAL FARM
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1989

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(20th June) kg/ha	CUT 1 (% check)	CUT 2(11th Sept) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
ANGELKAMP	DEU(17**)	6.5	120	147	80	25	1682	51	1256	79	2938	60
APELSVOLL	NOR(18)	6.5	124	184	99	25	2127	65	1279	80	3406	70
COMET	USA(19)	4.5	124	76	41	25	1598	49	1606	101	3204	66
FILIPPA	DNK(20)	6.3	110	35	19	25	1747	53	1821	115	3568	73
HAKA	FIN(21)	7.5	130	227	123	25	2489	76	1414	89	3903	80
HATTFJELLDAL	NOR(22)	8.0	129	310	168	25	3888	118	1157	73	5045	103
KAY(*)	CAN(1)	7.8	134	185	100	25	3286	100	1590	100	4876	100
MOBITE	NLD(23)	5.5	123	50	27	25	1373	42	1390	87	2763	57
NIVA	CSK(24)	7.0	114	48	26	25	1422	43	1567	99	2989	61
STANDARD ERROR OF DIFFERENCE =		0.9	5	64	-	0	559	-	237	-	725	-

CROP: ORCHARDGRASS (Dactylis glomerata L.) — LOCATION: FORT VERMILION EXPERIMENTAL FARM
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1990

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1(25th June) kg/ha	CUT 1 (% check)	CUT 2(22nd Aug) kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
ANGELKAMP	DEU(17**)	8.3	115	273	97	16	2073	72	257	67	2330	72
APELSVOLL	NOR(18)	8.3	116	276	98	16	2560	89	396	103	2956	91
COMET	USA(19)	7.5	118	244	86	16	1767	62	434	113	2201	68
FILIPPA	DNK(20)	7.3	107	143	51	16	1560	54	488	127	2048	63
HAKA	FIN(21)	8.0	123	345	122	16	2588	90	431	112	3019	93
HATTFJELLDAL	NOR(22)	8.0	121	251	89	16	2740	95	341	89	3081	95
KAY(*)	CAN(1)	8.3	120	283	100	16	2872	100	385	100	3257	100
MOBITE	NLD(23)	7.5	118	159	56	16	1632	57	389	101	2021	62
NIVA	CSK(24)	8.0	111	134	48	16	1608	56	501	130	2109	65
STANDARD ERROR OF DIFFERENCE =		0.6	5	49	-	0	495	-	102	-	569	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: ORCHARDGRASS (Dactylis glomerata L.)
SEEDING YEAR: 1988

LOCATION: BEAVERLODGE RESEARCH STATION
PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
ANGELKAMP	DEU(17**)	6.3	86	247	78	23	1661	93	2849	106	4510	101
APELSVOLL	NOR(18)	6.9	87	509	161	21	2246	126	1845	69	4091	92
COMET	USA(19)	6.5	75	168	53	24	2194	123	2963	110	5157	115
FILIPPA	DNK(20)	7.0	75	83	26	25	1167	65	2982	111	4148	93
HAKA	FIN(21)	7.5	92	432	137	23	2155	121	1908	71	4063	91
HATTFJELLDAL	NOR(22)	7.5	94	492	156	21	2220	125	1503	56	3723	83
KAY(*)	CAN(1)	6.8	92	316	100	23	1783	100	2687	100	4470	100
MOBITE	NLD(23)	6.4	81	99	31	25	1154	65	2860	106	4015	90
NIVA	CSK(24)	7.6	78	94	30	25	1266	71	2977	111	4243	95
STANDARD ERROR OF DIFFERENCE =		0.5	3	43	-	0	236	-	364	-	422	-

CROP: ORCHARDGRASS (Dactylis glomerata L.)
SEEDING YEAR: 1988

LOCATION: BEAVERLODGE (FOSTER'S FARM)
PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
ANGELKAMP	DEU(17**)	7.3	86	158	71	24	1109	78	3724	89	4834	86
APELSVOLL	NOR(18)	8.1	86	432	195	24	2171	153	3369	81	5540	99
COMET	USA(19)	6.9	77	113	51	24	1121	79	4363	104	5484	98
FILIPPA	DNK(20)	6.0	71	17	8	24	527	37	4019	96	4546	81
HAKA	FIN(21)	7.9	88	234	105	24	1518	107	3077	74	4596	82
HATTFJELLDAL	NOR(22)	8.5	93	530	239	23	2124	149	2520	60	4643	83
KAY(*)	CAN(1)	8.0	92	222	100	24	1423	100	4175	100	5597	100
MOBITE	NLD(23)	6.3	85	97	44	24	871	61	3396	81	4267	76
NIVA	CSK(24)	5.4	75	36	16	24	502	35	3666	88	4167	74
STANDARD ERROR OF DIFFERENCE =		0.4	3	46	-	0	179	-	393	-	440	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN EVALUATION TRIALS

CROP: ORCHARDGRASS (Dactylis glomerata L.) — LOCATION: FORT VERMILION EXPERIMENTAL FARM
SEEDING YEAR: 1988 — PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
ANGELKAMP	DEU(17**)	7.4	118	210	90	20	1877	61	757	77	2634	65
APELSVOLL	NOR(18)	7.4	120	230	98	20	2343	76	838	85	3181	78
COMET	USA(19)	6.0	121	160	69	20	1682	55	1020	103	2702	66
FILIPPA	DNK(20)	6.8	108	89	38	20	1654	54	1155	117	2808	69
HAKA	FIN(21)	7.8	126	286	123	20	2539	82	923	93	3461	85
HATTFJELLDAL	NOR(22)	8.0	125	280	120	20	3314	108	749	76	4063	100
KAY(*)	CAN(1)	8.0	127	234	100	20	3079	100	987	100	4066	100
MOBITE	NLD(23)	6.5	121	105	45	20	1502	49	890	90	2392	59
NIVA	CSK(24)	7.5	112	91	39	20	1515	49	1034	105	2549	63
STANDARD ERROR OF DIFFERENCE =		0.6	3	40	-	0	373	-	129	-	461	-

CROP: ORCHARDGRASS (Dactylis glomerata L.) — LOCATION: THREE-SITE MEAN
SEEDING YEAR: 1988 — PRODUCTION YEAR: 2-YEAR MEAN (1989 AND 1990)

CULTIVAR	ORIGIN	WINTER HARDINESS RATING	PLANT HEIGHT (cm)	SEED HARVEST YIELD kg/ha	SEED HARVEST YIELD (% check)	SEED HARVEST MATURITY (Day 1=July 1)	HERBAGE DRY MATTER YIELD CUT 1 kg/ha	CUT 1 (% check)	CUT 2 kg/ha	CUT 2 (% check)	ANNUAL TOTAL kg/ha	ANNUAL TOTAL (% check)
ANGELKAMP	DEU(17**)	7.3	102	184	81	22	1493	66	2241	87	3734	77
APELSVOLL	NOR(18)	7.8	103	331	145	22	2257	100	2103	81	4360	90
COMET	USA(19)	6.4	99	136	60	22	1402	62	2691	104	4093	85
FILIPPA	DNK(20)	6.4	90	53	23	22	1090	48	2587	100	3677	76
HAKA	FIN(21)	7.8	107	260	114	22	2028	90	2000	77	4028	83
HATTFJELLDAL	NOR(22)	8.3	109	405	178	22	2719	121	1635	63	4353	90
KAY(*)	CAN(1)	8.0	109	228	100	22	2251	100	2581	100	4832	100
MOBITE	NLD(23)	6.4	103	101	44	22	1187	53	2143	83	3329	69
NIVA	CSK(24)	6.4	94	63	28	22	1008	45	2350	91	3358	70
STANDARD ERROR OF DIFFERENCE =		0.4	2	30	-	0	207	-	207	-	319	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN SCREENING TRIALS

CROP: FESCUE, MEADOW (Festuca pratensis Huds.) — LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1989, 1990 & TWO-YEAR MEAN

CULTIVAR	ORIGIN	WINTER HARDINESS RATING 1989	1990	MEAN	MATURE PLANT HEIGHT(cm) 1989	1990	MEAN	SEED MATURITY DATE (Day 1=July 1) 1989	1990	MEAN	SEED YIELD(kg/ha) 1989	1990	MEAN	SEED YIELD(% check) 1989	1990	MEAN
MIMER(*)	SWE(40**)	7.7	9.0	8.3	81	102	92	24	19	22	634	1180	907	100	100	100
SKRA	POL(41)	7.7	8.7	8.2	78	97	87	24	19	22	531	900	716	84	76	79
STANDARD ERROR OF DIFFERENCE =		0.0	0.3	0.2	3	3	2	0	0	0	78	398	203	-	-	-

CROP: FESCUE, TALL (Festuca arundinacea Schreb.) — LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1989, 1990 & TWO-YEAR MEAN

CULTIVAR	ORIGIN	WINTER HARDINESS RATING 1989	1990	MEAN	MATURE PLANT HEIGHT(cm) 1989	1990	MEAN	SEED MATURITY DATE (Day 1=July 1) 1989	1990	MEAN	SEED YIELD(kg/ha) 1989	1990	MEAN	SEED YIELD(% check) 1989	1990	MEAN
ARID	USA(42**)	8.7	8.7	8.7	82	106	94	28	30	29	936	1165	1050	162	225	192
CAJUN	USA(11)	8.7	9.0	8.8	80	105	93	24	24	24	720	1064	892	125	206	163
FINELAWN 1	USA(43)	9.0	8.7	8.8	89	108	98	28	30	29	1308	1175	1242	226	227	227
JAGUAR	USA(44)	8.7	8.7	8.7	82	102	92	28	33	31	1051	876	964	182	169	176
KENTUCKY 31(*)	USA(14)	7.7	9.0	8.3	90	112	101	20	19	20	578	517	547	100	100	100
MARTIN	USA(11)	9.0	9.0	9.0	86	112	99	24	26	25	879	1161	1020	152	225	186
MISTRAL	NLD(23)	9.0	9.0	9.0	91	117	104	24	30	27	992	919	956	172	178	175
MOZARK	USA(11)	8.7	9.0	8.8	84	113	99	28	24	26	649	1107	878	112	214	160
PACER	USA(11)	8.7	9.0	8.8	72	110	91	28	26	27	745	1272	1009	129	246	184
SKARPA	POL(41)	8.7	9.0	8.8	108	125	117	29	30	30	748	1105	926	129	214	169
STEF	POL(45)	8.0	8.7	8.3	109	133	121	28	30	29	855	941	898	148	182	164
STANDARD ERROR OF DIFFERENCE =		0.4	0.3	0.2	6	4	4	0	0	0	130	206	122	-	-	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN SCREENING TRIALS

CROP: ORCHARDGRASS (Dactylis glomerata L.) LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 PRODUCTION YEAR: 1989, 1990 & TWO-YEAR MEAN

		WINTER HARDINESS RATING			MATURE PLANT HEIGHT(cm)			SEED MATURITY DATE (Day 1=July 1)			SEED YIELD(kg/ha)			SEED YIELD(% check)		
CULTIVAR	ORIGIN	1989	1990	MEAN	1989	1990	MEAN	1989	1990	MEAN	1989	1990	MEAN	1989	1990	MEAN
AMBASSADOR	USA(11**)	7.7	8.7	8.2	84	104	94	24	24	24	8	199	103	15	32	31
AMERA	POL(45)	7.7	9.0	8.3	84	109	96	24	24	24	10	288	149	20	47	45
AMPLY	FRA(46)	6.0	6.7	6.3	81	102	91	-	24	-	0	6	3	0	1	1
ARLY	FRA(46)	6.7	6.7	6.7	84	93	88	24	-	-	1	0	0	2	0	0
BEPRO	POL(47)	7.0	8.7	7.8	81	110	95	24	24	24	29	263	146	59	42	44
DIKA	POL(45)	6.7	8.0	7.3	78	108	93	24	24	24	3	133	68	5	21	20
DROGOBIRCHANKA	SUN(28)	7.3	8.3	7.8	86	110	98	24	24	24	52	429	240	104	69	72
FALA	POL(48)	7.7	8.7	8.2	90	114	102	24	24	24	40	455	248	81	73	74
GOROM	ROM(49)	7.3	9.0	8.2	74	103	88	24	24	24	23	461	242	47	74	72
JUNO	CAN(25)	7.3	8.3	7.8	72	110	91	24	24	24	18	278	148	36	45	44
KAY(*)	CAN(1)	7.7	9.0	8.3	85	122	103	24	24	24	50	620	335	100	100	100
LEIGESTRA	DEU(7)	7.0	8.0	7.5	92	110	101	24	24	24	6	182	94	12	29	28
MAKIBAMIDORI	JPN(50)	6.7	8.3	7.5	75	108	91	24	24	24	5	142	74	10	23	22
PERREVIA	GRC(51)	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIZZA	NLD(6)	8.3	9.0	8.7	83	121	102	24	24	24	14	348	181	27	56	54
POIANA	ROM(5)	7.0	8.7	7.8	79	102	90	24	24	24	7	116	61	14	19	18
RANCHO	USA(52)	7.3	8.3	7.8	85	113	99	24	24	24	12	323	168	24	52	50
RAPIDO	CAN(25)	7.3	8.7	8.0	79	107	93	24	24	24	5	168	87	11	27	26
SATRA	POL(45)	7.3	9.0	8.2	92	115	103	24	24	24	20	268	144	40	43	43
SVERDLOVSKAYA	SUN(28)	7.7	9.0	8.3	87	123	105	21	24	23	236	1105	670	474	178	200
TREBINA	DDR(53)	7.7	8.3	8.0	76	110	93	24	24	24	40	499	269	80	80	80
STANDARD ERROR OF DIFFERENCE =		0.5	0.4	0.3	7	5	4	0	0	0	24	85	44	-	-	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN SCREENING TRIALS

CROP: RYEGRASS, PERENNIAL (Lolium perenne L.) — LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1989, 1990 & TWO-YEAR MEAN

CULTIVAR	ORIGIN	WINTER HARDINESS RATING 1989	1990	MEAN	MATURE PLANT HEIGHT(cm) 1989	1990	MEAN	SEED MATURITY DATE (Day 1=July 1) 1989	1990	MEAN	SEED YIELD(kg/ha) 1989	1990	MEAN	SEED YIELD(% check) 1989	1990	MEAN
CROWN	NLD(23**)	4.3	4.7	4.5	45	53	49	69	38	54	507	185	346	79	29	54
FIESTA II	NLD(25)	4.0	4.0	4.0	41	55	48	56	38	47	494	162	328	77	25	51
LINDSAY	USA(11)	3.3	4.3	3.8	44	54	49	69	38	54	558	181	369	87	28	57
NORLEA(*)	CAN(1)	6.0	6.0	6.0	60	68	64	62	38	50	640	649	645	100	100	100
PRESTER	NLD(6)	4.0	2.7	3.3	40	53	46	69	38	54	271	144	208	42	22	32
RIVAL	NLD(6)	4.3	5.0	4.7	50	55	53	62	38	50	606	253	429	95	39	67
RUNAWAY	NLD(6)	4.3	5.0	4.7	48	57	53	56	38	47	473	333	403	74	51	63
SR 4000	USA(54)	5.3	4.7	5.0	45	52	49	56	38	47	351	176	263	55	27	41
SR 4100	USA(54)	4.7	4.3	4.5	50	52	51	69	38	54	386	134	260	60	21	40
STANDARD ERROR OF DIFFERENCE =		1.0	0.9	0.7	4	2	2	0	0	0	85	65	53	-	-	-

CROP: TIMOTHY (Phleum pratense L.) — LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 — PRODUCTION YEAR: 1989, 1990 & TWO-YEAR MEAN

CULTIVAR	ORIGIN	WINTER HARDINESS RATING 1989	1990	MEAN	MATURE PLANT HEIGHT(cm) 1989	1990	MEAN	SEED MATURITY DATE (Day 1=July 1) 1989	1990	MEAN	SEED YIELD(kg/ha) 1989	1990	MEAN	SEED YIELD(% check) 1989	1990	MEAN
ALPHA	???(28**)	8.7	8.7	8.7	91	102	97	40	41	41	669	570	619	131	94	111
CLIMAX(*)	CAN(1)	9.0	9.0	9.0	102	115	109	40	44	42	511	608	559	100	100	100
DSU L17	???(28)	8.0	8.7	8.3	83	111	97	42	44	43	499	652	576	98	107	103
FABIUS	???(28)	8.3	9.0	8.7	106	121	113	42	44	43	692	563	628	136	93	112
LD 2015(GRINDA)	???(28)	9.0	9.0	9.0	98	115	106	42	44	43	496	551	523	97	91	94
LIGLORY	???(28)	9.0	9.0	9.0	86	111	99	42	43	43	580	813	696	114	134	124
PHP 16	???(28)	9.0	9.0	9.0	97	114	106	42	41	42	664	615	639	130	101	114
PHP 17	???(28)	8.7	8.7	8.7	100	112	106	42	41	42	543	630	586	106	104	105
STANDARD ERROR OF DIFFERENCE =		0.3	0.3	0.2	7	4	4	0	1	0	67	51	42	-	-	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN SCREENING TRIALS

CROP: ALFALFA/LUCERNE (Medicago sativa L.) LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 PRODUCTION YEAR: 1989, 1990 & TWO-YEAR MEAN

		WINTER HARDINESS RATING			MATURE PLANT HEIGHT(cm)			SEED MATURITY DATE (Day 1=July 1)			SEED YIELD(kg/ha)			SEED YIELD(% check)		
CULTIVAR	ORIGIN	1989	1990	MEAN	1989	1990	MEAN	1989	1990	MEAN	1989	1990	MEAN	1989	1990	MEAN
ADVANCE	CAN(25**)	9.0	9.0	9.0	68	92	80	87	87	87	335	782	559	71	110	94
BEAVER(*)	CAN(1)	9.0	9.0	9.0	68	88	78	87	87	87	470	713	592	100	100	100
BETTY	FRA(26)	9.0	9.0	9.0	67	90	79	87	87	87	223	499	361	47	70	61
CRUSADER	CAN(27)	9.0	9.0	9.0	62	89	76	87	87	87	304	652	478	65	91	81
OLINDA	CAN(1)	9.0	9.0	9.0	65	91	78	87	87	87	441	623	532	94	87	90
P 1O81	???(28)	9.0	9.0	9.0	74	100	87	87	87	87	750	1355	1052	159	190	178
RIEL	CAN(25)	8.7	9.0	8.8	68	87	78	87	87	87	437	715	576	93	100	97
ROBOT	ITA(29)	8.7	9.0	8.8	69	90	80	87	87	87	196	443	319	42	62	54
WL 222	USA(30)	9.0	9.0	9.0	70	89	80	87	87	87	387	826	606	82	116	102
WL 316	USA(30)	9.0	9.0	9.0	70	92	81	87	87	87	354	988	671	75	139	113
5444	USA(31)	9.0	9.0	9.0	71	86	78	87	87	87	302	555	429	64	78	72
STANDARD ERROR OF DIFFERENCE =		0.2	0.0	0.1	3	5	3	0	0	0	45	202	103	-	-	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

PERFORMANCE OF CULTIVARS IN SCREENING TRIALS

CROP: CLOVER, RED (Trifolium pratense L.) LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 PRODUCTION YEAR: 1989, 1990 & TWO-YEAR MEAN

CULTIVAR	ORIGIN	WINTER HARDINESS RATING 1989	1990	MEAN	MATURE PLANT HEIGHT(cm) 1989	1990	MEAN	SEED MATURITY DATE (Day 1=July 1) 1989	1990	MEAN	SEED YIELD(kg/ha) 1989	1990	MEAN	SEED YIELD(% check) 1989	1990	MEAN
ALTASWEDE(*)	CAN(32**)	7.7	8.7	8.2	70	72	71	69	55	62	567	818	693	100	100	100
GRASSLANDS HAMUA	NZL(33)	1.0	0.0	0.5	58	-	-	69	-	-	94	-	-	17	-	-
REDQUIN	AUS(34)	1.0	0.0	0.5	56	-	-	69	-	-	76	-	-	13	-	-
TAPIOPOLY	HUN(35)	6.7	6.0	6.3	66	55	60	69	55	62	123	103	113	22	13	16
STANDARD ERROR OF DIFFERENCE =		0.4	0.7	0.4	2	2	1	0	0	0	22	49	27	-	-	-

PERFORMANCE OF CULTIVARS IN SCREENING TRIALS

CROP: TREFOIL, BIRDSFOOT (Lotus corniculatus L.) LOCATION: BEAVERLODGE RESEARCH STATION
SEEDING YEAR: 1988 PRODUCTION YEAR: 1989, 1990 & TWO-YEAR MEAN

CULTIVAR	ORIGIN	WINTER HARDINESS RATING 1989	1990	MEAN	MATURE PLANT HEIGHT(cm) 1989	1990	MEAN	SEED MATURITY DATE (Day 1=July 1) 1989	1990	MEAN	SEED YIELD(kg/ha) 1989	1990	MEAN	SEED YIELD(% check) 1989	1990	MEAN
LEO(*)	CAN(36**)	8.0	9.0	8.5	55	70	62	69	40	55	912	1149	1031	100	100	100
LIVADA	ROM(5)	8.3	8.3	8.3	50	55	53	69	40	55	148	704	426	16	61	41
OBERHAUNSTADTER	DEU(37)	7.0	8.0	7.5	54	58	56	69	40	55	224	525	374	25	46	36
ORSEGI	HUN(38)	8.0	8.0	8.0	51	56	54	69	40	55	140	627	383	15	55	37
ROCCO	DEU(39)	6.7	8.7	7.7	59	63	61	69	40	55	410	440	425	45	38	41
UPSTART	CAN(25)	8.0	8.7	8.3	54	65	59	69	40	55	1059	1184	1122	116	103	109
STANDARD ERROR OF DIFFERENCE =		0.7	0.4	0.4	4	3	3	0	0	0	133	136	95	-	-	-

* CHECK CULTIVAR
** SEE APPENDIX I FOR IDENTIFICATION OF SEED MAINTAINER OR AGENT

APPENDIX I: IDENTIFICATION OF SEED MAINTAINERS AND AGENTS

ID#	ADDRESS
1	SEED DIVISION, FOOD PRODUCTION AND INSPECTION BRANCH, AGRICULTURE CANADA, OTTAWA, ONTARIO, K1A 0C6, CANADA
2	NATIONAL PLANT MATERIALS CENTER, BELTSVILLE, MARYLAND, USA
3	AGRICULTURE CANADA RESEARCH STATION, P.O. BOX 29, BEAVERLODGE, ALBERTA, T0H 0C0, CANADA
4	SAATZUCHT STEINACH DR. M. VON SCHMIEDER NACHF, GMBH, POSTFACH 1, 8441 STEINACH, FEDERAL REPUBLIC OF GERMANY
5	INST. DE CERCETARI SI PRODUCTIE PENTRU CULTURA PAJISTILOR-BRASOV - STR. CUCULUI NR. 5 - JUD BRASOV, ROMANIA
6	KON KWEEKBEDRIJF EN ZAADHANDEL D.J. VAN DER HAVE, B.V., POSTBUS 1, 4420 AA KAPELLE, NETHERLANDS
7	DEUTSCHE SAATVEREDELUNG LIPPSTADT-BREMEN GMBH ZU LIPPSTADT, 4780 LIPPSTADT, POSTFACH 1407, FED. REP. OF GERMANY
8	KWS KLEINWANZLEBENER SAATZUCHT AG, RABBETHGE & GIESECKE, POSTFACH 1 46, 3352 EINBECK, FED. REP. OF GERMANY
9	ZWAAN EN DE WILJES B.V., POSTBUS 2, 9679 ZG SCHEEMDA, NETHERLANDS
10	BARENBRUG HOLLAND B.V., POSTBUS 4, 6800 AA ARNHEM, NETHERLANDS
11	INTERNATIONAL SEEDS INCORPORATED, P.O.BOX 168, 820 FIRST STREET, HALSEY, OREGON 97348, U.S.A.
12	VERNEUIL SEMENCES, B.P.3, 77390 VERNEUIL L'ETANG, FRANCE
13	E.F. BURLINGHAM & SONS, FOREST GROVE, OREGON 97116, USA
14	KENTUCKY AGRICULTURAL EXPERIMENT STATION, LEXINGTON, KENTUCKY 40506, USA
15	PICKSEED WEST INC., TANGENT, OREGON, 97389, USA
16	VAN ENGELEN ZADEN B.V., POSTBUS 35, 5250 AA VLIJMEN, NETHERLANDS
17	G. SCHNEIDER SAATZUCHT GBMH, POSTFACH 6, 2391 GRUNDHOF, FEDERAL REPUBLIC OF GERMANY
18	APELSVOLL AGRICULTURAL RESEARCH STATION, 2858 KAPP, NORWAY
19	NORTHRUP KING CO., P.O. BOX 959, MINNEAPOLIS, MINNESOTA 55440, USA
20	DANSK PLANTEFORAEDLING A/S, BOELSHOJ 248, HOJERUPVEJ 31, DK-4660, ST. HEDDINGE, DENMARK
21	AGRICULTURAL RESEARCH CENTRE, INSTITUTE OF PLANT BREEDING, SF-31600 JOKIOINEN, FINLAND
22	THE NATIONAL SEED COUNCIL, MOERVEIEN 2, 1430 AS, NORWAY
23	MOMMERSTEEG INTERNATIONAL B.V., POSTBUS 1, 5250 AA VLIJMEN, NETHERLANDS
24	OSEVA, U TOPIREN 2, 170 00 PRAHA 7, CZECHOSLOVAKIA
25	OTTO PICK & SONS LTD., BOX 126, RICHMOND HILL, ONTARIO, L4C 4X9, CANADA
26	LAFITE FERME DES ANGLAIS, 281 RUE DE CERNAY, B.P. 182, 51057 REIMS CEDEX, FRANCE
27	KING AGRO INC., P.O. BOX 1088, CHATHAM, ONTARIO, N7M 5L6, CANADA
28	OSECO INC., BOX 219, BRAMPTON, ONTARIO, L6V 2L2, CANADA
29	ISTITUTO SPERIMENTALE PER LE COLTURE FORRAGGERE, VIALE PIACENZA, 25-20075 LODI, ITALY
30	W-L RESEARCH, 2000 OAK STREET, BAKERSFIELD, CALIFORNIA 93301, U.S.A.
31	PIONEER HI-BRED INTERNATIONAL INC., 6800 PIONEER PARKWAY, BOX 316,JOHNSTON, IOWA 50131, USA
32	UNIVERSITY OF ALBERTA, DEPARTMENT OF PLANT SCIENCE, EDMONTON, ALBERTA, T6G 2P5, CANADA

continued on next page

APPENDIX I: IDENTIFICATION OF SEED MAINTAINERS AND AGENTS (continued)

ID#	ADDRESS
33	GRASSLANDS DIVISION, DSIR, PRIVATE BAG, PALMERSTON NORTH, NEW ZEALAND
34	NSW DEPARTMENT OF AGRICULTURE, P.O. BOX K220, HAYMARKET, NSW 2000, AUSTRALIA
35	GODOLLOI AGRARTUDOMANYI EGYETEM KUTATO INTEZET, KOMPOLT, HUNGARY
36	MACDONALD COLLEGE OF MCGILL UNIVERSITY, STE. ANNE DE BELLEVUE, QUEBEC, H0A 1C0, CANADA
37	DIPLOMLANDWIRT FRANZ WITTMANN, FLURWEG 11, 8350 PLATTLING, FEDERAL REPUBLIC OF GERMANY
38	AGRARTUDOMANYI EGYETEM, KESZTHELY, HUNGARY
39	SUDDEUTSCHE SAATZUCHT-UND SAATBAUGENOSSENSCHAFT, POSTFACH 11 28, 6935 WALDBRUNN 2, FED. REP. OF GERMANY
40	W. WEIBULL AB, BOX 520, S-261 24 LANDSKRONA, SWEDEN
41	HODOWLA BURAKA PASTEWNEGO, UL. SWIETEGO KRZYZA 17, 30-960 KRAKOW, POLAND
42	JACKLIN SEED CO., WEST 5300 JACKLIN AVENUE, POST FALLS IDAHO 83854, USA
43	FINELAWN RESEARCH CORP., P.O. BOX 1051, LAKE OSWEGO, OREGON 97034, USA
44	ZAJAC PERFORMANCE SEEDS, 33 SICOMAC ROAD, NORTH HALEDON, NEW JERSEY 07508, USA
45	POZNANSKA HODOWLA ROSLIN, UL. SARMACKA 7, 61-616 POZNAN, POLAND
46	R.A.G.T., 18, RUE SEGURET SAINCRIC, B.P. 326, 12003 RODEZ CEDEX, FRANCE
47	ZAKLAD DOSWIADCZALNY HODOWLI I AKLIMATYZACJI ROSLIN BARTAZEK, 11-033 BARTAG, POLAND
48	STACJA HODOWLI ROSLIN SMILOW, 27-621 JAKUBOWICE, POLAND
49	INSTITUTUL DE CERCETARI PENTRU CEREALE SI PLANTE TEHNICE - COM. FUNDULEA, JUD. CALARASI, ROMANIA
50	NATIONAL GRASSLAND RESEARCH INSTITUTE, NISHINASUNO-CHO, TOCHIGI-KEN, JAPAN
51	FODDER PLANT RESEARCH INSTITUTE, 411 10 LARISSA, GREECE
52	UNITED COOPERATIVES OF ONTARIO, BOX 1239, CHATMAM, ONTARIO, N7M 5R9, CANADA
53	VEB SAAT- UND PFLANZGUT, EX- UND IMPORT BERLIN, MOOSDORFSTRAASSE 7-9, 1193 BERLIN-TREPTOW, DDR
54	SEED RESEARCH OF OREGON INC., P.O. BOX 1418, CORVALLIS, OREGON 97339, USA