

## Results and Discussion of 1974 Forage Research

Alfalfa variety trial - Redmond. A six-year-old trial to study the yield performance of 20 alfalfa varieties was completed (Table 1 ). Yields for 1974 ranged from 4.06 to 5.78 tons air-dry hay (ADH) per acre. Five-year average yields ranged from 6.31 to 7.26 tons ADH/acre.

During the winter of 1972 Simazine was applied to control cheatgrass. The yields of all varieties were greatly reduced following this application. The 1973, 1974 and five-year average yields should be considered with this in mind, since yields may have continued at 7 to 8 tons ADH/acre had the plants not been damaged by the herbicide application.

Three-year average yields previous to the Simazine application ranged from 7.10 to 8.33 tons ADH/acre. Two-year average yields following the Simazine application ranged from 4.72 to 5.89 tons ADH/acre. Since the highest and lowest yielders were different before and after the Simazine application, this indicates that the varieties may have been affected differently by the herbicide. Since the herbicide was not applied as part of a statistical design, there is no way of being certain of its different effect on the varieties. Regardless of the herbicide effect, the spread between high and low yields over all varieties was about one ton ADH/acre/year.

In December, 1974, crown and roots of all varieties were dug up and studied in an attempt to determine if there were any differences due to winter injury, disease, insect injury, root branching, and/or bud formation. No distinct differences were found. All varieties exhibited varying degrees of all factors considered.

In September, 1974, soil and plant samples were taken and analyzed to determine if yield had an effect on soil nutrient level. Results were so varied that no distinct relationship was apparent. (Appendix 1-4).

Alfalfa variety trial of regional entries - Redmond. Results from the first harvest year of a trial to study the yield performance of 22 alfalfa varieties, as part of a regional testing program, are presented in Table 2. Yields ranged from 3.70 to 4.60 tons ADH/acre. The yields were considerably lower than those obtained in the above trial. The spread between high and low yields over all varieties continued to be about one ton ADH/acre/year. Moapa did not survive the winter of the seeding year.

In September, 1974, soil and plant samples were taken and analyzed from nine varieties encompassing high and low yielders, in an attempt to determine if yield had an effect on soil nutrient level. Results were so varied that no distinct relationship was apparent (Appendix 5-7).

Plant-density trial - Redmond. First-year results from a trial to study the effect of plant density on yield of Vernal alfalfa are presented in Table 3 . Yields ranged from 3.75 (lowest plant density) to 5.46 (highest plant density) tons ADH/acre, when plants were transplanted from the greenhouse to the densities utilized in the field. Yields ranged from 4.57 (lowest density) to 6.45 (highest density) tons ADH/acre, when plants were seeded in the field and thinned to the densities utilized. At this point, the results indicate that a high plant density at seeding provides greater yields than a low plant

density. Weeds have invaded the treatments having the two lowest plant densities. (Appendix 8,9).

Alfalfa survey - tri-county area. In August to September, 1974, a soil and plant analysis survey was made of 40 alfalfa fields in the tri-county area of Central Oregon in an attempt to determine if fertility problems existed that might limit alfalfa production. Surprisingly enough, test results indicated that most of the fields sampled were deficient in one or more plant nutrients (Table 4 : Appendix 10). As a result of this survey, comprehensive soil fertility trials will be established in the spring of 1975.

New trials established in 1974.

1. Trial to study the yield performance of 15 alfalfa varieties at Alfalfa.

Saranac	Thor	WVS1
Washoe	Narragansett	W1S1
Team	Vernal	W9SR1
Apalachie	Beltsville 72	W16S1
Agate	Anchor	W122R1

2. Trial to study the effect of different levels of P and K on Vernal alfalfa at Alfalfa.

3. Trial to study the effect of different levels of lime, P, K, B, Cu, M, and Mo on Promor alfalfa at Powell Butte.

Table 1. Yield performance of 20 alfalfa varieties grown during the years 1970 to 1974 inclusive, Central Oregon Experiment Station, Redmond.

VARIETY	Air-dry hay, tons/acre*								
	1970	1971	1972	3-yr ave.	1973	1974	2-yr ave.	Total	5-yr ave.
Scout	7.62	8.16	7.81	7.86	5.66	5.28	5.47	34.53	6.91
Washoe	6.33	8.03	7.02	7.13	5.48	4.70	5.09	31.56	6.31
Mark II	8.23	8.02	8.20	8.15	5.64	5.14	5.39	35.23	7.05
Ladak	8.11	8.84	8.03	8.33	5.06	4.94	5.00	34.98	7.00
Vernal	8.07	7.95	8.10	8.04	5.72	5.69	5.71	35.53	7.11
Cayuga	7.01	7.65	9.22	7.96	5.71	5.52	5.62	35.11	7.02
Narragansett	7.69	7.42	7.82	7.64	6.00	5.43	5.72	34.35	6.87
Dawson	7.60	7.01	8.10	7.57	5.45	5.28	5.37	33.44	6.69
Saranac	8.37	7.30	8.42	8.03	6.08	5.70	5.89	35.87	7.17
Iroquois	8.12	8.09	8.36	8.19	5.93	5.78	5.86	36.28	7.26
Titan	7.79	7.84	7.79	7.81	5.44	5.71	5.58	34.57	6.91
Apex	8.03	8.30	8.09	8.14	5.48	4.95	5.22	34.85	6.97
Alfa	8.14	8.42	8.12	8.23	4.72	4.71	4.72	34.11	6.82
Golden Gro	7.75	7.41	8.18	7.78	5.47	4.97	5.22	33.78	6.76
WL202	7.21	7.69	8.35	7.75	5.89	5.57	5.73	34.71	6.94
NK919	8.29	7.00	7.83	7.71	5.62	4.47	5.05	33.21	6.64
Resistador	7.33	6.50	8.20	7.34	5.64	4.06	4.85	31.73	6.35
Promor	7.93	6.83	8.05	7.60	5.98	5.00	5.49	33.79	6.76
Haymor	7.42	6.65	7.92	7.33	5.52	5.04	5.28	32.55	6.51
Ranger	6.91	6.77	7.62	7.10	5.71	5.52	5.62	32.53	6.51

\* Means of five replicates.

Table 2. Yield performance of 22 alfalfa varieties, Central Oregon Experiment Station, Redmond, (1974).

VARIETY	Air-dry hay, tons/acre*			Season total
	1st cut	2nd cut	3rd cut	
WU-S-1	1.94	1.59	0.73	4.26
W9SR1	1.55	1.69	0.73	3.97
Beltsville 71	1.61	1.90	0.83	4.34
W13S0	1.57	1.71	0.81	4.09
WDS3	2.03	1.71	0.75	4.49
Vernal	1.62	1.73	0.67	4.02
Agate	1.32	1.68	0.70	3.70
Washoe	1.46	1.58	0.76	3.80
Team	1.95	1.57	0.64	4.16
DuPuits	1.71	1.63	0.79	4.13
Beltsville 72	1.85	1.91	0.84	4.60
Saranac	1.70	1.84	0.95	4.49
Apalachie	1.53	1.71	0.74	3.98
Narragansett	2.05	1.71	0.72	4.48
Lahontan	1.89	1.10	0.53	3.52
Moapa 69	-	-	-	-
Apex	1.78	1.75	0.74	4.27
Anchor	1.37	1.86	0.94	4.17
Bonus	1.70	1.65	0.87	4.22
Weevil Check	1.97	1.73	0.84	4.54
Ladak	1.51	1.69	0.61	3.81
Thor	1.58	1.82	0.93	4.33

Table 3. The effect of plant density on yield of vernal alfalfa, Central Oregon Experiment Station, Redmond, (1974).

Plants per ft <sup>2</sup>	West Experiment 2A				
	Air-dry hay, tons/acre			Season total	
	1st cut	2nd cut	3rd cut		
0.67	1.81	1.44	0.50	3.75	
1	2.26	1.82	0.81	4.89	
2	2.13	1.96	0.82	4.91	
4	2.34	2.10	0.98	5.42	
8	2.29	2.20	0.97	5.46	
Plants per ft <sup>2</sup>	East Experiment 2B				
	1st cut	2nd cut	3rd cut	Season total	
	0.67	1.71	1.88	0.98	4.57
	1	2.08	2.08	1.08	5.24
	2	2.28	2.39	1.13	5.80
	4	2.35	2.49	1.30	6.14
8	2.45	2.41	1.59	6.45	

\* Means of five replicates

Table 4. Percentages of soil and plant analyses samples below critical levels\* for various nutrients from a survey made of 40 alfalfa fields in Central Oregon, 1974.

Soil analysis		Plant analysis	
% of sample	Below adequate levels for	% of sample	Below deficiency levels for
58	P	28	P
10	K	18	K
85	B	83	Ca
3	Cu	40	Mg
90	Zn	65	S
		10	B
		48	Cu
		70	Mo

\* as indicated in research literature.

Appendix Table 1. Yield performance of 25 alfalfa varieties,  
Central Oregon Experiment Station, Redmond, 1974.

VARIETY	Air-dry hay yields, tons/acre			
	1st cut	2nd cut	3rd cut	Total
Scout	2.65	1.77	0.86	5.28
Washoe	2.26	1.57	0.87	4.70
Mark II	2.48	1.74	0.92	5.14
Ladak	2.76	1.65	0.53	4.94
Vernal	2.81	1.97	0.91	5.69
Cayuga	2.80	1.81	0.91	5.52
Narragansett	2.76	1.83	0.84	5.43
Dawson	2.66	1.68	0.94	5.28
Saranac	2.88	1.93	0.89	5.70
Iroquois	2.82	1.99	0.97	5.78
Titan	3.14	1.94	0.63	5.71
Apex	2.48	1.78	0.69	4.95
Alfa	2.32	1.62	0.77	4.71
Golden Gro (WL303)	2.38	1.78	0.81	4.97
WL202	2.82	1.92	0.83	5.57
C x 20	3.04	1.94	1.00	5.98
C x 32	2.28	1.70	0.75	4.73
C x 35	2.75	1.72	0.85	5.32
C x 33	2.56	1.88	0.79	5.23
C x 34	2.55	1.75	0.73	5.03
NK919	2.28	1.64	0.55	4.47
Resistador	2.05	1.48	0.53	4.06
Promor	2.51	1.76	0.73	5.00
Haymor	2.43	1.88	0.73	5.04
Ranger	2.85	1.77	0.90	5.52

Appendix Table 2. Yield performance of 25 alfalfa varieties,  
first cutting, June 26, 1974, Central Oregon Experiment Station,  
Redmond.

VARIETY	Air-dry hay yields, tons/acre					Ave.
	Rep I	Rep II	Rep III	Rep IV	Rep V	
Scout	2.07	2.35	3.20	2.91	2.73	2.65
Washoe	1.76	2.66	1.51	2.74	2.65	2.26
Mark II	2.31	2.98	1.95	2.60	2.56	2.48
Ladak	2.53	3.32	2.10	2.63	3.20	2.76
Vernal	2.41	2.69	2.67	2.93	3.37	2.81
Cayuga	2.44	2.89	2.70	2.99	2.96	2.80
Narragansett	2.47	2.15	3.00	3.34	2.86	2.76
Dawson	2.67	2.71	2.62	2.71	2.57	2.66
Saranac	2.72	3.06	2.51	2.89	3.24	2.88
Iroquois	2.80	3.20	2.25	3.23	2.60	2.82
Titan	2.84	3.18	3.33	2.80	3.53	3.14
Apex	2.32	2.32	2.69	2.65	2.44	2.48
Alfa	-	2.12	2.17	2.40	2.59	2.32
Golden Gro (WL303)	2.63	2.43	2.88	2.01	1.94	2.38
WL202	3.07	3.23	2.14	2.38	3.28	2.82
C x 20	3.10	2.93	3.15	2.40	3.62	3.04
C x 32	1.98	2.53	2.10	2.52	2.29	2.28
C x 35	2.68	2.04	2.91	2.84	3.26	2.75
C x 33	2.19	2.53	2.23	3.06	2.78	2.56
C x 34	2.50	2.75	2.34	2.25	2.92	2.55
NK919	1.39	1.82	2.51	2.81	2.86	2.28
Resistador	2.25	2.00	1.55	2.32	2.14	2.05
Promor	2.55	2.82	2.13	2.39	2.95	2.51
Haymor	2.77	-	1.88	2.41	2.67	2.43
Ranger	2.95	2.97	2.50	2.59	3.25	2.85

Appendix Table 3. Yield performance of 25 alfalfa varieties, second cutting, August 8, 1974, Central Oregon Experiment Station, Redmond.

VARIETY	Air-dry hay yields, tons/acre					Ave.
	Rep I	Rep II	Rep III	Rep IV	Rep V	
Scout	1.58	1.79	1.84	1.92	1.70	1.77
Washoe	1.52	1.32	1.46	1.79	1.78	1.57
Mark II	1.68	1.68	1.66	1.75	1.91	1.74
Ladak	1.68	1.83	1.46	1.35	1.94	1.65
Vernal	1.91	1.97	2.12	1.87	2.00	1.97
Cayuga	1.84	1.56	1.74	1.73	2.16	1.81
Narragansett	2.14	1.47	1.68	1.91	1.96	1.83
Dawson	1.82	1.63	1.92	1.56	1.45	1.68
Saranac	2.05	1.97	1.69	1.84	2.10	1.93
Iroquois	2.06	2.21	1.76	2.13	1.81	1.99
Titan	1.87	1.86	2.13	1.99	1.85	1.94
Apex	1.40	2.00	1.80	1.73	1.98	1.78
Alfa	-	0.84	1.54	2.00	2.08	1.62
Golden Gro (WL303)	1.77	1.74	1.78	1.67	1.95	1.78
WL202	1.93	1.76	1.81	1.72	2.37	1.92
C x 20	1.87	1.90	1.54	1.55	2.82	1.94
C x 32	1.47	2.26	1.78	1.64	1.37	1.70
C x 35	1.79	1.68	1.61	1.74	1.77	1.72
C x 33	1.73	1.85	1.87	1.67	2.28	1.88
C x 34	2.06	2.04	1.56	1.51	1.57	1.75
NK919	1.11	1.19	1.91	1.94	2.06	1.64
Resistador	1.70	1.19	1.45	1.54	1.53	1.48
Promor	1.68	1.76	1.66	1.88	1.83	1.76
Haymor	2.06	1.92	1.82	1.56	2.05	1.88
Ranger	1.99	2.05	1.56	1.65	1.62	1.77

Appendix Table 4. Yield performance of 25 alfalfa varieties, third cutting, September 23, 1974, Central Oregon Experiment Station, Redmond.

VARIETY	Air-dry hay yields, tons/acre					Ave.
	Rep I	Rep II	Rep III	Rep IV	Rep V	
Scout	0.83	0.98	0.85	0.98	0.66	0.86
Washoe	0.90	0.88	0.86	0.82	0.88	0.87
Mark II	0.76	0.82	1.08	0.93	1.00	0.92
Ladak	0.64	0.63	0.34	0.52	0.72	0.53
Vernal	1.05	0.69	1.01	0.78	1.00	0.91
Cayuga	0.98	0.88	0.87	0.90	0.91	0.91
Narragansett	1.12	0.49	0.79	0.75	1.04	0.84
Dawson	1.02	1.17	0.94	0.71	0.88	0.94
Saranac	1.05	0.93	1.13	0.81	0.75	0.89
Iroquois	1.16	1.20	0.63	0.99	0.98	0.97
Titan	0.66	0.63	0.83	0.90	0.81	0.63
Apex	0.42	0.90	0.90	0.62	0.69	0.69
Alfa	-	0.25	0.89	0.89	1.03	0.77
Golden Gro (WL303)	0.84	0.95	1.08	0.56	0.83	0.81
WL202	1.04	0.85	0.94	0.76	0.76	0.83
C x 20	0.97	1.18	0.99	0.88	1.17	1.00
C x 32	1.15	0.67	0.99	0.58	0.38	0.75
C x 35	0.90	0.76	0.91	0.64	1.06	0.85
C x 33	0.65	1.04	0.80	0.82	1.12	0.79
C x 34	0.79	1.16	0.71	0.87	0.80	0.73
NK919	0.24	0.35	0.88	0.71	0.85	0.55
Resistador	0.50	0.32	0.73	0.78	0.53	0.53
Promor	0.59	0.91	0.71	0.88	0.85	0.73
Haymor	0.88	1.20	0.74	0.68	0.75	0.73
Ranger	0.99	0.93	0.84	0.97	0.97	0.90

Appendix Table 5. Yield performance of 22 alfalfa varieties, alfalfa uniform nursery, Central Oregon Experiment Station, first cutting, June 27, 1974, Redmond.

VARIETY	Air-dry hay yields, tons/acre					Ave.
	Rep I	Rep II	Rep III	Rep IV*	Rep V*	
WU-S-1	2.05	1.62	2.14			1.94
W9SR1	1.63	1.73	1.30			1.55
Beltsville 71	1.61	1.57	1.64			1.61
W13S0	1.83	1.38	1.50			1.57
WDS3	1.77	2.07	2.26			2.03
Vernal	2.15	1.46	1.24			1.62
Agate	.78	1.69	1.50			1.32
Washoe	1.03	1.50	1.84			1.46
Team	2.01	2.21	1.63			1.95
DuPuits	1.76	1.73	1.65			1.71
Beltsville 72	1.66	1.66	2.24			1.85
Saranac	1.93	1.69	1.47			1.70
Apalachie	1.28	1.81	1.49			1.53
Narragansett	2.59	1.91	1.64			2.05
Lahontan	1.47	2.19	2.01			1.89
Moapa 69	-	-	-			-
Apex	2.10	1.73	1.45			1.78
Anchor	1.71	1.24	1.17			1.37
Bonus	1.83	1.68	1.60			1.70
Weevil Check	1.62	2.21	2.07			1.97
Ladak	1.72	1.24	1.58			1.51
Thor	1.75	-	1.40			1.58

\* Replicates IV and V were lost due to error.

Appendix Table 6. Yield performance of 22 alfalfa varieties, alfalfa uniform nursery, Central Oregon Experiment Station, second cutting, August 15, 1974, Redmond.

VARIETY	Air-dry hay yields, tons/acre					Ave.
	Rep I	Rep II	Rep III	Rep IV	Rep V	
WU-S-1	1.48	1.93	1.92	1.39	1.25	1.59
W9SR1	1.81	1.83	1.86	1.39	1.57	1.69
Beltsville 71	1.97	2.13	2.12	2.00	1.30	1.90
W13S0	1.65	1.79	1.63	1.44	2.03	1.71
WDS3	1.96	1.82	1.74	1.57	1.48	1.71
Vernal	1.58	1.82	1.97	1.56	1.74	1.73
Agate	1.78	1.77	1.51	1.73	1.62	1.68
Washoe	2.02	1.46	1.60	1.61	1.20	1.58
Team	1.78	1.49	2.05	1.23	1.29	1.57
DuPuits	1.60	1.67	1.76	1.63	1.48	1.63
Beltsville 72	1.94	1.97	1.80	1.87	1.99	1.91
Saranac	1.74	1.81	2.12	1.78	1.77	1.84
Apalachie	1.89	1.91	1.56	1.57	1.60	1.71
Narragansett	1.88	1.74	1.62	1.90	1.41	1.71
Lahontan	1.00	.99	1.34	1.05	1.10	1.10
Moapa 69	-	-	-	-	-	-
Apex	1.57	1.93	2.00	1.76	1.47	1.75
Anchor	2.18	1.87	2.13	1.50	1.63	1.86
Bonus	1.77	1.85	1.85	1.33	1.45	1.65
Weevil Check	1.85	1.77	1.75	1.85	1.42	1.73
Ladak	1.41	1.78	1.86	1.58	1.80	1.69
Thor	1.98	1.77	2.10	1.78	1.48	1.82

Appendix Table 7. Yield performance of 22 alfalfa varieties, alfalfa uniform nursery, Central Oregon Experiment Station, third cutting, September 24, 1974, Redmond.

VARIETY	Air-dry hay yields, tons/acre					Ave.
	Rep I	Rep II	Rep III	Rep IV	Rep V	
WU-S-1	0.65	0.86	0.96	0.56	0.61	0.73
W9SR1	0.57	0.84	0.83	0.71	0.71	0.73
Beltsville 71	0.82	1.07	0.97	0.74	0.53	0.83
W13S0	0.91	0.90	0.93	0.50	0.80	0.81
WDS3	0.77	0.96	0.85	0.63	0.53	0.75
Vernal	0.32	0.86	0.74	0.59	0.82	0.67
Agate	0.46	1.01	0.74	0.62	0.65	0.70
Washoe	0.75	0.69	1.05	0.77	0.56	0.76
Team	0.43	0.97	0.93	0.58	0.30	0.64
DuPuits	0.91	0.95	-	0.72	0.59	0.79
Beltsville 72	0.63	1.04	0.92	0.97	0.66	0.84
Saranac	0.79	1.02	1.15	0.87	0.90	0.95
Apalachie	0.72	0.86	0.91	0.67	0.52	0.74
Narragansett	0.45	0.88	0.79	0.63	0.86	0.72
Lahontan	0.23	0.47	1.15	0.43	0.38	0.53
Moapa 69	-	-	-	-	-	-
Apex	0.73	0.85	0.78	0.69	0.63	0.74
Anchor	1.04	0.88	0.67	1.25	0.84	0.94
Bonus	0.90	0.96	1.03	0.77	0.67	0.87
Weevil Check	0.75	0.95	0.93	0.88	0.71	0.84
Ladak	0.59	0.57	1.01	0.50	0.37	0.61
Thor	0.91	1.01	1.14	0.90	0.70	0.93

Appendix Table 8. The effect of plant density on yield of  
Vernal alfalfa, West Experiment 2A, Redmond, 1974.

<u>First cutting, June 27.</u>						
Plants /sq. ft.	<u>Air-dry hay yields, tons/acre</u>					Ave.
	Rep I	Rep II	Rep III	Rep IV	Rep V	
.67	1.61	1.63	1.86	2.04	1.89	1.81
1	2.11	1.90	2.65	1.62	3.04	2.26
2	2.19	2.13	1.98	2.15	2.18	2.13
4	2.73	2.34	2.18	1.82	2.65	2.34
8	2.53	2.39	2.15	2.34	2.05	2.29
<u>Second cutting, August 9.</u>						
.67	1.40	1.60	1.67	1.18	1.36	1.44
1	1.62	1.93	1.82	1.14	2.39	1.82
2	1.96	1.79	2.11	2.09	1.86	1.96
4	1.68	1.68	2.36	2.44	2.35	2.10
8	2.14	2.55	1.94	2.14	2.22	2.20
<u>Third cutting, September 24.</u>						
.67	0.47	0.62	0.54	0.43	0.42	0.50
1	0.86	0.98	0.94	0.38	0.88	0.81
2	0.70	1.05	0.66	0.91	0.79	0.82
4	0.90	0.83	1.14	0.86	1.15	0.98
8	1.03	1.09	0.70	0.90	1.11	0.97

Appendix 9. The effect of plant density on yield of Vernal alfalfa, East Experiment 2B, Redmond, 1974.

Plants /sq ft	Air-dry hay yields, tons/acre					Ave.
	Rep I	Rep II	Rep III	Rep IV	Rep V	
<u>First cutting, June 27.</u>						
.67	1.84	1.84	1.81	1.19	2.07	1.71
1	2.52	1.93	2.19	1.66	2.10	2.08
2	2.59	2.74	2.13	1.99	2.23	2.28
4	2.57	2.22	2.86	1.69	2.42	2.35
8	2.44	2.80	2.54	2.18	2.29	2.45
<u>Second cutting, August 9.</u>						
.67	1.73	2.12	2.20	1.87	1.87	1.88
1	2.12	2.32	1.80	2.12	2.05	2.08
2	2.14	2.60	2.61	1.95	2.63	2.39
4	2.33	3.13	2.25	2.25	2.49	2.49
8	2.44	2.35	2.36	2.31	2.57	2.41
<u>Third cutting, September 24.</u>						
.67	0.97	1.04	1.19	0.93	0.79	0.98
1	0.87	1.27	1.17	0.91	1.16	1.08
2	1.13	1.30	0.92	1.26	1.05	1.13
4	1.37	1.33	1.34	1.15	1.30	1.30
8	2.61	1.52	1.35	1.20	1.27	1.59

Appendix 10. Results of soil and plant analysis survey of 40 Central Oregon alfalfa fields taken in August - September, 1974.

Location farm	Soil pH	Plant Ca %	Soil Ca meg/100g	Plant Mg %	Soil Mg meg/100g	Plant Zn ppm	Soil Zn ppm	Plant Mn ppm	Plant K %	Soil K ppm	Plant P %	Soil P ppm	Plant Cu ppm	Soil Cu ppm	Plant Mo ppm	Plant B ppm	Soil B ppm	Plant S %
Wiley	5.5	1.43	5.8	0.33	2.3	27	0.72	80	1.4	76	0.25	14	8.6	1.80	0.6	29	0.21	0.31
	5.6	1.34	7.4	0.31	3.2	29	0.72	60	1.2	106	0.27	17	10.6	1.92	0.6	31	0.17	0.25
Sinclair	6.7	1.30	10.6	0.31	5.3	38	0.36	31	2.5	388	0.25	5	12.0	1.55	0.4	32	0.60	0.27
	6.5	1.42	11.6	0.30	5.1	31	0.48	16	2.8	336	0.23	6	10.8	1.74	0.7	35	0.66	0.23
Keller	6.6	1.45	10.3	0.29	3.9	44	0.72	30	3.6	310	0.38	15	12.0	1.36	0.7	34	0.75	0.28
	7.0	1.40	12.5	0.26	4.3	34	0.48	22	3.2	516	0.26	14	9.4	1.30	0.4	35	0.31	0.18
Breeze	7.2	1.79	17.7	0.31	6.0	27	0.72	26	3.0	336	0.29	9	8.4	1.49	0.8	29	0.38	0.19
Williams	8.2	1.34	11.8	0.32	5.2	27	0.96	28	2.8	286	0.25	8	6.4	1.24	0.9	29	0.36	0.20
Howard	7.6	1.74	42.0	0.44	7.6	25	0.36	22	3.0	1160	0.28	17	6.8	0.93	0.7	29	0.54	0.19
	6.3	1.60	15.9	0.30	4.7	26	0.36	35	2.3	490	0.31	17	8.8	1.12	1.1	36	0.32	0.18
Platt	6.6	1.87	6.2	0.32	1.3	35	0.60	33	1.9	484	0.21	6	10.4	0.87	0.4	25	0.19	0.18
	6.4	2.42	6.9	0.43	1.7	34	0.48	44	1.6	216	0.21	15	10.2	0.62	0.9	27	0.16	0.13
	6.6	2.04	7.4	0.38	1.6	28	0.48	19	1.8	152	0.17	14	10.4	1.24	0.4	29	0.37	0.13
Easley	6.3	1.72	7.5	0.37	1.6	39	1.20	26	2.6	298	0.46	18	15.2	0.99	0.8	21	0.34	0.22
Auzenne	5.8	1.39	5.0	0.30	1.8	29	0.48	22	3.4	388	0.34	6	11.2	1.12	0.2	23	0.23	0.24
Harris	6.2	1.30	5.8	0.29	2.1	30	0.36	39	3.9	336	0.30	11	10.6	1.55	0.8	27	0.20	0.22
Miller	6.1	1.46	6.2	0.31	1.7	30	0.48	31	2.4	262	0.28	5	11.0	0.87	0.5	23	0.20	0.20
	6.4	1.88	5.8	0.24	1.2	28	0.48	38	1.8	204	0.18	5	10.6	1.12	0.2	23	0.21	0.15
	6.2	2.39	6.2	0.34	1.5	26	0.72	34	1.2	320	0.22	17	9.8	0.87	0.3	31	0.28	0.18
Cyrus	6.3	1.62	7.9	0.33	1.3	31	0.48	45	2.5	250	0.27	18	11.8	1.30	0.1	13	0.18	0.24
	6.2	1.31	7.4	0.21	1.7	27	0.36	27	2.3	116	0.22	18	8.8	1.36	0.2	21	0.23	0.15
	6.3	1.38	4.0	0.34	1.1	34	0.48	57	3.1	456	0.28	44	11.8	1.36	0.3	7	0.34	0.31
Buckner	6.3	1.68	9.5	0.38	3.3	34	0.40	26	3.4	262	0.28	7	11.2	1.36	0.2	21	0.28	0.18
	5.9	1.56	8.3	0.32	3.7	34	0.40	33	2.9	208	0.30	10	13.8	1.61	0.3	23	0.19	0.00
Kasberger	6.1	1.52	8.3	0.33	3.4	40	0.53	46	3.4	326	0.27	16	11.8	1.67	0.1	21	0.30	0.14
	6.1	1.15	9.0	0.27	4.8	24	0.66	39	3.3	250	0.30	37	8.8	2.11	0.1	21	0.21	0.15
	6.0	1.41	9.5	0.31	4.1	31	0.66	41	2.7	204	0.33	27	10.0	1.67	0.6	22	0.14	0.17
	6.0	1.50	12.5	0.37	6.1	34	0.66	52	2.3	504	0.34	43	7.8	1.92	0.4	39	0.40	0.20
	6.6	1.44	12.2	0.25	4.8	29	0.72	21	3.4	636	0.26	16	8.4	2.17	1.7	42	0.77	0.14
6.4	1.69	9.9	0.37	3.6	32	0.72	21	2.9	208	0.25	12	10.4	1.36	0.2	29	0.57	0.17	

Appendix 10. Concluded.

Location farm	Soil pH	Plant Ca %	Soil Ca meg/100g	Plant Mg %	Soil Mg meg/100g	Plant Zn ppm	Soil Zn ppm	Plant Mn ppm	Plant K %	Soil K ppm	Plant P %	Soil P ppm	Plant Cu ppm	Soil Cu ppm	Plant Mo ppm	Plant B ppm	Soil B ppm	Plant S %
Kilgore	6.0	1.29	7.2	0.26	3.4	33	1.32	35	3.6	316	0.27	6	7.4	1.61	0.2	36	0.37	0.11
Carlson	6.1	1.38	7.4	0.43	3.0	32	0.79	26	2.3	96	0.31	33	10.8	2.05	0.4	14	0.26	0.22
Macy	6.2	1.23	9.0	0.30	6.3	24	0.53	36	2.2	156	0.23	37	9.2	2.73	0.2	33	0.26	0.17
Madras	6.7	1.70	11.2	0.29	5.7	22	0.53	37	2.6	228	0.24	31	8.4	2.05	0.2	57	0.34	0.22
	6.7	1.72	10.6	0.31	6.9	22	0.40	32	3.1	216	0.27	18	8.0	2.11	0.2	48	0.22	0.23
Hayes	5.8	1.30	5.1	0.25	2.2	39	1.08	24	3.3	216	0.25	12	9.4	1.49	0.3	18	0.41	0.20
Larkin	6.3	1.70	6.6	0.26	1.7	23	0.96	21	2.4	326	0.18	8	10.2	1.43	0.2	33	0.41	0.14
	6.1	1.58	6.1	0.30	1.8	25	1.08	27	2.2	274	0.17	11	9.6	2.11	0.1	40	0.39	0.20
	6.2	2.29	5.0	0.35	1.4	19	0.96	38	1.6	374	0.14	9	10.0	1.36	0.3	48	0.50	0.14
Walker	6.0	1.86	6.2	0.32	2.4	36	0.84	80	3.4	180	0.38	8	12.0	1.49	0.3	26	0.33	0.23