

Alfalfa Varietal Adaptation

Wendell Gross Nursery

The Wendell Gross Nursery, seeded in 1959, has now completed its fourth year of production. As mentioned in previous years, this nursery was seeded on virgin soil. Sulfur and phosphate fertilizers have been applied annually, consequently, the field is capable of high production.

Irrigation has on occasion been a problem. The second cutting yields on several of the years have been reduced by the lack of, or erratic, irrigation. During the 1963 season the irrigation pump broke down around the tenth of August and the nursery received little or no water after that date. It was necessary to make the second cutting almost thirty days early in order to cut the forage while it would still make good quality hay. The yields were very much reduced and for all practical purposes reflect the performance of the variety for the first cutting only.

Table No. 8 presents the average yield, 5% level significance and agronomic observations taken for the first cutting. Stand notes indicate that Moapa has, for practical production purposes, gone out. Most of the harvested forage indicated was in the form of cheatgrass. Rambler, Kansas Synthetic, Lahontan, Zia and Talent show definite signs of stand deterioration on one or more of the replications. Table Nos. A and B show a summary of the average monthly temperature, precipitation, etc. These tables indicate below normal spring and early summer temperatures. With these subnormal temperatures, alfalfa plants form new lateral buds from the crown before the alfalfa blooms, consequently bloom cannot be used as a cutting criteria and all varieties were harvested before any blooming occurred and in the late maturing varieties before budding was prominent.

The cool spring generally favored the very hardy alfalfa types over the common alfalfa types. Table No. 8 shows that Rhizoma was the highest yielding variety but significantly higher yielding than Talent only. Moapa should be considered out of the nursery.

Atlantic and Narragansett continue to stay up in yield in relation to the other varieties.

Table No. 9 presents the first cutting, second cutting and seasons total yield. The second cutting yield understandably does not show the total potential of the varieties but does indicate the remarkable ability of Talent to recover from cutting. The second cutting yield of Talent based on only a partial growing period was almost twice that of some of the slow recovering types.

Appendix Table Nos. 9 and 10 show the yield of the varieties by replicate and average yield for the two cuttings.

Table No. 10 presents the yield of the several varieties in the Gross Nursery by yield and percentage of Ladak for 1960, 1961, 1962 and 1963. Also the average yield for the four years and percentage of Ladak for the four year period is shown.

The results indicate that after four years Narragansett and Atlantic have yielded approximately nine to ten percent more than Ladak. This increase amounts to approximately one-half ton increase per acre per year. While it appears that Narragansett is losing ground each year to Ladak, by average yield, it is still the top yielding variety. Atlantic, with a lower early yield, is maintaining its advantage over Ladak. Another group of varieties, Rhizoma, Sevelra, Ranger, Vernal and Orestan have yielded equal to, or a little higher than, Ladak. The remaining group which have yielded less than Ladak belong to the common alfalfa types or the very hardy pasture type alfalfa.

Narragansett and Atlantic are both susceptible to bacterial wilt and should not be grown in wilt infested areas. Atlantic has shown some tolerance to bacterial wilt in tests in other parts of the nation.

Three alfalfa varietal nurseries were established on station lands during 1963. These nurseries include Cayuga, a variety similar in yield and hardiness to Atlantic and Narragansett, but with bacterial wilt resistance.

Table No. 8

Yield and Agronomic Data for the First Cutting of Hay from the Alfalfa Varietal Nursery on the Wendell Gross Farm, Powell Butte, Oregon, 1963

Variety	Average Yield Tons Per Acre	Significance	Plant Height Inches	Stand	Stage of Bloom
Rhizoma	3.06		27.75	A	All Varieties Bud or Prebud Stage when cut.
Atlantic	2.90		27.00	A	
Nomad	2.80		25.50	A	
Narragansett	2.71		26.75	A	
Orestan	2.67		29.50	A	
Ladak	2.61		27.50	A	
Ranger	2.61		26.50	A	
Rambler	2.60		28.00	-	
Grimm	2.56		25.75	A	
Sevelra	2.56		26.75	A	
Socheville	2.52		27.50	-	
Du Puits	2.50		25.25	A	
Kansas Synthetic	2.45		27.25	-	
Vernal	2.39		27.50	A	
Lahontan	2.29		26.00	-	
Zia	2.12		26.50	-	
Talent	2.04	30.25	-		
Moapa	1.41(1)	26.00	O		

Harvested June 27, 1963

(1) Moapa yields approximately 95% cheatgrass stand.

A = Good producing stand in all replications

- = Stand shows signs of weakening in one or more of the replications

O = For production purposes the stand is gone.

Table No. 9

Summary of the Hay Yields Obtained from the Alfalfa Varietal Nursery on the Wendell Gross Farm, Powell Butte, Oregon, 1963

Yields are in Tons Per Acre by Cutting and Total Yield
The Multiple Range Test for Significance is on the Total Yield for the season

Variety	Yield in Tons Per Acre			(2)
	1st Cutting	2nd (1) Cutting	Seasons Total	5% Level Significance
Rhizoma	3.06	.59	3.65	
Atlantic	2.90	.56	3.45	
Narragansett	2.71	.64	3.36	
Grimm	2.56	.75	3.31	
Ranger	2.61	.70	3.31	
Rambler	2.60	.69	3.29	
Nomad	2.80	.48	3.28	
Socheville	2.52	.71	3.23	
Ladak	2.61	.61	3.22	
Sevelra	2.56	.63	3.19	
Kansas Synthetic	2.45	.67	3.12	
Vernal	2.39	.72	3.11	
Orestan	2.67	.44	3.11	
Du Puits	2.50	.54	3.04	
Talent	2.04	.83	2.87	
Zia	2.12	.69	2.81	
Lahontan	2.29	.49	2.78	
Moapa (3)	1.41	.29	1.70	

First Harvest: June 27, 1963

Second Harvest: August 16, 1963

- (1) Irrigation pump broke down around August 10, preventing any further irrigation during the season.
- (2) Any two varieties covered by the same line are not significantly different in yield.
- (2) Moapa yield composed largely of cheatgrass.

Table No. 10

Summary of the Yields of Eighteen Varieties Grown on the Wendell Gross Farm,
Powell Butte, Oregon from 1960 - 1963, inclusive.

Yields are Shown in Tons Per Acre by Year, Average of Four Years
and by Percentage of Ladak

Variety	1960		1961		1962		1963		Average of four Years	
	Total Yield Tons/A	% Ladak	Total Yield Tons/A	% Ladak	Total Yield Tons/A	% Ladak	Total Yield Tons/A	% Ladak	Years	% Ladak
Narragansett	7.11	114.1	6.95	110.7	5.81	106.8	3.36	104.3	5.81	109.8
Atlantic	6.77	108.7	6.92	110.2	5.80	106.8	3.45	107.1	5.74	108.5
Rambler	6.74	108.2	5.22	83.1	5.29	97.2	3.29	102.2	5.14	97.2
Rhizoma	6.66	106.9	5.94	94.6	5.41	99.4	3.65	113.4	5.42	102.5
Sevelra	6.64	106.6	6.12	97.5	5.58	102.6	3.19	99.1	5.38	101.7
Ranger	6.61	106.1	6.22	99.0	5.45	100.2	3.31	102.8	5.40	102.1
Vernal	6.42	103.0	6.34	101.0	5.64	103.7	3.11	96.6	5.38	101.7
Nomad	6.33	101.6	5.32	84.7	5.12	94.1	3.28	101.9	5.01	94.7
Ladak	6.23	100.0	6.28	100.0	5.44	100.0	3.22	100.0	5.29	100.0
Orestan	6.07	97.4	6.56	104.5	5.28	97.1	3.11	96.6	5.26	99.4
Grimm	5.98	96.0	6.01	95.7	4.83	88.8	3.31	102.8	5.03	95.1
Kansas Synthetic	5.96	95.7	6.18	98.4	5.23	96.1	3.12	96.9	5.12	96.8
Du Puits	5.49	88.1	6.34	101.0	4.83	88.8	3.04	94.4	4.93	93.2
Sochville	5.47	87.8	6.40	101.9	4.63	85.1	3.23	100.3	4.93	93.2
Lahontan	5.42	87.0	6.42	102.2	4.72	86.8	2.78	86.3	4.84	91.5
Zia	5.08	81.5	5.87	93.5	4.63	85.1	2.81	87.3	4.60	87.0
Talent	4.99	80.1	5.88	93.6	4.69	86.2	2.87	89.1	4.61	87.1
Moapa	4.82	77.4	5.30	84.4	2.83	52.0	1.70	52.3	3.66	69.2
Average of all varieties	6.04		6.12		5.07		3.10			

Appendix Table No. 9

Hay Yields Obtained from Eighteen Alfalfa Varieties Grown on
the Wendell Gross Farm, Powell Butte, Oregon, 1963
Yields Recorded in Tons Per Acre by Replicate
and Average of the Four Replications

First Cutting

Variety	Hay Yields in Tons Per Acre By Replicate				Average
	I	II	III	IV	
Sevelra	3.111	2.378	2.331	2.419	2.56
Narragansett	2.430	3.084	3.521	1.817	2.71
Lahontan	1.934	2.918	2.973	1.323	2.29
Ranger	2.722	3.410	2.273	2.036	2.61
Socheville	2.767	3.718	1.989	1.595	2.52
Grimm	2.994	2.827	2.466	1.963	2.56
Kansas Synthetic	2.587	2.588	2.696	1.934	2.45
Atlantic	3.072	2.860	3.090	2.566	2.90
Orestan	2.811	3.142	2.654	2.062	2.67
Zia	2.148	2.932	1.584	1.811	2.12
Ladak	2.386	3.700	1.736	2.615	2.61
Talent	2.075	3.341	.989	1.751	2.04
Du Puits	3.774	2.983	1.370	1.869	2.50
Nomad	3.067	3.316	2.827	1.994	2.80
Vernal	3.145	2.744	1.712	1.971	2.39
Rambler	2.918	4.348	1.156	1.965	2.60
Rhizoma	3.550	3.682	2.761	2.237	3.06
Moapa	1.796	1.738	1.469	.653	1.41

Harvested June 27, 1963

Appendix Table No. 10

Hay Yields Obtained from Eighteen Alfalfa Varieties Grown on
the Wendell Gross Farm, Powell Butte, Oregon, 1963
Yields Recorded in Tons Per Acre by Replicate
and Average of the Four Replications

Second Cutting

Variety	Hay Yields in Tons Per Acre By Replicate				Average
	I	II	III	IV	
Sevelra	.358	.843	.472	.835	.627
Narragansett	.775	.569	.284	.942	.643
Lahontan	.655	.365	.438	.506	.491
Ranger	.582	.968	.342	.924	.704
Socheville	.300	.916	.840	.786	.711
Grimm	.334	1.516	.702	.459	.753
Kansas Synthetic	.574	.762	.590	.733	.665
Atlantic	.676	.723	.240	.592	.558
Orestan	.425	.619	.248	.454	.437
Zia	.827	.624	.801	.506	.690
Ladak	.639	.765	.561	.478	.611
Talent	.859	.686	.937	.822	.826
Du Puits	.621	.621	.255	.673	.543
Nomad	.493	.548	.454	.423	.480
Vernal	.449	.919	.608	.906	.720
Rambler	.378	.519	1.548	.308	.688
Rhizoma	.418	.668	.532	.744	.591
Moapa	.287	.308	.235	.326	.289

Harvested August 16, 1963

Irrigation pump breakdown around August 10 precluded further irrigation during second cutting growth period.