



Cool Season Forage Trial

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A Cool Season Forage Trial was planted at the University of California Intermountain Research and Extension Center at Tulelake, California in September 2000. Four blocks of forage varieties, arranged in a randomized complete block design with four replications per entry, were planted on September 8, 2000. The major blocks included Tall Fescue varieties; Timothy varieties; Orchardgrass varieties; and a Miscellaneous block, which contained various brome, meadow fescue, festulolium, and ryegrass varieties.

Initial establishment evaluations were conducted on May 17, 2001. The establishment parameters that were measured included; plant height, percentage ground cover, and plot vigor.

The four blocks were harvested on varying schedules, based on plant maturity. The Timothy block was harvested at full head development for the first cutting, and again at maximum head development for the second cutting. Most growers in the intermountain region use a two cut schedule. The Tall Fescue, Orchardgrass and Miscellaneous blocks are each harvested three times per growing season, with the first harvest scheduled for the anthesis stage of growth. All plots were harvested with a Carter Forage harvester.

The Timothy plots received 200 units of nitrogen in two applications per season, and the remaining plots receive 325 units of nitrogen in four applications per season. Phosphorus and sulfur requirements were maintained with rotating applications of 12-12-12 and 16-20-0-13.

The trial was flood irrigated to maintain ideal moisture conditions for maximum growth throughout the growing season.

The 2001 establishment and yield data can be found in tables 1-4. Combined yields for 2001-2004 are reported in tables 5-8.

All data was analyzed for significance using the ANOVA2 program.

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Table 1. Tall Fescue Establishment

Varieties	Height (inches) 5/17/01	Ground Cover (1-10) 5/17/01	Vigor Rating (1-10) 5/17/01	First Cut Yield (t/a) 5/22/01	Second Cut Yield (t/a) 7/22/01	Third Cut Yield (t/a) 10/1/01	Total Yield 3 Cuttings (t/a)
Amelle	12.8	6.8	7.0	1.5	4.7	3.5	9.7
Carmine	15.0	8.0	8.3	1.9	4.5	3.2	9.7
Barcel	13.0	7.8	8.0	1.6	4.7	3.5	9.7
Barolex	14.0	8.5	8.8	1.8	4.7	3.2	9.7
Dovey	15.8	7.0	7.8	1.6	4.3	3.4	9.3
HYMARK	18.0	8.8	8.8	2.6	4.7	3.1	10.4
Stag	17.0	9.0	9.0	2.5	5.0	2.8	10.4
Fawn	17.8	8.8	9.0	1.8	3.9	2.7	8.4
Georgia (5 ext wt)	15.8	8.0	8.3	2.0	4.7	3.0	9.7
Georgia (5 max-Q)	15.0	8.5	8.5	2.4	5.3	3.4	11.1
Jessup (E)	16.3	8.0	8.3	2.5	4.3	3.0	9.8
Jessup (M)	15.0	7.3	7.8	2.1	4.8	3.5	10.4
Mean	15.4	8.0	8.3	2.03	4.7	3.2	9.9
CV%	9.5	10.1	8.5	18.9	9.0	16.5	7.4
LSD(0.05)	2.10	1.20	1.00	0.6	0.6	.08	1.0

Table 2. Timothy Establishment

Varieties	Height (inches) 5/17/01	Ground Cover (1-10) 5/17/01	Vigor Rating (1-10) 5/17/01	First Cut Yield (t/a) 5/22/01	Second Cut Yield (t/a) 7/6/01	Third Cut Yield (t/a) 10/1/01	Total Yield 3 Cuttings (t/a)
Clair	18.8	8.8	9.3	1.9	2.2	1.6	5.7
Climax	13.3	8.0	9.0	1.1	3.1	1.7	5.9
Timfor	13.0	8.5	8.8	1.3	2.6	1.7	5.6
Barliza	14.8	8.5	9.0	1.5	2.1	1.7	5.3
PXTA-01	15.8	8.3	9.0	1.5	2.2	1.7	5.4
PXTA-04	12.5	8.3	8.5	1.1	2.5	1.4	5.0
Mean	14.7	8.4	8.9	1.4	2.4	1.6	5.5
CV%	11.5	11.0	4.4	19.4	24.0	21.3	13.3
LSD(0.05)	2.5	NS	NS	0.4	0.9	NS	NS

Table 3. Orchardgrass Establishment

Varieties	Height (inches) 5/17/01	Ground Cover (1-10) 5/17/01	Vigor Rating (1-10) 5/17/01	First Cut Yield (t/a) 5/22/01	Second Cut Yield (t/a) 7/20/01	Third Cut Yield (t/a) 10/1/01	Total Yield 3 Cuttings (t/a)
Sparta	13.5	8.5	8.8	1.2	3.8	2.2	7.3
Quantum	12.8	8.5	8.5	1.3	4.0	3.4	8.6
Mammoth	17.5	9.0	9.0	1.9	3.6	2.8	8.3
Baridana	13.3	7.8	8.3	1.3	3.7	2.4	7.4
Latar	17.5	8.5	8.8	1.8	3.4	2.7	7.9
Potomac	17.5	8.8	8.8	1.4	3.4	2.6	7.4
Stampede	15.0	8.3	8.5	1.4	3.5	2.5	7.4
Hallmark	17.8	9.0	8.8	1.6	3.5	2.7	7.8
Mean	15.6	8.5	8.7	1.5	3.6	2.7	7.8
CV%	9.5	8.2	5.9	19.7	8.5	22.8	12.2
LSD(0.05)	2.2	NS	NS	0.4	NS	NS	NS

Table 4. Miscellaneous Establishment

Varieties	Height (inches) 5/17/01	Ground Cover (1- 10) 5/17/01	Vigor Rating (1-10) 5/17/01	First Cut Yield (t/a) 5/22/01	Second Cut Yield (t/a) 7/22/01	Third Cut Yield (t/a) 8/17/01	Fourth Cut Yield (t/a) 10/1/01	Total Yield 3 Cuttings (t/a)
Laura	11.8	8.5	9.0	1.5	2.6	2.0	3.4	9.5
Bartura	13.3	8.5	8.8	1.6	2.3	2.9	3.5	10.3
Deborah	12.3	8.0	8.8	1.5	3.0	1.8	2.1	8.3
Hakari	17.8	8.8	8.8	2.6	2.5	2.0	1.9	8.9
Barfa	12.8	7.8	8.5	1.2	2.8	1.5	3.6	9.1
Barfest	15.0	9.0	9.3	2.2	3.2	1.6	2.1	9.1
Barpolo	9.5	9.3	9.5	0.8	3.9	3.0	4.5	12.2
Gala	10.8	7.0	7.3	1.2	2.4	2.0	2.3	8.0
Mara	11.5	9.5	9.8	1.6	2.8	2.8	5.0	12.2
AGRBW 101	17.3	9.0	9.0	2.5	3.4	2.2	2.5	10.6
Mean	13.2	8.5	8.9	1.7	2.9	2.2	3.1	9.8
CV%	9.4	9.6	6.9	32.4	11.1	25.2	30.4	10.1
LSD(0.05)	1.8	1.2	0.9	0.8	0.5	0.8	1.4	1.4

Table 5. Tall Fescue Combined Yields

Varieties	2001 Yield (T/A)	2002 Yield (T/A)	2003 Yield (T/A)	2004 Yield (T/A)	4 Year Average (T/A)
Amelle	9.7	10.91	6.24	9.0	8.96
Carmine	9.7	10.84	6.48	9.9	9.23
Barcel	9.7	11.41	6.16	9.1	9.09
Barolex	9.7	11.18	6.48	8.9	9.06
Dovey	9.3	11.77	6.95	8.9	9.23
HYMARK	10.4	12.03	7.12	10.1	9.91
Stag	10.4	11.59	6.86	9.3	9.54
Fawn	8.4	11.21	6.84	9.2	8.91
Georgia (5 ext wt)	9.7	10.86	6.29	9.0	8.96
Georgia (5 max-Q)	11.1	12.06	7.44	9.7	10.07
Jessup (E)	9.8	11.20	6.01	8.5	8.88
Jessup (M)	10.4	11.85	6.69	9.8	9.68
Mean	9.9	11.4	6.6	9.3	9.3
CV%					10.98
LSD(0.05)					NS

Table 6. Timothy Combined Yields

Varieties	2001 Yield (T/A)	2002 Yield (T/A)	2003 Yield (T/A)	2004 Yield (T/A)	4 Year Average (T/A)
Clair	5.7	9.9	4.1	5.9	6.4
Climax	5.9	9.6	3.6	6.0	6.3
Timfor	5.6	10.5	4.0	5.8	6.5
Barliza	5.3	9.8	3.8	6.4	6.3
PXTA-01	5.4	9.8	4.2	6.5	6.5
PXTA-04	5.0	11.3	4.7	5.9	6.7
Mean	5.5	10.1	4.1	6.1	6.4
CV%					9.52
LSD(0.05)					0.92

Table 7. Orchardgrass Combined Yields

Varieties	2001 Yield (T/A)	2002 Yield (T/A)	2003 Yield (T/A)	2004 Yield (T/A)	4 Year Average (T/A)
Sparta	7.3	8.6	3.8	6.1	6.45
Quantum	8.6	9.3	4.4	7.6	7.5
Mammoth	8.3	9.3	4.9	6.5	7.25
Baridana	7.4	9.1	4.3	6.3	6.8
Latar	7.9	9.3	4.7	7.0	7.2
Potomac	7.4	8.8	4.4	5.9	6.6
Stampede	7.4	9.1	4.1	5.9	6.6
Hallmark	7.8	9.1	4.7	7.2	7.2
Mean	7.8	9.1	4.4	6.6	7.0
CV%					15.95
LSD(0.05)					NS

Table 8. Miscellaneous Combined Yields

Varieties	2001 Yield (T/A)	2002 Yield (T/A)	2003 Yield (T/A)	2004 Yield (T/A)	4 Year Average (T/A)	Forage Types
Laura	9.5	7.5	3.0	7.4	6.8	Meadow fescue
Bartura	10.3	8.0	3.3	6.8	7.1	Meadow fescue
Deborah	8.3	8.2	3.0	8.7	7.1	Sweet brome
Hakari	8.9	9.0	4.6	6.8	7.3	Alaska brome
Barfa	9.1	10.6	5.8	9.7	8.8	Tall Fescue
Barfest	9.1	7.9	3.6	8.3	7.2	Festulolium
Barpolo	12.2	6.3	2.4	7.9	7.2	Perennial ryegrass
Gala	8.0	6.5	3.3	6.6	6.1	Grazing brome
Mara	12.1	8.5	2.8	7.5	7.7	Perennial ryegrass
AGRBW 101	10.6	9.0	4.9	7.5	8.0	Prairie brome
Mean	9.8	8.2	3.7	7.7	7.34	
CV%					13.95	
LSD(0.05)					1.49	