NOT FOR PUBLICATION

PROGRESS REPORT

FORAGE CROP INVESTIGATIONS

1957

BREEDING AND STRAIN TESTING

Field Husbandry Department
Ontario Agricultural College
Guelph

FORAGE PROGRESS REPORT 1957

The data from all O.A.C. trials are compiled in this report for use of members of the Field Husbandry Department and those associated with the testing programs. Data from co-operative trials at Kemptville and Ridgetown are included in summary form so that all information will be collected togetner for interpretive purposes.

This report is not complete but does contain the main data collected from current projects and those completed in 1957.

CONTENTS

(Year refers to year trial was seeded)

ALFALFA STRAIN TRIALS

In 1953 an alfalfa strain trial was seeded on slightly sloping ground at the north-west end of range 10 C. The site proved ideal for differentiation between wilt resistant and wilt susceptible varieties and between winter hardy and non-winter hardy types.

The test included such widely used varieties as Grimm, Ontario Variegated and Ladak; less well known varieties such as Vernal, Ranger, Narragansett, Rhizoma and DuPuits and three others of uncertain category -- A 224, M-50 and Grimm x DuPuits.

Stands in most plots were excellent but in the Grimm and Ontario Variegated plots the grade was no better than satisfactory. One of the DuPuits plots had a thin spot running lengthwise through the centre of the plot caused presumably by poor seeding.

Two cuttings were made in 1954 and three in 1955 and 1956. The lower two replicates were ploughed under in the fall of 1956 and the upper two were left for demonstration purposes. The hay in this section was harvested in June, 1957, only.

COMMENTS

The eleven strains under study in this test may be grouped into five classes on the basis of winter hardiness and wilt resistance.

1. Winter hardy, wilt resistant - Vernal, A 224
2. Winter hardy, partially wilt resistant - Ladak
3. Moderately winter hardy, wilt resistant - Ranger
4. Winter hardy, wilt susceptible - Narragansett, Rhizoma, Grimm, Ontario Variegated

5. Of doubtful winter hardiness, wilt susceptible - DuPuits, M-50, Grimm x DuPuits.

No variety suffered abnormal winter injury in the establishment year of 1953-4 but in the following winter the members of group 5 suffered severe damage, losing 40-50% of their plants. Nevertheless, so vigorous was the growth of the remaining plants that in 1955 no significant differences were noted in the year's total yield. Additional heavy damage was suffered by the French types in the winter of 1955-6 and during the following summer their yields averaged considerably less than a ton per acre while some of the others yielded three tons and over.

The fourth group consisting of Narragansett, Rhizoma, Grimm and Ontario Variegated maintained adequate and economic stands for three crop years but bacterial wilt was thinning the stands considerably during the third crop year and by 1957, the fourth year, the population had been reduced to an uneconomic level.

Ranger suffered a moderate amount of damage each year from winter injury but because of its wilt resistance its stands were still adequate in 1956 and 1957.

Ladak, because of its high resistance to cold and moderate resistance to wilt, maintained a satisfactory level of stands and yields throughout the experiment ending up in a tie with Ranger over the 4-year period.

Throughout the experiment the two winter hardy, wilt resistant strains, Vernal and A 224, occupied a position at or near the top with respect to yield and in the third and fourth years this dominance had become quite pronounced.

CONCLUSIONS

1. Over a 2-year period there appeared to be little to choose in this experiment between the hardy, wilt resistant variety Vernal, the hardy, wilt susceptible variety Narragansett, and the early, vigorous, not fully winter hardy, wilt susceptible variety DuPuits.

2. For the 3-year period, during the latter part of which bacterial wilt undoubtedly became an important factor DuPuits appeared much less attractive and Ranger much more so, although the latter was outyielded by Vernal and Narragansett.

3. For the 4-year period the attribute of wilt resistance became even more important. Vernal is the most desirable variety for this long term stand followed in order by Ranger and Ladak.

Recommendations Based on this Experiment

Two crop years -- Vernal, Narragansett, DuPuits

Three crop years -- Vernal, Narragansett, Ranger

Four crop years -- Vernal, Ranger, Ladak

Tables showing hay and aftermath yields for each year that the experiment was in progress are included in this report along with information on winter injury, spring and fall growth.

A second alfalfa strain trial was established in 1955. A table showing hay and aftermath yields for 1957 and for the mean of 1956 and 1957 is likewise included.

Winter Hardiness Notes on Alfalfa (Range 10C)

	Winterkill[1] 1954-5	Winterkill[2] 1955-6	Number Plants[3] per sq. ft. May 12/56	Crown[4] rating May 9/56
Vernal	3%	30%	1.7	3.2
Narragansett	3	37	1.5	4.2
Rhizoma	4	39	1.5	4.0
A 224	7	42	1.3	4.5
Grimm	6	38	1.3	4.2
Ladak	5	35	1.3	3.5
Ont. Variegated	7	42	1.3	4.0
Ranger	11	54	0.9	5.7
DuPuits	47	73	0.6	7.0
M 50	40	80	0.3	7.5

1. The percentage of winterkill was estimated visually in April, 1955, without taking plant counts.

2. Two square yard samples were taken from each plot in the 4 replicates. These plants that had at least 3 - 4 living shoots were classified as living. If a plant had apparently been living last fall but now showed no sign of life it was classified as a dead plant.

   Winterkill percentage - $\frac{\text{Number of dead plants}}{\text{Number of dead + living plants}} \times 100.$

3. An average of four square yard samples from each plot in four replicates, i.e. of 16 square yards for each variety.

4. Crown ratings were based on width of crown and should be indicative of the number of tillers to be expected per average crown. 1 is excellent and 9 very bad.

Seasonal Growth Habits Shown as Height in Inches

	Spring April 21	Summer Aftermath July 14	Fall Oct. 20
Vernal	2-3	4-5	8
Narragansett	1-2	4-5	6
Rhizoma	1-2	4	5
A 224	2-3	3	4
Grimm	1-2	4-5	5
Ladak	1-2	3	3
Ont. Variegated	1-2	5	6
Ranger	2-3	4-5	8
DuPuits	3-4	7	12
M 50	3-4	7	12

Alfalfa Uniform Strain Trial, O. A. C., 10C, 1953

Yields in Tons D. M. per Acre

Variety	1954			1955					1954-5 Mean			1956					1954-6 Mean			1957
	Hay	Aftermath	Total	Hay	Aftermath			Total	Hay	Aftermath	Total	Hay	Aftermath			Total	Hay	Aftermath	Total	Hay
	June 25	Sept. 2		June 21	Aug. 3	Sept. 8	Total					July 4	Aug. 21	Oct. 26	Total					June 21
Vernal	2.64	1.92	4.56	3.72	1.80	1.00	2.80	6.52	3.18	2.36	5.54	2.21	1.37	.32	1.69	3.91	2.85	2.13	4.98	1.90
A 224	2.54	1.96	4.50	3.80	1.46	.96	2.43	6.23	3.17	2.20	5.37	1.77	1.13	.13	1.26	3.03	2.70	1.88	4.58	1.74
Narragansett	2.05	1.75	3.80	3.83	1.80	1.09	2.89	6.72	2.94	2.32	5.26	1.80	.86	.11	.96	2.76	2.56	1.86	4.42	.81
Ranger	2.18	1.52	3.70	3.38	1.83	1.00	2.83	6.21	2.78	2.17	4.95	1.28	.86	.26	1.12	2.40	2.28	1.82	4.10	1.45
Ladak	2.20	1.71	3.91	3.38	1.50	.82	2.33	5.71	2.79	2.02	4.81	1.70	.93	.06	.99	2.69	2.42	1.66	4.09	1.41
Du Puits	2.83	1.78	4.61	3.38	1.82	1.06	2.89	6.27	3.10	2.34	5.44	.64	.22	.03	.24	.88	2.28	1.64	3.92	0
Rhizoma	2.14	1.66	3.80	2.98	1.74	.94	2.69	5.66	2.56	2.17	4.73	1.46	.73	.06	.79	2.25	2.19	1.71	3.90	.27
M-50	2.86	1.67	4.53	3.26	1.90	1.13	3.02	6.28	3.06	2.34	5.40	.47	.19	.03	.21	.68	2.20	1.63	3.83	0
Grimm x Du Puits	2.62	1.82	4.43	3.29	1.74	1.11	2.85	6.14	2.95	2.34	5.29	.32	.18	.01	.19	.51	2.08	1.62	3.70	0
Ont. Variegated	1.86	1.54	3.40	3.18	1.57	.93	2.50	5.68	2.52	2.02	4.54	1.15	.65	.06	.71	1.85	2.06	1.58	3.64	.22
Grimm	1.70	1.47	3.18	2.95	1.62	.99	2.61	5.56	2.32	2.04	4.36	1.25	.42	0	.42	1.67	1.97	1.50	3.47	0
Mean	2.33	1.71	4.04	3.38	1.71	1.00	2.71	6.09	2.85	2.21	5.06	1.28	.68	.10	.78	2.06	2.33	1.73	4.06	.71
L.S.D. - 0.05	0.39	0.14	0.43	N.S.	.28	.15	.38	N.S.				.63	.34	.17	.36	.94				
0.01	0.52	0.19	0.58	N.S.	.37	.20	.51	N.S.				.85	.46	.22	.49	1.27				
C.V.	4	6	7	14	11	10	10	11				34	35	6	32	32				

Alfalfa Strain Trial, O.A.C., 16C, 1955

1957 Yields and 1956-7 Mean Yields in Tons D.M. per Acre

Variety	1957						1956-7 Mean			Winter-kill*
	Hay	Aftermath				Total	Hay	Aftermath	Total	
	June 21	July 19	Sept. 1	Nov. 1	Total					percent 1956-7
Du Puits	1.86	.67	.65	.17	1.49	3.35	1.99	1.96	3.95	10
Danish	1.90	.68	.49	.10	1.27	3.17	1.96	1.72	3.68	10
Socheville	1.75	.53	.50	.18	1.21	2.96	1.90	1.77	3.67	20
Ont. Varieg.	1.79	.71	.61	.13	1.45	3.24	1.87	1.68	3.55	15
Narragansett	1.95	.56	.65	.07	1.28	3.23	1.95	1.59	3.54	20
Vernal	1.66	.60	.65	.11	1.36	3.02	1.86	1.58	3.44	35
Rhizoma	1.90	.69	.66	.09	1.44	3.34	1.91	1.49	3.40	15
Ranger	1.69	.62	.67	.15	1.44	3.13	1.73	1.61	3.34	30
Atlantic	1.70	.53	.62	.11	1.26	2.96	1.82	1.52	3.34	15
A-226	1.65	.57	.55	.19	1.31	2.96	1.71	1.59	3.30	35
Buffalo	1.54	.54	.52	.19	1.25	2.79	1.64	1.66	3.30	35
Argentine	1.33	.50	.56	.20	1.26	2.59	1.53	1.59	3.12	60
A-225	1.49	.50	.51	.13	1.14	2.63	1.67	1.44	3.11	60
Grimm	1.81	.59	.44	.07	1.10	2.91	1.78	1.31	3.09	15
Caliverde	.99	.44	.38	.16	.98	1.97	1.18	1.49	2.67	85
Ladak	1.61	.39	.34	.03	.76	2.37	1.73	.87	2.60	35
Mean	1.66	.57	.55	.13	1.25	2.91	1.76	1.56	3.32	
L.S.D. - 0.05	.24	.16	.22	.09	N.S.	.57				
0.01	.33	.21	.29	.12	N.S.	.77				
C.V.	10	19	28	48	24	14				

* Visual estimation in the spring of 1957. The most important factor was heaving.

ALFALFA MANAGEMENT, ARKELL, 1954
GENERAL SUMMARY

1. The order of yields for the four varieties

1956	1957	1956-7 mean
Vernal	Vernal	Vernal
DuPuits	Ranger	Ranger
Grimm	Grimm	Grimm
Ranger	DuPuits	DuPuits

2. The order of yields for cutting treatments

1956	1957	1956-7 mean
Three cuts	Two cuts	two or three cuts
Two cuts	Three cuts	
Four cuts	Four cuts	Four cuts

3. The order of yields for fertilizer treatments

1956	1957	1956-7 mean
F. manure	F. manure	F. manure
2 (P + K)	2 (P + K)	2 (P + K)
P + K	P + K	P + K
K	K	K
P	P	P
Check	Check	Check

ALFALFA MANAGEMENT, ARKELL, 1954,
1956 AND 1957 YIELDS IN TONS D.M. PER ACRE

		F3				F5			
		C2	C3	C4	Mean	C2	C3	C4	Mean
DuPuits	1956	2.54	3.26	2.76	2.85	2.76	3.28	2.36	2.80
	1957	2.10	.94	.83	1.29	2.11	.84	.32	1.09
Ranger	1956	2.37	3.16	2.34	2.62	2.42	2.99	2.04	2.48
	1957	2.60	2.68	2.25	2.50	2.86	2.12	1.51	2.16
Vernal	1956	2.72	3.20	2.72	2.88	2.92	3.52	3.23	3.23
	1957	3.14	3.23	2.61	2.99	3.07	3.11	2.80	3.00
Grimm	1956	2.69	2.65	2.31	2.55	2.74	2.90	2.48	2.70
	1957	1.82	1.53	.86	1.40	1.80	1.51	.93	1.47
F-C Mean	1956	2.58	3.07	2.53	2.72	2.71	3.17	2.52	2.80
	1957	2.42	2.10	1.64	2.05	2.45	1.89	1.39	1.92
	1956-7	2.50	2.59	2.08	2.38	2.58	2.53	1.95	2.36

		Variety means for cutting treatments			Variety means for years		
		C2	C3	C4	1956	1957	1956-7
DuPuits	1956	2.73	3.26	2.22	2.73		
	1957	1.88	.88	.42		1.06	
							1.90
Ranger	1956	2.53	3.09	2.18	2.60		
		2.74	2.39	1.92		2.34	
							2.37
Vernal	1956	2.90	3.27	2.90	3.03		
	1957	3.15	2.98	2.60		2.90	
							2.96
Grimm	1956	2.66	2.86	2.44	2.65		
	1957	1.87	1.55	1.28		1.49	
							2.07
F-C Mean	1956	2.70	3.12	2.43	2.75		
	1957	2.41	1.96	1.50		1.95	
	1956-7	2.55	2.54	1.96			2.35

ALFALFA MANAGEMENT, ARKELL, 1954,
1956 AND 1957 YIELDS IN TONS D.M. PER ACRE

		F1				F4			
		C2	C3	C4	Mean	C2	C3	C4	Mean
DuPuits	1956	2.61	3.03	1.66	2.43	2.60	2.67	1.75	2.34
	1957	1.17	.81	.08	.68	1.17	.43	.46	.69
Ranger	1956	2.57	2.85	1.72	2.38	2.38	2.85	1.92	2.38
	1957	2.49	2.33	1.44	2.08	1.99	1.84	1.82	1.89
Vernal	1956	2.72	2.77	2.28	2.59	2.58	2.73	2.59	2.63
	1957	2.94	2.50	2.03	2.49	3.70	2.60	2.28	2.52
Grimm	1956	2.26	2.39	1.65	2.10	2.30	2.78	2.39	2.49
	1957	1.00	.80	.45	.75	1.88	1.87	1.24	1.67
F-C Mean	1956	2.54	2.76	1.83	2.37	2.46	2.76	2.16	2.46
	1957	1.90	1.62	1.00	1.50	1.94	1.68	1.45	1.69
	1956-7	2.22	2.19	1.41	1.93	2.20	2.22	1.80	2.06

		F2				F6			
		C2	C3	C4	Mean	C2	C3	C4	Mean
DuPuits	1956	3.05	3.55	2.22	2.94	2.81	3.77	2.57	3.05
	1957	2.48	.97	.50	1.32	2.29	1.31	.34	1.32
Ranger	1956	2.82	3.53	2.64	2.99	2.66	3.16	2.40	2.74
	1957	3.34	2.94	2.58	2.95	3.00	2.40	1.93	2.45
Vernal	1956	3.20	3.72	3.44	3.39	3.27	3.70	3.34	3.43
	1957	3.26	3.11	2.82	3.06	3.80	3.31	3.12	3.40
Grimm	1956	2.84	3.40	3.16	3.08	3.12	3.04	2.82	2.99
	1957	2.48	1.93	1.60	2.00	2.25	1.66	1.25	1.72
F-C Mean	1956	2.98	3.55	2.78	3.10	2.96	3.42	2.78	3.05
	1957	2.90	2.24	1.88	2.33	2.83	2.17	1.67	2.21
	1956-7	2.94	2.89	2.33	2.71	2.89	2.79	2.22	2.63

Alfalfa Strains 1953, Kemptville

Summary of Tons D.M. per Acre*

Variety	Hay	Aftermath 1	Aftermath 2	Aftermath Total	Season Total	Hay	Aftermath 1	Aftermath 2	Aftermath Total	Season Total
	1954					1955				
Vernal	2.94	1.64			4.58	2.97	1.05	1.47	2.52	5.49
Du Puits	2.56	1.99			4.55	2.72	1.26	1.50	2.76	5.48
Rhizoma	2.75	1.70			4.45	2.74	1.16	1.40	2.56	5.30
Narragansett	2.59	1.82			4.41	2.78	1.04	1.50	2.54	5.32
Ranger	2.13	1.47			3.60	2.62	1.15	1.36	2.51	5.13
Grimm	2.71	1.77			4.48	2.61	1.14	1.29	2.43	5.04
Ladak	2.59	1.48			4.07	2.87	.90	1.24	2.14	5.01
L.S.D.-0.05										
	1956					1957				
Vernal	2.53	.53	.72	1.25	3.78	2.40	1.18			3.58
Du Puits	2.24	.58	1.16	1.72	3.96	1.74	.98			2.72
Rhizoma	2.32	.61	1.10	1.71	4.03	2.20	1.09			3.29
Narragansett	2.20	.57	.96	1.53	3.73	2.20	1.04			3.24
Ranger	2.13	.61	1.23	1.84	3.97	2.07	1.04			3.11
Grimm	2.11	.53	.85	1.38	3.49	1.73	.87			2.60
Ladak	2.12	.39	.54	.93	3.05	2.07	.73			2.80
L.S.D.-0.05										
	Two Year Mean 1954-1955					Four Year Mean 1954-1957				
Vernal	2.96			2.08	5.04	2.71			1.65	4.36
Du Puits	2.64			2.38	5.02	2.32			1.86	4.18
Rhizoma	2.75			2.13	4.88	2.50			1.77	4.27
Narragansett	2.69			2.18	4.87	2.44			1.73	4.17
Ranger	2.38			1.99	4.37	2.24			1.71	3.95
Grimm	2.66			2.10	4.76	2.29			1.61	3.90
Ladak	2.73			1.81	4.54	2.41			1.32	3.73

* Harvest dates for 1954, 1955, 1956, 1957

	1956	1957
Hay	June 6	June 21
Aftermath 1	Aug. 14	Aug. 8
Aftermath 2	Oct. 5	

Alfalfa Strains 1956, Kemptville
Pounds D.M. per Acre in 1957

	Hay June 24	Aftermath Aug. 8	Total
M-50	5571	3189	8760
M-53	5773	2810	8583
Vernal	5549	3031	8580
Alfa	5792	2382	8174
P.M.A. 220	5462	2640	8102
DuPuits	5210	2841	8051
Can. Grimm	5260	2296	7556
S.C. 3503	5174	2176	7350
Mean	5474	2671	8145
L.S.D. 0.05	N.S.	N.S.	N.S.
C.V.	8	6	8

Alfalfa Strains 1956, Ridgetown
Pounds D.M. per Acre of First Cut Hay in 1957

Alfa	4120
Vernal	4090
DuPuits	4040
Can. Grimm	4010

Alfalfa variety (DuPuits type) trial 1956. Increase in Yield of a DuPuits-Orchard Grass Mixture Over a Canadian Grimm-Orchard Grass Mixture at Guelph in 1957. Pounds D.M. per Acre.

	Cut 1	Cut 2	Cut 3	Cut 4	Season Total	Aftermath July to October
Silage + After. Pasture	60	422	473	450	1405	1345 = $17.00
Hay + After. Pasture	414	375	342	405	1536	1122 = $14.00
Pasture	167	267	263	378	1093	926 = $11.50

ALFALFA VARIETY (DU PUITS - TYPE) TRIAL 1956. POUNDS D.M./ACRE in 1957.

	Alfalfa + orchard					Alfalfa				
	Cut 1	Cut 2	Cut 3	Cut 4	Total	Cut 1	Cut 2	Cut 3	Cut 4	Total
Hay	June 24	July 23	Sept.6	Oct.22		June 24	July 23	Sept.6	Oct.22	
Alfa	5110	2043	1887	713	9754	3265	1552	1648	636	7101
DuPuits	5099	1963	1848	753	9663	2674	1477	1498	655	6304
Cardinal	4670	1996	1824	730	9221	2660	1487	1476	651	6274
Vernal + DuPuits	5012	1732	1662	532	8938	2924	1271	1298	466	5959
Vernal	4861	1316	1339	196	7712	3109	802	1001	155	5067
Can. Variegated	4685	1588	1506	348	8103	2396	1081	1206	295	4978
Silage	June 17	July 17	Sept.6	Oct.22		June 17	July 17	Sept.6	Oct.22	
Alfa	4698	2197	2063	788	9745	2960	1640	1668	709	6977
DuPuits	4506	2243	2218	868	9835	2613	1487	1745	768	6613
Cardinal	4488	2087	1982	794	9352	2525	1482	1575	718	6300
M.-53	4630	2258	2133	739	9760	2731	1561	1564	659	6615
Vernal	4451	1649	1595	250	7945	2680	1031	1156	209	5076
Can. Variegated	4446	1821	1745	418	8430	2322	1066	1178	368	4934
Pasture	May 16	June 17	Aug.13	Oct.22		May 16	June 17	Aug.13	Oct.22	
Alfa	2303	1692	2153	967	7115	1667	1352	1329	761	5109
DuPuits	2224	1589	2039	942	6793	1478	1121	1127	763	4489
Cardinal	2229	1489	2004	883	6605	1397	1028	1180	741	4346
Vernal + DuPuits	2361	1405	2064	835	6665	1632	986	1245	701	4564
Vernal	2272	1208	1358	597	5934	1520	776	1033	462	3791
Can. Variegated	2037	1322	1776	564	5700	1270	849	934	438	3491

ALFALFA SEED LOTS (T.T.T.) 1956. Lbs. D.M./Acre-in 1957.

G. No.	Seed Lot Designation	June 24 Alfalfa	July 23	Total
685	Can. Variegated	4581	1821	6402
688	Grimm	3895	1735	5630
690	Vernal	4277	1346	5623
686	Can. Variegated	3769	1684	5453
705	Wash. Common	3899	1454	5353
704	N. Dakota Grimm	3657	1572	5229
694	Can. Grimm	3665	1487	5152
684	Can. Variegated	3505	1607	5112
711	Can. Variegated	3042	1430	4472
651	African	1973	1015	2988

Notes: September 1956. G 694 and 711 short; Vernal & remainder except African intermediate; African tall.

October 1956. G 694 & 711 3" shorter than Vernal, not as green in color, and heavily infected with common leaf spot.

May 7, 1957. African severely injured by frost; Washington Common moderately injured; others slightly injured.

Tons Dry Matter per Acre of Red Clover Varieties

Grown in Pure Stands at Guelph

	Trial 1 Seeded in 1953			Trial 2 Seeded in 1954			Trial 3 Seeded in 1955		
	1954	1955	Total	1955	1956	Total	1956	1957	Total
* Lasalle	3.33	1.17	4.50	2.94	1.26	4.20	3.50	1.81	5.31
Ottawa	3.14	1.16	4.30	3.06	1.16	4.22	3.10	1.85	4.95
Dollard	3.33	1.38	4.71	3.08	.91	3.99	3.10	1.75	4.85
Redon	3.16	.92	4.08	3.30	.85	4.15	3.33	1.41	4.74
Pennscott	3.51	.68	4.19	3.07	.40	3.35	2.86	1.28	4.14
Kenland	3.13	.89	4.02	3.27	.27	3.54	2.65	1.37	4.02
Can. Red*	2.88	.37	3.25	3.13	.29	3.42	3.12	.78	3.90

* composite of 5 seed lots of Canadian grown double-cut red clover

RED CLOVER STRAIN TRIALS, 16C1 1955

The results from the strain trial of North American double cut types serve to reinforce the impression gained from previous tests that LaSalle is the best forage variety available for Ontario. Yields are shown in the accompanying tables.

Pennscott appeared in a less favorable light than in previous years and Wisconsin Polycross revealed itself as a strain with an excellent yield potential.

Common red clover was markedly inferior to the pedigree strains in both harvest years.

None of the single cut strains provided yields equal to those of the best double cut varieties.

REDON RED CLOVER, 16C 1955

This test included seven strains the ancestry of which was as follows:

Brampton G 564 - cut for hay June 25, for seed Sept. 20, 1954
" G 562 - no hay removed, crop left for seed, 1954
" G 402 - cut for hay in June, for seed in Sept. 1953
" G 563 - cut for hay June 10, for seed Sept. 20, 1954
Idaho G 226 - Redon seed produced in Idaho
Dunbar G 565 - reputedly Redon but the appearance of the field cast some doubt on this assertion.

The five strains whose origin was certain differed hardly at all (i.e. by less than 5%) in yield and by a maximum of three days in flowering. These data provide some evidence that the management practice employed in the production of seed had no effect on the yield potential of the variety.

Red Clover, Double Cut, Strain Trial, O.A.C., 16C, 1955

1956, 1957 and 1956-7 Mean Yields in Tons. D.M. per Acre

Variety	1956			1957			1956-7 Mean		
	June	Aug.	Total	June	Aug.	Total	June	Aug.	Total
Lasalle	2.27	1.23	3.50	1.07	.74	1.81	1.67	.98	2.65
Purdue	2.11	1.14	3.25	1.06	.68	1.74	1.59	.91	2.50
Ottawa	1.92	1.18	3.10	1.10	.75	1.85	1.51	.97	2.48
Wisc. P'cross	1.95	1.18	3.13	1.06	.68	1.74	1.51	.93	2.44
Dollard	2.06	1.04	3.10	1.19	.56	1.75	1.63	.80	2.43
Redon	2.20	1.13	3.33	.94	.47	1.41	1.57	.80	2.37
Wisc. M.R.	2.02	1.11	3.13	.68	.44	1.12	1.35	.78	2.13
Pennscott	1.84	1.02	2.86	.70	.58	1.28	1.27	.80	2.07
Bogle I	1.94	1.09	3.03	.64	.41	1.05	1.29	.75	2.04
Bogle II*	1.81	1.15	2.96	.69	.42	1.11	1.25	.79	2.04
Kenland	1.75	.90	2.65	.82	.55	1.37	1.28	.73	2.01
Common I**	2.01	1.11	3.12	.47	.31	.78	1.24	.71	1.95
Emerson	1.75	.99	2.74	.71	.42	1.13	1.23	.71	1.94
Common II	1.82	1.11	2.93	.48	.35	.83	1.15	.73	1.88
Mean	1.96	1.11	3.07	.83	.52	1.35	1.40	.81	2.21
L.S.D. - 0.05	.23	N.S.	.36	.14	.12	.22	.12	.12	.20
" 0.01	.31	N.S.	.49	.18	.16	.29	.15	.16	.27
C.V.	8	12	8	11	16	11	5	10	6

* Bogle II is the progeny of Bogle I which is common red clover.

** Common I and II are seed lots of different origin.

Red Clover Varieties 1956, Kemptville and Ridgetown
Pounds D.M. per Acre in 1957

Variety	Kemptville			Ridgetown
	Hay June 25	Aftermath Aug. 9	Total	Hay June
Lasalle	4014	1992	6006	4200
Dollard	4177	2100	6277	4020
Pennscott	3579	2420	5999	4030
Can. Red	3779	2070	5849	3510
Mean	3887	2146	6033	3940
L.S.D. 0.05	360	N.S.	N.S.	N.S.
0.01	N.S.	N.S.	N.S.	
C.V.	5.8	9.0	5.2	

BRITISH DOUBLE CUT RED CLOVER STRAIN TRIAL O.A.C. 17C, 1956

1957 Yields in Tons D.M. per Acre

Variety	Hay June 18	Aftermath July 29	Total 1957
LaSalle	1.86	1.00	2.86
Cotswold	1.49	1.30	2.79
Essex	1.46	1.27	2.73
Garton's	1.38	1.31	2.69
Common	1.43	1.25	2.68
Conath's	1.37	1.22	2.59
Scottish	1.39	1.18	2.57
Dorset	1.35	1.09	2.44
Viking (B.T.)	1.10	1.13	2.23
Mean	1.42	1.19	2.61
L.S.D.-0.05	.11	.19	.10
-0.01	.15	.25	.13
C.V.	5	11	4

BRITISH SINGLE CUT RED CLOVER - O.A.C., 17C, 1956

1957 Yields in Tons D.M. per Acre

Variety	Hay June 25	Aftermath Aug.19	Total 1957	Pasture June 4	Aftermath July 30	Total 1957	Mean
Leon	2.21	.98	3.19	1.38	1.52	2.90	3.05
Montgomery	2.00	.83	2.83	1.09	1.58	2.67	2.75
Cornish	2.05	.68	2.73	1.01	1.45	2.46	2.60
Mammoth	1.93	.60	2.53	1.31	1.35	2.66	2.60
Cotswold	1.73	.56	2.29	1.14	1.24	2.38	2.33
Essex	1.72	.51	2.23	.96	1.28	2.23	2.23
Viking (B.T.)	1.46	1.59	3.04	.62	1.77	2.39	2.72
Mean-R.C.	1.94	.69	2.63	1.15	1.40	2.55	2.59
L.S.D.-0.05	.15	.14	.11	.16	.15	.11	
-0.01	.21	.20	.15	.22	.20	.14	
C.V.	7	12	4	10	7	4	

RED CLOVER INTRODUCTIONS, 16C, 1955

Among the 30 strains studied, five were more persistent than LaSalle and all these were inclined toward the single-cut type.

Variety	G Number	Stand+	Flowering++ percentage
LaSalle	557	30	30
Oberhaunstad	607	42	30
Tetraploid	596	45	0
Silo	597	40	7
Resistenta	595	65	0
R 11	594	65	3

\+ Estimated percentage of plot area covered, June 17/57
++ Estimated percentages of inflorescences in bloom, June 17.

RED CLOVER SEED LOTS (T.T.T.) 1956 GUELPH 1957 DATA

Seed Lot G. No.	Description	Lbs. D.M./acre June 20	Lbs. D.M./acre July 29	Lbs. D.M./acre Total	% of LaSalle June 20	% of LaSalle July 29	% of LaSalle Total
LaSalle							
819	Cert. 1	4352	2341	6693	94	114	101
832	Reg. 1 Alberta grown	4592	2109	6701	100	103	101
738	Reg. 1	4575	2167	6742	99	106	101
743	Reg. 1 Alberta grown	4722	1996	6719	102	97	101
742	Cert. 1 Alberta grown	4835	1747	6583	105	85	99
706	Reg. 1 Check in research plots 1956	4563	1929	6492	99	94	97
British Double Cut							
818	22,400 lbs. importation	4378	2465	6843	95	120	103
737	4,200 lbs. "	4211	2312	6523	91	113	98
703		4173	2281	6454	91	111	97
720	*	4429	2037	6466	96	99	97
724	30,240 lbs. importation	4364	2058	6422	95	100	96
734	33,000 " " *	4143	2197	6340	90	107	95
739	43,646 " "	4217	2077	6294	91	101	95
725	30,000 " "	4218	2060	6278	92	101	94
748	34,000 " " *	3965	2127	6099	86	104	91
726	89,000 " "	4022	1943	5960	87	95	89
Canadian							
736	3,000 lbs.	4925	2488	7414	107	121	111
639	Simcoe Co. grown	4752	2640	7392	103	129	111
740	Ont. grown 1,800 lbs.	5061	2262	7323	110	110	110
756	Blend E. Ont. 1954 crop	4956	2336	7292	108	114	110
638	Simcoe Co. grown	4654	2522	7176	101	123	108
647	Bulk Simcoe, York, Grey	4596	2583	7179	100	126	108
746	Victoria & Peter. Co. 22,000 lbs.	4710	2414	7123	102	118	107
727	Bulk W. Ont.	4639	2429	7068	101	119	106
636	Simcoe Co. grown	4438	2573	7011	96	126	105
820		4668	2251	6919	101	110	104
754	Blend E. Ont. 1954 crop	4703	2192	6895	102	107	104
747	Blend 30 Central Ont. growers 40,000 lbs.	4383	2495	6878	95	122	103

Seed Lot G. No.	Description	Lbs. D.M./acre June 20	Lbs. D.M./acre July 29	Lbs. D.M./acre Total	% of LaSalle June 20	% of LaSalle July 29	% of LaSalle Total
751	Blend 9 E. Ont. growers 3,000 lbs.	4367	495	6862	95	122	103
741	Ont. grown 150 lbs	4541	2326	6867	99	114	103
643	York Co. grown	4278	2528	6806	93	123	102
762	Blend 2 local lots. New Liskeard	5532	1258	6791	120	61	102
823		4538	2181	6719	98	106	101
761	Single growers. E. Ont.	4345	2345	6690	94	114	100
642	York Co.	4164	2427	6592	90	118	99
648	Blend Grey, Bruce, Huron, Well.	4146	2409	6555	90	118	98
645	Blend Simcoe, Dufferin, Grey	4198	2280	6479	91	111	97
821	Paisley district. 2,000 lbs.	3734	2673	6406	81	130	96
730	New Liskeard area	4651	1647	6298	101	80	95
753	Renfrew, Single grower's lot.	4019	2214	6232	87	108	94
758	Blend 20 growers. E. Ont. 9,000 lbs.	4218	2035	6254	92	99	94
723		4261	1959	6220	92	96	93
700		4509	1713	6222	98	84	93
732		4075	2166	6141	88	106	92
755	E. Ont. Single growers lot.	3904	2154	6058	85	105	91
749	Ottawa variety. Blend 8 growers	3807	2206	6013	83	108	90
763	Earlton & Verner Blend 4,800 lbs.	4171	1839	6010	90	90	90
759	Blend E.Ont. growers.40,000 lbs.	3760	2196	5956	82	107	89
752	Blend, 5 E. Ont. growers.5500 "	3656	2186	5842	79	107	88
824		3846	2023	5869	83	99	88
831	Manitoulin. One grower many generations	4674	797	5471	101	39	82
830	" " "	4564	678	5242	99	33	79
B. Trefoil							
692	Viking	4067	1673	5740	88	82	86
L.S.D. 0.05		680	500	*			
C.V.		11.3	16.4	6.6			

** Varieties x cuts = 600
* Imported from same British seed firm

RED CLOVER SEED LOTS (T.T.T.) 1956 GUELPH. YIELD DATA 1957

	No. Seed Lots	Lbs. D.M./ac. June 20	July 29	Total	D.M. Yield as % of LaSalle June 20	July 29	Total
LaSalle	6	4606	2048	6655	100	100	100
Canadian	31*	4377	2295	6672	95	106	98
British	10	4212	2156	6367	91	105	96
Viking B. Trefoil	1	4067	1673	5740	88	82	86

RED CLOVER SEED LOTS (T.T.T.) 1956 GUELPH
COEFFICIENTS OF VARIABILITY

	No. Seed Lots	June 20	July 29	Season Total
LaSalle	6	3.6	10.0	1.5
British	10	3.6	7.3	3.8
Canadian	31*	8.5	10.7	7.1

RED CLOVER SEED LOTS (TTT) 1956. KEMPTVILLE. 1957 DATA

Seed Lot G. No.	June 25	August 8	Season Total
Ottawa			
749	91	130	104
LaSalle-*	100	100	100
Canadian			
761	93	108	98
753	86	103	94
756	90	99	93
758	89	100	93
753	86	103	91
754	80	101	87
759	85	90	87
755	78	86	81
752	72	93	79
British			
748	73	75	74
726	64	60	63

*Mean of 12 plots

BIRDSFOOT TREFOIL

The report on this legume contains the following sections:

A. Tables of yields of the strain trials seeded in 1955 and 1956

B. Relative gradings of progenies grown in the greenhouse and in the field

C. A brief description of seedings and nurseries established in 1957.

Birdsfoot Trefoil Strain Trial, O.A.C., 16C 1955
1957 Yields and 1956-7 Mean Yields in Tons D.M. per Acre

Variety	1957 Hay June 17	1957 Aftermath July 19	1957 Aftermath Sept. 1	1957 Aftermath Total	1957 Total	1956-7 Mean Hay	1956-7 Mean Aftermath	1956-7 Mean Season
Viking	1.64	.74	.49	1.23	2.87	1.47	1.11	2.58
Zoar	1.44	.81	.60	1.41	2.85	1.29	1.28	2.57
Roskilde	1.60	.65	.49	1.14	2.74	1.55	1.04	2.59
Italian	1.32	.78	.57	1.35	2.67	1.26	1.26	2.52
French	1.27	.79	.56	1.35	2.62	1.20	1.25	2.45
Granger	1.27	.75	.52	1.27	2.54	1.22	1.22	2.44
Guilderland	1.28	.67	.49	1.16	2.44	1.23	1.09	2.32
Montour	1.36	.72	.46	1.18	2.54	1.23	1.05	2.28
Empire	1.17	-	.58	.58	1.75	1.38	.82	2.20
Hudson	.98	-	.27	.27	1.25	1.05	.55	1.60
Mean	1.33	.59	.50	1.09	2.42	1.29	1.07	2.36
L.S.D. - 0.05	.14	.06	.15	.16	.23			
0.01	.20	.09	.20	.22	.31			
C.V.	7	8	20	10	7			

BIRDSFOOT TREFOIL STRAIN TRIALS, O.A.C., 17C, 1956

1957 Yields in Tons D.M. per Acre

Varieties Test # 1*	Hay June 17	Aftermath July 19	Aftermath Sept. 5	Total	Total
F_2 Hybrid	1.50	.63	.83	1.46	2.96
European	1.12	.78	.71	1.49	2.61
Cascade	.99	.70	.67	1.37	2.36
Mansfield	1.03	.69	.61	1.30	2.33
Viking	.91	.63	.50	1.13	2.04
Mean	1.11	.68	.66	1.35	2.46
L.S.D.-0.05	.23	.09	.12	.07	.09
0.01	.32	.13	.17	.10	.11
C.V.	13	9	12	10	4
Test # 2					
Eur. x 4 n L.tenuis	1.85	.63	.85	1.48	3.33
" "	1.93	.62	.86	1.48	3.41
Empire x "	1.60	.57	.88	1.45	3.05
Intercrosses	1.65	.63	.86	1.49	3.14
Mean	1.76	.61	.86	1.47	3.23
L.S.D.-0.05	N.S.	N.S.	N.S.	N.S.	N.S.
C.V.	14	10	9	9	14

* In part, at least, the lower yields in test # 1 as compared with those of test #2 may be attributed to poorer stands. Viking in particular had only fair plant stands. Compare with yield of Viking in the red clover test. In test #1, the order of earliness of flowering was: Viking, Cascade and Mansfield, European and F_2 hybrid.

SEEDLING AND FIELD GRADINGS OF PROGENY LINES

1. In the greenhouse, the seedlings being grown in 2" pots, gradings were as follows. In lot 3 environmental variation was very large.

   Lot 1. 44, 6, 34, 37, 26

   Lot 2. 108, 85, 82, 38, 110, 90, 4, 44, 6, 15, 75, 70, 29, 34

   Lot 3. 85, 136, 127, 82, 125, 131, 88, 79, 4, 130, 80, 84, 151, 14, 39, 12.

2. Field gradings of seeded progeny rows by groups, the best progenies appearing first.

   130, 90, 127, 6, ---87, 38, 3, 4, 6, 115, 125, ---78, ---84, 89, 91, 100.

3. Field gradings of spaced-planted progeny rows by groups

   39, 44, 85, 90, ---6, 130, 135, 136, ---4, 24, 38, 78, 127, 128, 147, ---9, 12, 14, 15, 26, 29, 34, 37, 125, 131, 70, 75, 79, 80, 82, 87, 88, 108, 110, 148.

From a comparison of seedling and field gradings the following trends may be noted:

(i) A low seedling vigor grading is usually correlated with a low vigor rating in the field. Examples are 12, 26, 37, 14, 15, 29, 34, 70, 75, 80. Exceptions to this trend are 39, 130. Both of these were located where environmental variation may have been more important than genotypic influences.

(ii) High seedling vigor does not guarantee high field gradings. Examples of progenies where the correlation was good are 6, 44, 85, 38, 4, 6, 136, 127.

Progenies that show poor correlation include 108, 82, 110. Both 82 and 108 were graded as slender types.

The results suggest that the progenies placed in the lower one-third of the group when screened for seedling vigor in the greenhouse may safely be discarded as unlikely to yield vigorous rows in the field. This study is being continued on a larger scale in 1958.

It will also be noted that the progenies found in the top one-third in the seeded progenies are also found, with one exception, in the top one-third of the spaced-planted progenies. Gradings in both cases were based on visual observations and not on harvest yields found by weighing. The gradings are based also only on the growth of the first year.

NEW SEEDINGS AND NURSERIES, 1957

(for full details see the 1957 field planting plans)

1.	Strain trial	10 Strains	7C
	Cascade	Granger	Roskilde
	European	Mansfield	Tana
	Empire	Otofte	Viking
		L. uliginosus	

Establishment was good for all Lotus corniculatus strains but that for the L. uliginosus was quite poor.

2.	Strain trial	11 strains	Kaine farm
	Cascade	Granger	Roskilde
	European	Mansfield	Tana
	Empire	Otofte	Viking
	L. tenuis		L. uliginosus

Establishment was satisfactory for all strains except the L. uliginosus.

3. Type trials, 7C and the Kaine farm

Twelve propagules of each of about 130 clines were transplanted to the field for study under close spacing.

4. Introductions and Progeny rows, 6C and 7C

Open pollination seed from a few selected clones along with introductions of several species and strains of Lotus were seeded in short rows for observational purposes.

5. Synthetics

Twelve synthetics were established at various locations for the purpose of providing polycross seed and of providing information on the techniques of handling a birdsfoot trefoil polycross nursery.

6. Selection nursery, 7, 8D

Populations were established as follows:

Granger	500	Roskilde	600
Viking	400	Otofte	700
Mansfield	850	Tana	650
Empire	450	Others	200

7. Spaced progeny rows, 7, 8D

The progeny, numbering 20-100 plants, of 35 selections were transplanted into spaced plots for the purpose of study of the progeny and of providing further material for selection.

8. Drainage adaptation test, 7, 8D

Vernal alfalfa, Viking and Empire birdsfoot trefoil Lotus uliginosus, diploid and tetraplois L. tenuis were seeded with and without timothy in rows across an area known to be subject to flooding for the purpose of demonstrating relative resistance to poor drainage.

Timothy Strains 1956, Guelph. First Hay Cut in 1957.

Strain	Pounds - D.M. per Acre			%	%	%
	Alfalfa + Timothy	Timothy	Alfalfa	Timothy in mixture	Leaf in Timothy	Crude Prot. in Timothy
Medium Cut*						
Common	5718	3716	2002	65.4	35.5	8.95
Climax	5454	3859	1595	70.6	39.0	8.94
S-48	5378	3160	2218	59.3	45.7	9.53
S-51	5436	2750	2686	52.5	47.9	9.75
Drummond	5230	3083	2147	59.0	41.0	9.43
Essex	5211	2868	2343	55.5	38.0	9.24
Late Cut*						
Common	5256	3028	2228	55.9	22.1	8.40
Climax	4958	2814	2144	56.8	24.7	8.99
S-48	5225	2854	2371	53.7	30.8	9.08
S-51	4594	2509	2085	54.6	30.2	8.91
Drummond	5257	2973	2284	58.1	28.4	8.66
Essex	4913	2628	2285	54.0	26.2	9.05
Mean -						
Medium Cut	5405	3239	2165	60.4	41.2	9.31
Late Cut	5034	2801	2233	55.5	27.1	8.85
L.S.D. cutting times 5%		N.S.	N.S.			
1%		N.S.	N.S.			
L.S.D. Varieties 5%		N.S.	406			
1%		N.S.	547			
C.V. cutting times (%)		9.9	35.4			
C.V. Varieties (%)		12.6	13.2			

* Medium cut harvested July 2; late cut July 17.

Timothy Strains 1956, Guelph. Aftermath and Total Dry Matter in 1957

Strain	Aftermath Pounds D.M./Ac. Alf. + Tim.	Aftermath Pounds D.M./Ac. Tim.**	Aftermath Pounds D.M./Ac. Alf.	% Tim. in Mix.	Season Total Pounds D.M./Ac. Alf. + Tim.	Season Total Pounds D.M./Ac. Tim.	Season Total Pounds D.M./Ac. Alf.
Medium Cut*							
Common	3122	968	2154	30.0	8840	4684	4156
Climax	3005	769	2236	26.1	8459	4628	3831
S-48	3113	354	2759	11.2	8491	3514	4977
S-51	3031	312	2719	10.3	8468	3061	5407
Drummond	2922	456	2466	15.5	8153	3539	4614
Essex	3212	398	2814	12.5	8423	3265	5158
Late Cut*							
Common	2268	452	1816	20.1	7524	3480	4044
Climax	2353	414	1939	17.6	7310	3229	4081
S-48	2344	160	2284	6.7	7568	3014	4554
S-51	2478	210	2268	8.7	7072	2719	4353
Drummond	2459	224	2235	9.3	7716	3197	4519
Essex	2334	271	2063	11.3	7247	2899	4348
Mean -							
Medium Cut	3068	543	2525	17.6	8472	3782	4691
Late Cut	2373	289	2101	12.3	7406	3090	4317
L.S.D. cutting times 5%	243	230			786	N.S.	
L.S.D. for varieties 1%	447	N.S.			1443		
5%	N.S.	113			N.S.	403	
1%	N.S.	153			N.S.	543	
C.V. for varieties	8.3	26.7			7.1	11.5	
C.V. for cutting times	9.7	60.1			10.7	31.9	

* Medium cut harvested August 22; late cut September 5.
** Variety x time of cutting significant at 1% level.

Summary Percent Increase in Leafiness of Timothy Strains Relative to Common at Guelph

	1952 Seeding	1953 Seeding			1956 Seeding
	1955	1954	1955	1956	1957 (m)
S-48	-	-	19.2	8.2	10.2
S-51	-	-	21.1	7.0	12.4
Drummond	15.6	-	-	-	5.5
Climax	6.7	10.4	8.0	1.8	3.5
Medon	6.2	9.9	3.0	-	-
Milton	-	-1.4	-	-0.9	-
Essex	-	-	-	-	2.5

* Medium dates of cutting

Timothy Varieties 1956. Pounds D.M./Acre in First Hay Cut in 1957 at Kemptville and Ridgetown

	Kemptville Alfalfa + Timothy June 25	Ridgetown Timothy
Common	4199	2880
Climax	4041	2890
S-48	3511	2580
S-51	3697	
Essex	3741	
L.S.D. -0.05		N.S.

(Hay-Pasture) 1955, Guelph. Pounds D.M. Per Acre.

Variety	1956 Hay July 6	1956 Aftermath Aug.15	1956 Aftermath Oct.19	1956 Aftermath Total	1956 Season Total	1957 Hay June 26	1957 Aftermath Aug.12	1957 Aftermath Total	Two Year Av. Hay	Two Year Av. Aftermath	Two Year Av. Total
			Brome + Alfalfa								
Saratoga	4724	2061	1315	3376	8100	5786	2777	8562	5255	3076	8331
Lyon	4998	1979	1269	3248	8246	5427	2713	8140	5212	2980	8192
Southland	4885	2095	1267	3362	8247	5468	2645	8114	5176	3003	8179
Achenbach	4576	1727	1272	2999	7575	5630	2407	8037	5103	2703	7806
Can. Brome	3923	1711	1152	2863	6786	4862	2565	7427	4392	2714	7106
Mean	4621	1915	1255	3170	7790	5434	2621	8056	5028	2895	7923
L.S.D. 0.05						N.S.	N.S.	N.S.			
0.01						N.S.	N.S.	N.S.			
C.V.						38	6	8			
			Brome Component								
Saratoga	2324	175	54	229	2553	2818	495	3312	2572	362	2934
Lyon	2414	91	51	142	2556	2379	201	2580	2396	171	2567
Southland	2628	86	52	138	2766	2359	228	2587	2493	183	2676
Achenbach	2256	92	36	128	2384	3243	185	3428	2749	156	2905
Can. Brome	1860	74	20	94	1954	2428	232	2660	2144	163	2307
Mean	2296	104	43	147	2443	2645	268	2913	2470	207	2677
L.S.D. 0.05						N.S.	80				
0.01						N.S.	120				
C.V.						26	25				
			Alfalfa Component								
Saratoga	2400	1886	1261	3147	5547	2968	2282	5250	2683	2714	5397
Lyon	2584	1888	1218	3106	5690	3048	2512	5560	2816	2809	5625
Southland	2257	2009	1215	3224	5481	3109	2417	5526	2683	2620	5503
Achenbach	2320	1635	1236	2871	5191	2387	2222	4609	2354	2547	4901
Can. Brome	2063	1637	1132	2769	4832	2434	2333	4767	2248	2551	4799
Mean	2325	1811	1212	3023	5347	2789	2353	5143	2558	2688	5246

TABLE 19 - YIELDS OF LEGUME IN THE SEEDLING AND FIRST HARVEST YEARS OF EXPERIMENT 3 IN POUNDS DRY MATTER PER ACRE

Seedling Year 1956		First Harvest Year 1957							
Mixture	August 28	Mixture	Hay Cut	Mixture	First Aftermath	Mixture	Second Aftermath	Mixture	Season Total
DuPuits alone	2695	Alfa + Lyon	4625	DuPuits + Lyon	3590	DuPuits + Lyon	1802	DuPuits + Lyon	9748
" + Lyon	2586	DuPuits alone	4374	DuPuits alone	3535	" + Can.Brome	1735	Alfa + Lyon	9669
" + Can.Brome	2565	" + Lyon	4357	Alfa + Lyon	3367	" alone	1687	DuPuits alone	9597
" + Saratoga	2483*	" + Can.Brome	4320	DuPuits + Can.Brome	3146	Alfa + Lyon	1677	" + Can.Brome	9201
Alfa + Lyon	1994	Vernal + Achenbach	4105	Vernal + Achenbach	3042	DuPuits + Saratoga	1594	Vernal + Achenbach	8366
Can.Grimm † Lyon	1808	DuPuits + Saratoga	3153	DuPuits + Saratoga	2871	Vernal + Achenbach	1219	DuPuits + Saratoga	7619
Vernal + Achenbach	1741	Vernal + Climax	2690	Can.Grimm + Lyon	2627	" + Wisc.55	1187	Vernal + Wisc.55	6327
" + Climax	1702	" + Wisc.55	2632	Vernal + Wisc.55	2508	" + Lyon	1153	" + Climax	6249
" + Wisc.55	1686	" + S-4475	2566	" + Climax	2448	Can.Grimm + Lyon	1121	" + Lyon	5951
" + Wisc.63	1654	" + Lyon	2524	" + Lyon	2275	Vernal + Climax	1112	Can.Grimm + Lyon	5676
" + Can.Brome	1582	" + Can.Brome	2324	Can.Grimm + Can.Brome	2157	Can.Grimm + Can.Brome	1065	Vernal + S-4475	5390
" + Lyon	1567	" + Wisc.63	2185	Vernal + Wisc.63	2094	Vernal + Can.Brome	1024	Can.Grimm + Can.Brome	5308
" + S-4475	1553	Can.Grimm + Can.Brome	2086	" + S-4475	1937	" + Wisc.63	888	Vernal + Can.Brome	5188
Can.Grimm + Can.Brome	1478	" " + Lyon	1928	" + Can.Brome	1840	" + S-4475	887	" + Wisc.63	5167
Vernal + Saratoga	1442	Vernal + Saratoga	1551	" + Saratoga	1681	" + Saratoga	758	" + Saratoga	3990
Rambler + Lyon	582	Rambler + Lyon	601	Rambler + Lyon	596	Rambler + Lyon	129	Rambler + Lyon	1326
Viking + Frode	288	Viking + Frode	188	Viking + Frode	111	Viking + Frode	87	Viking + Frode	386
Mean	1730	Mean	2718	Mean	2343	Mean	1125	Mean	6186

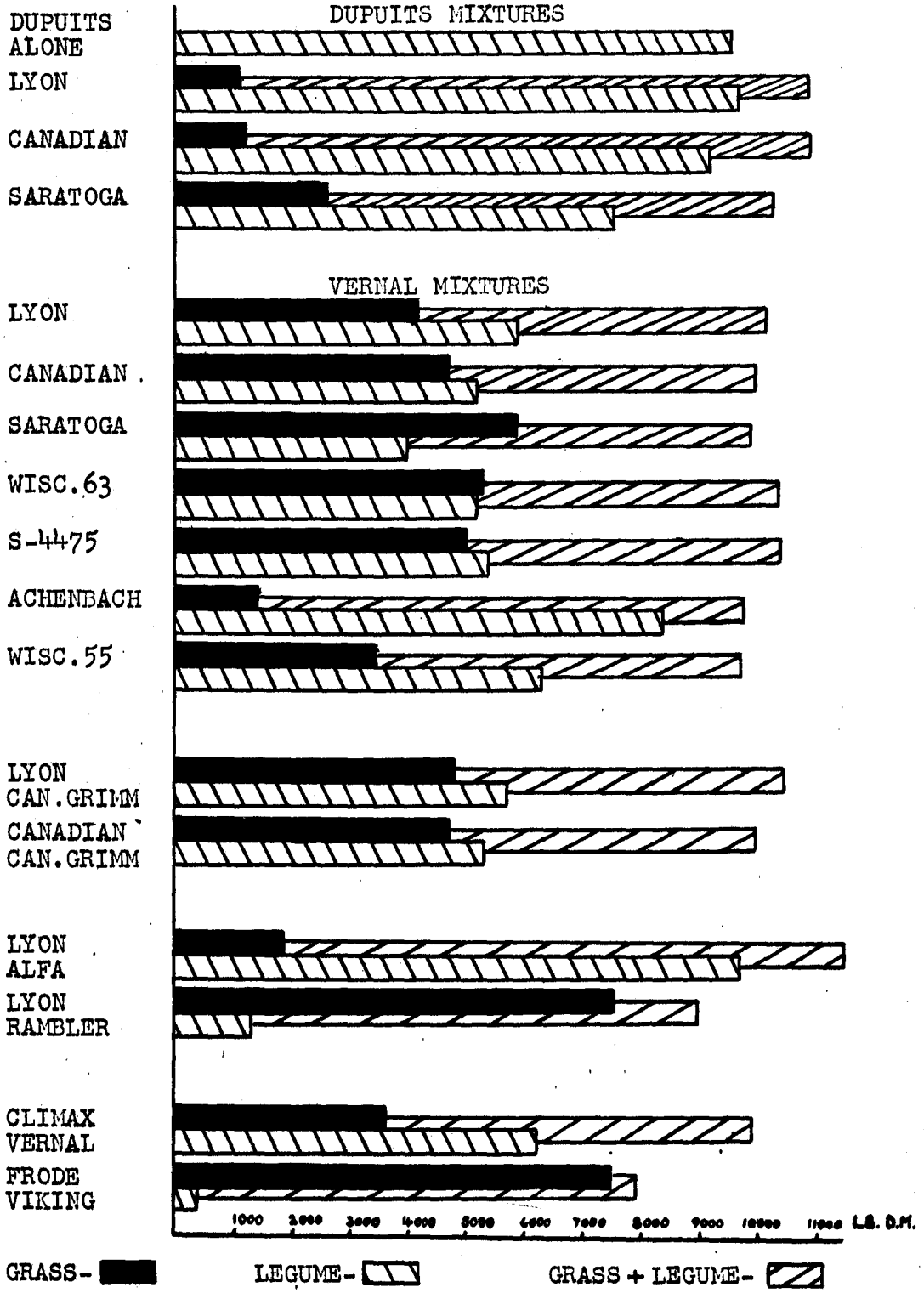
* Levels of significance according to Hartley's test, e.g. yields above the highest full line are significantly greater than yields below the highest dotted line.

TABLE 20 - YIELDS OF GRASS IN THE SEEDLING AND FIRST HARVEST YEARS OF EXPERIMENT 3 IN POUNDS DRY MATTER PER ACRE

Seedling Year 1956		First Harvest Year 1957									
Mixture	August 28	Mixture	Hay Cut	Mixture	First Aftermath	Mixture	Second Aftermath	Mixture	Season Total
Frode + Viking	1089*	Lyon + Rambler	5820	Saratoga + Vernal	1685	Frode + Viking	867	Lyon + Rambler	7574
Saratoga + Vernal	374	Frode + Viking	4962	Frode + Viking	1638	Saratoga + Vernal	568	Frode + Vernal	7467
Lyon + Rambler	347	Saratoga + Vernal	3669	S-4475 + Vernal	1597	Wisc.63 + "	507	Saratoga + "	5922
Can.Brome + Can.Grimm	262	Lyon + Can.Grimm	3612	Can.Brome + "	1445	S-4475 + "	410	Wisc.63 + "	5263
" " + Vernal	244	Wisc.63 + Vernal	3491	Lyon + Rambler	1420	Lyon + Rambler	333	S-4475 + "	4981
Lyon + "	196	Can.Brome + Can.Grimm	3091	Can.Brome + Can.Grimm	1331	Lyon + Vernal	270	Can.Brome + Vernal	4708
S-4475 + "	189	" " + Vernal	3008	Wisc.63 + Vernal	1266	Can.Brome + Can.Grimm	257	Lyon + Can.Grimm	4693
Saratoga + DuPuits	177	S-4475 + "	2974	Lyon + "	1141	" " + Vernal	256	Can.Brome + "	4679
Wisc.63 + Vernal	173	Lyon + "	2830	" + Can.Grimm	896	Climax + "	206	Lyon + Vernal	4241
Lyon + Can.Grimm	164	Climax + "	2648	Wisc.55 + Vernal	890	Lyon + Can.Grimm	186	Climax + Vernal	3610
" + Alfa	164	Wisc.55 + "	2392	Climax + "	756	Wisc.55 + Vernal	180	Wisc.55 + "	3462
Can.Brome + DuPuits	138	Saratoga + DuPuits	1842	Saratoga + DuPuits	700	Saratoga + DuPuits	100	Saratoga + DuPuits	2642
Wisc.55 + Vernal	131	Lyon + Alfa	1485	Can.Brome + "	466	Achenbach + Vernal	94	Lyon + Alfa	1852
Climax + Vernal	80	Can.Brome + DuPuits	1178	Achenbach + Vernal	352	Can.Brome + DuPuits	33	Can.Brome + DuPuits	1677
Lyon + DuPuits	64	Achenbach + Vernal	975	Lyon + Alfa	348	Lyon + DuPuits	20	Achenbach + Vernal	1421
Achenbach + Vernal	19	Lyon + DuPuits	929	" + DuPuits	174	" + Alfa	19	Lyon + DuPuits	1123
Mean	238	Mean	2807	Mean	1006	Mean	269	Mean	4082

* Levels of significance according to Hartley's test, e.g. yields above the highest full line are significantly greater than yields below the highest dotted line.

CHART SEASONAL YIELDS 1957.



Orchard Strains (Pasture) 1955, Guelph.

Pounds D.M. per Acre

Variety	1956*			1957			
	June 11	July 13	Total	May 16	June 17	Aug. 19	Total
Frode	1207	1082	2289	1594	796	816	3206
Past. Lab. III	1154	1145	2299	1670	707	767	3143
Weibulls H-11	890	1229	2119	1347	785	938	3069
Oron	1177	998	2175	1620	648	750	3017
Common	1254	1085	2339	1609	639	709	2957
S-143	584	1257	1841	1217	754	693	2664

* growth poor in 1956.

Orchard Strains, 1956, Kemptville and Ridgetown.

Pounds Hay D.M. per Acre

	Kemptville* June 25	Ridgetown**
Past. Lab. III	3495	-
Frode	3446	2480
Common	3414	2210
Hercules	3145	-
S-37	2895	2570

* Yield of orchard + alfalfa
** Yield of orchard - pure stand seeding

1958 – 2-year ave – Total
O.g component

Orchard Strains (Hay) 1956, Guelph. D.M. Yields in Pounds Per Acre of the Mixture and of the Orchardgrass Component in 1957.

Mixture	Hay	Aftermath			Season
	June 24	July 24	Sept.5	Oct.22	Total
	Orchard Component				
Vernal + Common	3436	768	495	130	4828
+ Frode	3065	872	497	112	4546
+ Pa. III	3117	747	450	80	4393
+ Hercules	2614	702	472	109	3898
+ S-37	2446	771	427	177	3821
+ Ott. 100	2295	558	546	102	3500
+ Grasslands	1729	526	444	200	2899
DuPuits + Frode	2306	777	432	186	3700
Mean	2626	715	470	137	3948
L.S.D. at 5%	898	211	N.S.	51	346
1%	N.S.	N.S.	N.S.	70	N.S.
C.V. (in %)	23	20	17	25	6
	Total Yield				
Vernal + Common	5349	1829	1389	350	8917
+ Frode	5303	1753	1382	308	8745
+ Pa. III	5421	1760	1319	300	8800
+ Hercules	4952	1782	1382	375	8491
+ S-37	4901	1903	1318	406	8528
+ Ott. 100	5263	1912	1509	326	9010
+ Grasslands	5332	1875	1522	535	9264
DuPuits + Frode	5783	2367	1982	954	11087
Mean	5288	1898	1475	444	9105
L.S.D. at 5%	N.S.	224	173	105	802
1%	N.S.	306	236	143	1096
C.V. (in %)	8	8	8	16	6

Orchard Grass Strains (Silage) 1956, Guelph

Mixture	June 14	July 10	Aug. 22	Oct. 22	Season Total
	Pounds D.M. per Acre for Orchard Component				
DuPuits + Frode	2844	722	626	360	4553
+ Common	2726		546	415	4445
+ Pa. III	2737	652	540	339	4268
+ Hercules	2226	607	386	348	3567
+ S-37	1925	649	445	372	3391
Mean	2492	678	509	367	4045
L.S.D. at 5%	N.S.	N.S.	N.S.	N.S.	N.S.
1%	N.S.	N.S.	N.S.	N.S.	N.S.
C.V. (in %)	26	28	24	22	18
	Pounds D.M. - per Acre for Mixture				
DuPuits + Frode	4938 3	2141 2	2211 1	1423 4	10713
+ Common	5041 1	2103 3	2081 4	1479 1	10705
+ Pa. III	5010 2	2070 5	2104 3	1412 5	10597
+ Hercules	4910 4	2090 4	1964 5	1479 1	10443
+ S-37	4766 5	2187 1	2199 1	1424 3	10576
Mean	4933	2118	2112	1443	10607
L.S.D. at 5%	N.S.	N.S.	N.S.	N.S.	N.S.
1%	N.S.	N.S.	N.S.	N.S.	N.S.
C.V. (in %)	6	18	7	4	4
	Pounds D.M. per Acre for DuPuits Component				
DuPuits + Frode	2094	1419	1585	1063	6160
+ Common	2315	1345	1535	1064	6260
+ Pa. III	2273	1418	1564	1073	6329
+ Hercules	2684	1483	1578	1131	6876
+ S-37	2841	1538	1754	1052	7185
Mean	2441	1440	1603	1076	6562
	Percent Orchard grass in Mixture				
DuPuits + Frode	57.7	34.3	28.4	25.5	
+ Common	53.4	36.2	25.8	27.9	
+ Pa. III	54.4	31.8	25.3	24.1	
+ Hercules	45.2	29.0	20.2	23.6	
+ S-37	40.6	29.6	20.3	26.0	
Mean	50.3	32.2	23.9	25.4	

Orchard Strains (Pasture) 1956, Guelph. D.M. Yields in Pounds Per Acre of the Mixture and of the Orchardgrass Component in 1957.

Mixture	May 16	June 17	July 17	Aug.13	Oct.22	Season Total
Orchard Component						
Ladino + Common	1483	1046	1044	457	498	4528
+ Frode	1337	1082	1003	497	470	4389
+ Pa. III	1370	1186	989	486	360	4391
+ Hercules	1318	1111	939	455	403	4225
+ S-37	986	1015	904	532	547	3983
+Ott. 100	881	906	802	437	313	3338
+ S-143	1033	1108	959	494	578	4171
DuPuits + Frode	870	605	755	395	313	2938
+ S-37	627	457	640	420	469	2633
Mean	1101	946	893	464	441	3844
L.S.D. at 5%	231	142	164	N.S.	90	398
1%	312	193	223	N.S.	122	539
C.V. (in %)	14	10	13	13	14	7
Total Yield						
Ladino + Common	1937	1856	1768	783	881	7224
+ Frode	1917	1954	1808	890	827	7397
+ Pa. III	1942	2015	1797	940	745	7439
+ Hercules	1867	2041	1805	872	787	7371
+ S-37	1665	2047	1821	963	903	7399
+ Ott.100	1586	2112	1816	978	691	7182
+ S-143	1603	2012	1848	862	945	7271
DuPuits + Frode	2205	1609	1124	736	843	6517
+ S-37	2114	1519	1152	834	1074	6694
Mean	1871	1907	1660	873	855	7166
L.S.D. at 5%	124	218	165	N.S.	133	434
at 1%	168	295	223	N.S.	180	588
C.V. (in %)	5	8	7	14	11	4

Reed Canary Strains 1956, Guelph. 1957 Data

Strain	Pounds D.M. per Acre			Spring Vigor* May 7	Anthesis Date June
	Hay June 21	Aftermath Aug. 23	Total		
Common	7861	2273	10134	5	17
Ioreed	7570	2456	10026	2	17
Ott. 1133-7	7740	2085	9824	4	18
Ott. Syn. 1	7657	1984	9640	5	18
Ott. Syn. 2	7391	2026	9416	3	19
Ott. Syn. 3	7289	1931	9219	3	20
L.S.D. - 0.05	N.S.	296	N.S.		
0.01	-	397	-		
C.V. (%)	6.8	13.7	6.9		

* 1 (low) to 5 (high). Range in height was 6" - 12".

Perennial Ryegrass Strains 1956, Guelph. 1957 Data

Strain	Hay Yield Lbs. D.M./Ac. July 2	% Winter Survival May 7	Spring Vigor* May 7	% Rust Sept.
Ott. Syn. 1	5192	95	5.0	90
Ott. Syn. 1A	5156	95	5.0	90
Pacific	4794	90	3.8	50
Peron	4317	90	3.0	50
Kent Indigenous	3415	75	2.5	0
Common	3408	80	1.5	5
S-24	3211	85	2.3	0
S-23	2959	55	2.5	5
S-100	2351	55	1.3	0
L.S.D. 0.05	512			
0.01	694			
C.V. (%)	9.2			

* 1 (low) to 5 (high). Ranger in height 2" - 6".

Rape and Kale Yields in Tons per Acre

R.P.O. F.H. 13 Outline in 1954 Report

Variety	Green Weight 1957	Green Weight 4 year Mean	Percent Dry Matter 1957	Dry Matter 1957	Dry Matter 4 year Mean
Gartons Early Giant Rape	32.4	26.5	13.8	4.48	3.24
Gartons English Rape	27.4	23.5	15.0	4.09	2.93
MacDonalds Dwarf Essex	--	19.8*	--	--	2.25*
Groats English Broadleaf	31.6	--	15.2	4.58	--
Dunns Essex Giant	34.0	--	15.1	4.87	--
Sharpes Rape-Kale	31.5	23.5	14.0	4.42	2.79
Sharpes Hungry Gap Kale	31.6	22.3	14.0	4.29	2.83
Sharpes 1000 Headed Kale	33.1	22.5	14.9	4.91	2.91
Dunns Marrowstem Kale	37.9	--	12.7	4.88	--
Dunns 1000 Headed Kale	30.3	--	15.1	4.94	--
Dunns Canson Kale	32.6	--	14.5	4.72	--
Gartons Marrowstem Kale	34.9	23.8	14.1	4.07	2.55
MacDonalds Marrowstem Kale	--	19.3*	--	--	1.99*
L.S.D.				N.S.	
C.V.				13.4	

* - 3 year mean