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NOT FOR PUBLICATION  
Department of Crop Science

$\frac{120}{34}$

**FORAGE CROP INVESTIGATIONS - ONTARIO**  
**1964 Report on Field Trials of Varieties and Mixtures**



Research Station, Ottawa

Experimental Farm, Kapuskasing

Experimental Farm, Fort William

Kemptville Agricultural School, Kemptville

Ontario Agricultural College, Guelph

Western Ontario Agricultural School, Ridgeway

Demonstration Farm, New Liskeard

## Foreword

This report contains data from trials established to evaluate varieties and mixtures. It is not complete in that only data summarized to November 1, 1964 are included. This report is prepared for use by the members of the Ontario Forage Crops Committee and others interested in the forage program in Ontario.

The data included cannot be considered in most cases as a complete evaluation of varieties and mixtures. Field trials are being conducted continuously and data from several years and several trials are necessary to determine the potential value of any variety or mixture in Ontario agriculture. To assist the reader, a brief summary of the varieties of each species and of the mixtures is included.

A co-operative federal-provincial program is in operation in Ontario for variety and mixture testing. To facilitate the planning of new trials and the summarizing of the data, co-ordinators have been appointed for each species and for mixtures. These co-ordinators are as follows:

Alfalfa	Dr. W.E. Tossell, Crop Science Dept., O.A.C.
Birdsfoot Trefoil	Dr. B.E. Twamley, Crop Science Dept., O.A.C.
Red Clover	H.A. McLennan, Genetics and Plant Breeding Research Institute, C.E.F.
White Clover	L.P. Folkins, Genetics and Plant Breeding Research Institute, C.E.F.
Bromegrass	Dr. E.E. Gamble, Crop Science Dept., O.A.C.
Timothy	Dr. W.R. Childers, Genetics and Plant Breeding Research Institute, C.E.F.
Orchardgrass, Fescues,	
Other grasses	Dr. B.R. Christie, Crop Science Dept., O.A.C.
Forage Mixtures	Dr. J.E. Winch, Crop Science Dept., O.A.C.

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## Alfalfa Varieties

A-1a

The more than two dozen varieties or strains tested below are arranged somewhat arbitrarily into five maturity groups with the DuPuits type at one extreme and Beaver at the other. There are two that are of the maturity class of Vernal, nine that are a little earlier than Vernal, and five that lie somewhere in the range between DuPuits and Ontario Variegated or Cayuga.

The DuPuits group - early, high yielding, vigorous, excellent aftermath recovery. Being long season plants they sometimes fail to prepare for winter before an early killing frost and so they are classed as only moderately winter hardy. Most of them were developed in Europe out of the Flamande type of alfalfa and are usually not wilt resistant.

Alfa - Developed at Weibulsholm, Sweden, and handled in Ontario by Ontario Seed Cleaners and Dealers, Toronto.

Cardinal - Developed by Tourneur Frères, France. Handled by Northrup-King. One of the coarsest-stemmed members of the Flamande group.

Europe - Developed in France by F. Desprez. Handled by Walcott-Taylor.

Eynsford - Developed by W. Alexander in association with Gunson Seeds, England. Handled in Canada by Smith Seeds, Ltd. Selected in Kent out of "Southern French type of alfalfa".

FD100 - Developed by *Desprez* France. Handled by Walcott-Taylor in conjunction with Pfister Associated Growers. Reputed to be a little hardier than DuPuits.

Glacier - Bred by Mr. Vitrac of Tourneur Frères, France. Handled by Northrup-King. Originally designated as NK 505. Licensed for Canada in December, 1964. Not as coarse as DuPuits, a little later and more winter-hardy. Not wilt-resistant.

Breeding Method: Glacier is a synthetic variety which originated from the cross (DuPuits x M. falcata) x Franconia. A single-plant from an S<sub>2</sub> generation of DuPuits was crossed with a plant of M. falcata. A progeny from the F<sub>1</sub> population was crossed with a single S<sub>1</sub> plant of Franconia. The progeny obtained were evaluated from the F<sub>1</sub> generation to the F<sub>4</sub>. The parent stocks for Glacier were then selected from this population.

Haymor - Handled by Northrup-King as NK 502. Not as coarse as DuPuits. Originated as variety crosses. *only 2 plants in range*

Mega - Developed at Svalov, Sweden. Handled in Canada by Hogg & Lytle. Limited data suggest it has a higher yield potential than DuPuits. Breeding Method: Mega is a synthetic variety of 75 clones, selected from alfalfa of Flemish origin. After a severe winter in South East Sweden (1948-49) 688 of the surviving plants were selected on the basis of vigour, leafiness and seed set. These 688 plants were allowed to intercross under natural conditions and seed was harvested. The plants were also evaluated further for vigour, maturity, flower production, seed set and resistance to Pseudopeziza species. On the basis of this evaluation, 2,000 seedlings of the superior plants were established. From these 75 were selected on the basis of vigour, leafiness and seed set, and these 75 plants form the basic stocks for Mega.

Orchies - Developed in France by Fillon and sponsored by Calapproved Seed Growers Association.

Saranac - Bred at Cornell by Murphy and Lowe. Breeding history not yet published. A wilt-resistant Flamande type of the same maturity status as DuPuits.

The following five are earlier than the standard or Vernal type of alfalfa but differ in some essential feature from DuPuits.

CL35 - Developed by Caladino Farm Seeds. It is a synthetic of 16 clones selected of the Flamande type. May be slightly later than DuPuits. Not wilt resistant.

RP33 - Handled by Rudy Patrick. A synthetic variety. Flamande type with wilt-resistance.

567 Warrior - Sponsored and handled by Northrup-King, originally as NK507. Described as a variety cross. It is intermediate in maturity, hardier and finer stemmed than DuPuits. It has some wilt resistance. *Intermediate between Vernal and Du Puits*

Tuna - Developed at Ultuna, Sweden, by Torssell out of German stock. Handled by Hogg & Lytle. In winter hardiness, vigor, and maturity, and aftermath production Tuna is intermediate between DuPuits and Vernal. It is not wilt resistant.

Hybride de Crecy - Developed by Genest & Company, France. Sponsored by Ontario Seed Cleaners, Toronto. It originated through several generations of selfing and selection, followed by diallel crossing. Very uniform, rapid aftermath recovery, tall, rather fine in the stem. More winter hardy than DuPuits. Wilt susceptible.

The following are slightly earlier and have a little longer growing period than Vernal.

Arnim - Developed in Germany. Handled by Arnold-Thomas Seed Service, California. Consists of material selected out of M. sativa x M. falcata hybrids. Winter hardy but wilt susceptible. Flowers unusually variable in color. It may be earlier than the rest of the group. *Intermediate between Vernal and Du Puits in maturity at Iowa*

Cayuga - Bred by Murphy at Cornell. Originally designated as New York Syn. B. A synthetic of 10 clones of varied origin. Wilt resistant and winter hardy. Not as fine in the stem as Vernal but a little faster in aftermath recovery.

NK503, 504 - Sponsored by Northrup-King. These are described as Vernal types but are a little earlier. Wilt resistance status not given.

Narragansett - Developed in Rhode Island by Odland. A synthetic composed of clones from Cassack, Ladak, Ontario Variegated, and M. sativa x M. falcata hybrids. A hardy, "tough", vigorous variety with some wilt resistance.

High Seed Set Narragansett - Being processed by Murphy and Lowe at Cornell. This strain is earlier than Narragansett and appears to have considerable wilt resistance.

= Narragansett, MK II - better seed set

Wilt Resistant Narragansett - Being processed at Cornell. Present status unknown.

Ontario Variegated - Common or commercial alfalfa which today may trace back to Ranger, DuPuits, etc., as well as to acclimatized original material.

Rhizoma - Developed by Moe, University of British Columbia. Originated in hybrid strains resulting from a cross between *M. sativa* and *M. falcata*. Winter hardy but not wilt resistant; broad crowned with a tendency to creep in some western areas. Has many yellow and green flowers.

WL202 - A Waterman-Loomis product. Synthetic of 33 clones, 31 from Vernal and 2 from Narragansett. Similar to Vernal in most characteristics but has slightly less fall dormancy.

Pioneer 525 - Developed by the co-operative efforts of Arnold-Thomas and Pioneer Hi-Bred Corn Company. A synthetic of 22 clones selected out of Vernal. It is wilt resistant and between Vernal and Ranger in maturity.

The next group consists of Vernal and Progress, and following it is Beaver.

Vernal - Bred at Wisconsin by Brink. A synthetic of 11 clones out of Cossack, Ladak, Kansas common, and Siberian x Cossack hybrids. Very winter hardy; wilt resistant; fine stemmed and leafy. The most persistent of varieties currently in use. Has a considerable number of yellow and green flowers.

Progress - Developed by Caladino Farm Seeds, and entered by that firm under the designation CL10. A synthetic of 19 clones selected out of Vernal. This variety has a lower percentage of green and yellow flowers than Vernal but in other respects it closely resembles it.

Beaver - Bred by Bolton at Saskatoon. A synthetic of 10 clones selected from Ladak, Grimm, Cossack, Turkestan, Viking. A very late variety with excellent winter hardiness and wilt resistance. Has early fall dormancy and is slow in aftermath recovery.

*CL-25 equals Progress or CL10 in winter hardiness, and in Johnston's letters, March 23, 1965, is reputed to exceed Progress and Vernal in yield*

*CL-30 equals Buffalo in hardiness. Exceeds Vernal, Progress, and CL-25 in yield, according to Johnston*

*Pioneer 522 - Pioneer Hi-Bred (now, Arnold-Thomas Seed Service)  
Finer, later, more variegated in color than 525, more hardy.*

*MK 510 - Tournours Freres, - flamande - maybe slightly harder than Du Puits.*

*Omaha - Flamande type - Wilman*

VARIETIES IN ONTARIO ALFALFA PRELIMINARY TRIALS 1960-1965

	Seeded 1960	Seeded 1961	Seeded 1962					Seeded 1963		Seeded 1964		
	Guelph Kemp.	Ridg. Ottawa	Guelph	Kemp.	Kapus.	Ridg. <sup>1</sup>	Ott. <sup>2</sup>	Ridg.	Ott.	Guelph	Kempt.	
*Vernal	X	X	X	X	X	X	X	X	X	X	X	
*DuPuits	X	X	X	X	X	X	X	X	X	X	X	
High Seed Set Narrag.	X	X										
Saranac	X	X								X	X	
Wilt Res. Narrag.	X	X										
-----												
Cardinal	Series 1	X					X					
Narragansett		X										
Orchies		X					X					
Haymor (NK 502)		X										
Cayuga		X	X				X				X	
-----												
NK 503		X										
NY Syr. A		X										
NK 504		X										
-----												
Beaver	Series 2	X	X	X	X	X	X					
Tuna		X	X	X	X	X	X	X	X			
-----												
Glacier	Series 3	X	X	X	X	X	X	X	X			
Eynsford		X	X	X	X	X			X	X		
Progress (CL 10)		X	X	X	X	X			X	X		
Mega		X	X	X	X	X		X	X	X		
Warrior (NK 507)		X	X	X	X	X			X	X		
-----												
NK 508		X	X	X	X			X	X			
Hybride de Crecy (A 9 H)		X	X	X	X		X	X	X			
Europe		X	X	X	X							
FD 100			X	X	X			X	X			
*Rhizoma					X							
-----												
*Alfa	Series 4	X	X	X	X	X	X	X	X	X	X	
Pioneer 525		X	X	X	X	X	X	X	X	X	X	
Arnim		X	X	X	X	X	X	X	X	X	X	
RP 33		X	X	X	X	X	X	X	X	X	X	
W.L. 202		X	X	X	X	X	X	X	X	X	X	
C.L. 35												
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										Series 5	X	X

*See also performance tables 1-13.*

\* check varieties. <sup>1</sup> Reseeded because 1961 seeding winterkilled in 1961-1962. <sup>2</sup> Extra seeding at Ottawa. This also includes Ladak, 3 Rambler lots and 5 Swift Current lots.

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## SUMMARY: MEAN YIELDS OF CERTAIN VARIETIES IN SCREENING TRIALS

Comparisons	Tests		Yield	
	No. of Locations	No. of Test Years	Hay	Total
Vernal Cayuga	4	11	4610 4400	7990 8150
DuPuits Eynsford	3	6	4410 4510	8290 8800
DuPuits F.D.-100	2	3	4710 4840	8770 8860
DuPuits Glacier Tuna	4	9	4540 4810 4530	8250 8990 8110
DuPuits Mega	4	7	4600 4920	8530 9220

## SUMMARY: MEAN YIELDS OF CERTAIN VARIETIES IN PERFORMANCE TRIALS

Comparisons	Tests		Yield - Hay		Tests		Yield - Pasture
	No. of Locations	No. of Test Years	Cut 1	Total	No. of Locations	No. of Test Years	Total
Vernal Cayuga	3	4	5770 5480	9890 9750	3	4	7490 7480
Alfa DuPuits Glacier	5	7	- 4430 4710	- 6880 7240	4	5	5770 5670 5750
DuPuits Tuna Alfa	2	3	4670 4760	7310 6930	1	1	5500 5190 5190

SUMMARY: YIELDS OF CERTAIN ALFALFA VARIETIES IN SCREENING TRIALS

Variety	Guelph 1960		Kemptville 1960		Ottawa 1961 Ave. 62-63	Guelph 1962		Kemptville 1962		Ridgetown 1962		Kapusksing 1962		Ridgetown 1963		
	Ave.1961-64		Ave.1961-63		Total	Ave.1963-64		Ave.1963-64		Ave.1963-64		Ave.1963-64		Ave. 1964		
	Hay	Total	Hay	Total		Hay	Total	Hay	Total	Hay	Total	Hay	Total	Hay	Total	
Alfa															5880	9570
DuPuits	3900	7660	4030	7390	11060	4600	10060	4190	8190	4880	7280	4440	6630	5760	9940	
Vernal	4270	7660	4520	7650	9660	4860	10820	4140	7200	5430	7500	4240	6230	5320	9070	
Cayuga	3920	7620	4600	8030	10250					5070	7280					
Eynsford						4800	11260	4330	8350			4390	6790			
FD-100								4310	8380						5900	9810
Glacier						4940	11220	4640	8590	4910	7560	4330	6686	5650	9800	
Mega						4950	11420	4630	8880			4700	7210	5900	9550	
Tuna						4830	11020	4180	7870	4190	6320	4510	6790	5310	9020	

SUMMARY: YIELDS OF CERTAIN ALFALFA VARIETIES IN PERFORMANCE TRIALS

Variety	Guelph (1961)		Kapusksing (1962)		Verner (1962)	Douglas (1963)	Ridgetown (1963)		Kemptville (1963)		Guelph (1963)	
	Ave. 1962-63		Ave. 1963-64		Ave. '63-64	Ave. -1964	Ave. 1964		Ave. 1964		Ave. 1964	
	Hay	Total	Hay	Total	Total	Total	Hay	Total	Hay	Total	Hay	Total
<u>1. HAY MANAGEMENT</u>												
Alfa			2780	4320			6580	10070	6310	8730	4650	7440
DuPuits			2270	3460	7290		6550	10220	6390	9120	4670	7350
Vernal	4710	9470	2450	3800	6580		6890	12150	6780	8480		
Cayuga	4370	9190					6620	11990	6560	8620		
Glacier			3050	4760	7520		6490	9940	6280	8680	4700	7520
Mega											4762	7340
Tuna					6720							
<u>2. PASTURE MANAGEMENT</u>												
Alfa				5430		5500				7470		5190
DuPuits				4580		6000				7680		5500
Vernal		8720		3830		5450				7060		
Cayuga		8920				5050				7030		
Glacier				5300		5210				7600		5350
Mega												
Tuna												5190

## SUMMARY: ALFALFA PROVINCIAL SCREENING TRIALS, 1960

## 1) Series 1

	Guelph (1960) 1961-1964		
	Hay	After.	Total
High Seed Set Narragansett	4290	3580	7870
Wilt-Resistant Flemish	4130	3820	7950
Vernal	4270	3390	7660
Wilt-Resistant Narragansett	4270	3440	7710
DuPuits	3900	3760	7660
Cardinal	3920	3700	7620
Narragansett	3980	3340	7320
Orchies	3810	3620	7430
Haymor NK 502	3830	3650	7480
Cayuga	3920	3520	7440
Warrior (NK 503)	3980	3260	7240
N.Y. Syn. A	3970	3440	7410
NK 504	3900	3450	7350

SUMMARY: ALFALFA PROVINCIAL SCREENING TRIALS, 1962

2) Series 3.

	Guelph (1962) Ave. 1963-64		Kemptville (1962) Ave. 1963-64		Ridgetown (1962) Ave. 1963-64		Kapusksing (1962) Ave. 1963-64	
	Hay	Total	Hay	Total	Hay	Total	Hay	Total
Vernal	4860	10820	4140	7200	5430	7500	4240	6230
DuPuits	4600	11060	4190	8190	4880	7280	4440	6630
Beaver	4830	10370	4290	7500	5240	7130	3770	5450
Tuna	4830	11020	4180	7870	4190	6320	4510	6790
Glacier	4940	11220	4640	8590	4910	7560	4330	6680
Eynsford	4800	11260	4330	8350			4390	6790
Progress (CL 10)	4640	10690	4360	7780			4050	6050
Mega	4950	11420	4630	8880			4700	7210
Warrior (NK 507)	4860	11300	4410	8310			4420	6430
NK 508	4930	11240	3990	7530			4350	6630
A 9 H	4480	10820	4040	7800			4060	6140
Europe	4940	11000	4500	8400				
FD 100			4310	8380				
Cayuga					5070	7280		
Cardinal					4920	7230		
Orchies					4400	6620		
Rhizoma							4300	6230

## ALFALFA PROVINCIAL SCREENING TRIAL, 1963

## RIDGETOWN

(1964 Results)

3) Series 4

Seeded 1963

a	June 23		July 29		August 31		Total
	% Legume*	Yield	% Legume*	Yield	% Legume*	Yield	
A 9 H	68	5505	70	2138	80	2036	9679
Warrior	71	6062	77	2062	84	1773	9897
Vernal	63	5315	73	1890	78	1861	9066
Alfa	68	5878	76	1990	83	1705	9573
Glacier	64	5653	73	2206	84	1940	9799
Mega	67	5896	77	1993	80	1657	9546
FD 100	69	5905	76	2020	82	1887	9812
Progress	66	5625	74	1819	81	1719	9163
Pioneer 525	66	5651	72	1837	80	1625	9113
Tuna	61	5310	74	2108	78	1606	9024
Arnim	67	5566	74	2041	81	1943	9550
DuPuits	71	5762	77	2246	85	1936	9944
L.S.D. @ 5%		391 lb.		193 lb.		259 lb.	
@ 1%		539 lb.		257 lb.			
C.V. =		6.0%		8.2%		12.4%	

\* % legume obtained from 5' strip at one end of plots seeded with Lincoln brome.  
Yields are of pure stands of alfalfa.

PROVINCIAL ALPACA STRAIN TRIAL, GUELPH, 1960 SEEDING

Test 545

Yield in lb. dry matter per acre

	1964					1963		1962		1961		4-Year Average		
	Cut 1	Cut 2	Cut 3	Aft. Past.	Seas. Total	Hay Total	Aft. Total	Hay Total	Aft. Total	Hay Total	Aft. Total	Hay	Aft.	Seas.
High Seed Set	4484	1342	2671	4013	8497	3935	3205	4088	3636	4658	3466	4291	3580	7871
Narragansett	a.	cd		abc		7140		8124		8124				
*Wilt Resistant	4027	1548	2788	4336	8363	4609	3430	3519	3901	4373	3616	4132	3821	7953
Flemish	ab	abc		a		8039		7420		7989				
Vernal	4324	1192	2628	3820	8144	4262	2871	3749	3526	4744	3348	4270	3391	7661
	ab	de		bc		7133		7275		8092				
Wilt Resistant	4271	1236	2508	3744	8015	4454	3047	3565	3569	4813	3394	4276	3439	7715
Narragansett	ab	de		cd		7501		7134		8207				
DuPuits	3802	1420	2552	3972	7774	4298	3316	3289	4132	4222	3614	3903	3759	7662
	c	bcd		abc		7614		7421		7836				
Cardinal(NK501)	3983	1655	2403	4058	8041	3974	3289	3323	3927	4389	3547	3917	3705	7622
	bc	a		abc		7263		7250		7936				
Narrangansett	3992	1056	2376	3432	7424	4026	3027	3633	3520	4555	3391	3984	3343	7327
	bc	e		d		7053		7133		7946				
Orchies	4118	1462	2425	3887	8005	3655	3131	3389	3888	4073	3595	3809	3625	7434
	abc	abc		abc		6786		7277		7668				
Haymor (NK502)	3698	1592	2633	4225	7923	4101	3119	3211	3772	4323	3488	3833	3651	7484
	c	ab		ab		7220		6983		7811				
Cayuga	4046	1406	2554	3960	8006	4031	3056	3524	3595	4060	3486	3915	3524	7439
	abc	bcd		abc		7087		7119		7546				
NK 503	4048	1068	2493	3561	7609	4052	2780	3461	3452	4338	3279	3975	3268	7243
	abc	e		d		6832		6933		7617				
NY Syn.A	3956	1256	2585	3841	7797	4319	3105	3321	3701	4293	3093	3972	3435	7407
	bc	de		bc		7424		7022		7386				
NK 504	4066	1256	2465	3721	7787	4212	3144	3477	3571	3832	3380	3897	3454	7351
	abc	de		cd		7356		7048		7212				
Mean	4042	1345	2545	3890	7932	4149	3118	3505	3706	4359	3438	4014	3538	7552
						7267		7211		7797				
L.S.D. 5%	S.D.	S.D.	N.S.	S.D.	N.S.	N.S.		320		N.S.	142			
C.V.	3.5	6.0	5.2		3.1	9.6		6.3		10.2	3.0			

PROVINCIAL PRELIMINARY ALFALFA STRAIN TRIAL, GUELPH, 1962

Test 573

Yields in lb. dry matter per acre; Stands rates at 1 to 5

	1964				Rep.5-6 Total 5	Decrease (Col.4-5) 6	1963	1963-64	October 14, 1964		
	Rep. 1, 2, 3, 4			Rep.1-6 Total 7			Average 8	Rep.1-4 Estimate 9	Rep.1-4 Stand 10	Rep.5-6 Stand 11	
	Cut 1 1	Cut 2 2	Cut 3 3								Total 4
Vernal	5333	2342	3060	10735	10638	97	10915	10825	1525	1	1
DuPuits	5176	2596 <sup>e</sup>	3009	10781	7097	3684	11342	11062	1150	3-4	5
Beaver	5592	2283 <sup>bc</sup>	2685	10960	11270	-310	9783	10372	850	1	1
Tuna	5612	2726 <sup>e</sup>	2958	11296	10594	702	10744	11020	1275	2-3	3-4
Glacier	5460	2722 <sup>ab</sup>	2823	11005	10198	807	11430	11218	950	3-4	4
Eynsford	5561	2576 <sup>ab</sup>	3087	11224	9377	1847	11288	11256	1050	3-4	4-5
Progress (CL 10)	5375	2426 <sup>bc</sup>	2972	10773	11210	-437	10609	10691	1625	1	1
Mega	5585	2662 <sup>cde</sup>	3092	11339	8685	2654	11504	11422	1000	3-4	5
Warrior 507	5576	2562 <sup>ab</sup>	3144	11282	10754	528	11324	11303	1600	2	2
NK 508	5714	2594 <sup>bc</sup>	3028	11336			11137	11237	1750	2	-
A 9 H	5036	2812 <sup>bcd</sup>	3038	10886	8932	1954	10744	10815	2150	1-3	4-5
Europe	5537	2356 <sup>a</sup>	2912	10805	9106	1699	11202	11004	1250	2-4	5
Mean	5496	2555	2984	11026	9806	1220	10996	11011			
Significance	N.S.	S.D.	N.S.	N.S.			674				
C.V.	3.5	3.0	4.5	2.5			4.4				

## COMMENTS ON TEST 573

This test, established in 1962, was cut four times in 1963, the last cut being taken on October 8 (see 1963 report). In that year it was irrigated in mid and late October. Replicates 5 and 6 received much less water than replicates 1-4.

In early May, 1964, the test was assessed for winter injury.

Tuna, Beaver, Glacier, Vernal, C1-10 showed relatively little damage. Mega and Europe showed slightly more.

Warrior (NK 507), NK 508, Eynsford, A 9 H suffered moderate damage.

DuPuits was, by far, the hardest hit.

The sections of replicates 5 and 6 which received little irrigation in mid-October were much more badly damaged than the irrigated sections.

In August the stands of several varieties began to thin out rapidly, especially in replicates 5 and 6. See columns 10 and 11.

DuPuits, Mega, Eynsford, Glacier, Europe were most affected, Tuna a little less seriously.

Warrior, NK 508 and A 9 H showed a little thinning in some plots in Reps. 1-4 while Vernal, Beaver, and Progress still had perfect stands in all replicates.

The test included no early wilt-resistant variety and so the relative importance of earliness versus wilt susceptibility in the thinning of the stands is not directly measurable. However, all wilt-resistant varieties still show a perfect or near-perfect stand. In addition, Progress which is of about the same maturity status as Tuna, has maintained its stand much better than Tuna has.

Note: Aftermath totals in 1964 were not significantly different.

PROVINCIAL ALFALFA PRELIMINARY STRAIN TRIAL, KEMPTVILLE, 1962 SEEDING

Yields in Pounds of Dry Matter per Acre

	1964					1963			1963-1964 Mean			Rank
	Cut 1 Jun.18	Cut 2 Jul.26	Cut 3 Oct.8	Cut 2 + 3	Total Season	Hay	Aft.	Total	Hay	Aft.	Total	
Vernal	4329	1672	1075	2747	7075	3961	3371	7332	4145	3059	7204	13
DuPuits	4374	2124	1855	3979	8353	4001	4028	8029	4187	4004	8191	7
Beaver	4705	1921	1156	3077	7781	3868	3338	7206	4286	3208	7494	12
Tuna	4540	2498	1109	3607	8146	3825	3777	7602	4182	3692	7874	9
Glacier	5045	2351	1503	3854	8900	4231	4044	8275	4638	3949	8587	2
Eynsford	4532	2340	1940	4280	8812	4128	3764	7892	4330	4022	8352	5
Progress (CL 10)	4750	1928	1508	3436	8186	3970	3413	7383	4360	3424	7784	10
Mega	4857	2392	1913	4305	9162	4409	4188	8597.1	4633	4246	8879	1
Warrior (NK507)	4572	2200	1763	3963	8535	4245	3845	8090.5	4408	3904	8312	6
NK 508	4200	2031	1450	3481	7681	3778	3589	7367	3989	3535	7524	11
A 9 H	4189	2211	1951	4162	8351	3894	3748	7642	4041	3955	7996	8
Europe	4618	2047	1838	3885	8503	4377	3929	8306.5	4497	3907	8404	3
FD 100	4476	2231	1773	4004	8480	4140	4135	8275.5	4308	4069	8377	4

Range: Hay 3989 - 4638  
 1963-4 Mean Aftermath 3059 - 4246  
 Season 7204 - 8879

ALFALFA VARIETY TRIAL (Seeded 1962)  
1964 Yield Lbs. D.M. per Acre

	June 24		July 29		September 1		Total
	% Legume*	Yield	% Legume	Yield	% Legume	Yield	
Vernal	78	5076	73	1386	76	1296	7758
Beaver	75	5336	73	1267	68	1100	7703
Cayuga	69	5162	80	1434	72	1344	7940
DuPuits	80	4765	75	1478	72	1456	7699
Cardinal	78	4629	80	1419	71	1314	7362
Glacier	80	4593	76	1428	71	1396	7417
Tuna	70	4271	76	1436	68	1171	6878
Orchies	78	4566	77	1580	60	1408	7554
L.S.D. @ 5%		560 lb.		N.S.		N.S.	
C.V. =		8.0%		10.0%		14.1%	

\* % legume obtained from a 4' strip of Lincoln brome at one end of plots.  
Yields are of pure alfalfa.

ALFALFA VARIETY TRIAL - KAPUSKASING 1964 *1963 seeding*

Varieties	1964			1963		
	1st cut	2nd cut	Total	1st cut	2nd cut	Total
Vernal	4506	1253 <sup>x</sup>	5759 (1)	3964	2776	6696
Rhizoma	4269	1182 <sup>x</sup>	5451 (3)	4346	2648	7000
Beaver	3707	964 <sup>x</sup>	4671 (4)	3838	2444	6232
CL 10	4412	1249 <sup>x</sup>	5661 (2)	3688	2766	6433
A 944	4746	1389 <sup>o</sup>	6135 (8)	3267	2836	6135
Mega	5662	2030 <sup>o</sup>	7692 (1)	3738	3017	6721
Glacier	4929	1708 <sup>o</sup>	6637 (5)	3724	2992	6716
Eynsford	5286	1787 <sup>o</sup>	7073 (2)	3497	3050	6501
Tuna	5138	1625 <sup>o</sup>	6763 (3)	3890	2862	6816
DuPuits	5070	1442 <sup>o</sup>	6512 (6)	3804	2935	6753
NK 507	4962	1321 <sup>o</sup>	6283 (7)	3884	2774	6571
NK 508	5008	1667 <sup>o</sup>	6675 (4)	3698	2896	6590
Average	4808	1468	6276	3778	2833	6597
L.S.D.	652	362				
	Jul. 7	Aug. 21 <sup>x</sup> Aug. 27 <sup>o</sup>		Jul. 10	Aug. 19	

Winter survival was good, thanks to a deep snow cover. First-cut yields were notably better than last year for all varieties except Rhizoma. Aftermath growth suffered from cold and wet conditions and averaged close to 1500 lb. less than in 1963. Mega was the top producer, maintaining its promising performance of last year. Eynsford and Tuna also performed very well. Beaver shows no promise at all for this area: slow growth and recovery.

ALFALFA PERFORMANCE TRIALS

	1961	1962	1963				1964	
	Guelph H, P	Kapuskasing	Guelph H, P	Kemptville H, P	Verner H	Douglas P	Ridgetown H	Fort William
<b>Vernal Series</b>								
Vernal	X	X		X	X	X	X	X
Narragansett	X			X	X	X	X	X
Cayuga	X			X	X	X	X	X
<b>DuPuits Series</b>								
DuPuits		X	X	X	X	X	X	X
Alfa		X	X	X	X	X	X	X
Glacier		X	X	X	X	X	X	X
Tuna			X					X

Note: 1. The Guelph test winterkilled in 1963-64.

2. The Kapuskasing test included several other entries.

*RO 1964-5*

ALFALFA VARIETY TRIAL - HAY - KAPUSKASING 1964 <sup>1962 seedling</sup>

(seeded with brome)

Variety	1964			1963		
	1st cut	2nd cut	Total	1st cut	2nd cut	Total
Vernal	2804	996	3800	2084	1714	3798
Rhizoma	2792	985	3777	2084	1516	3600
Beaver	2732	855	3587	2719	1786	4505
Glacier	3308	1423	4731	2784	2097	4881
Alfa	3007	984	3991	2547	2108	4655
DuPuits	2735	857	3592	1796	2538	4334
Average	2896	1017	3913			
L.S.D.	734	336				
	Jul. 9	Aug. 21		Jul. 10	Aug. 19	

1965  
cut 1  
1121  
847  
1235  
1052  
1102  
908

## ALFALFA VARIETY TRIAL - PASTURE - KAPUSAKSING 1964

(seeded with brome)

Variety	1964			1963		
	1st cut	2nd cut	Total	1st cut	2nd cut	Total
Vernal	3015	1084	4099	2088	1481	3569
Rhizoma	3224	1322	4546	2356	1694	4050
Beaver	2453	786	3239	2334	1348	3682
Glacier	3964	2017	5981	2566	2044	4610
Alfa	4448	1959	6407	2442	2019	4461
DuPuits	3348	1558	4906	2078	2174	4252
Average	3408	1454	4863			
L.S.D.	739	538				
	Jul. 6	Aug. 10		Jun. 27	Aug. 7	

1965  
cut 1  
588  
785  
728  
842  
842  
797

## ALFALFA VARIETY TEST FOR HAY - VERNER, 1962 SEEDING, PURE STANDS

Yield of dry matter in pounds per acre

Variety	1963	1964			1963-4	
	Total Yields	Jun.25	Aug.10	Sept.29	Total 3 cuts Total Yields	
Glacier	6519	4604	2734	1181	8519	7519
DuPuits	6104	4343	2820	1304	8467	7286
Chartrainvilliers	6100	4432	2707	1282	8421	7260
Narragansett	6926	4929	2650	958	8537	7236
Tuna	6519	4245	2571	988	7804	6716
Vernal	5500	4394	2396	879	7669	6584
Beaver	4798	4397	2235	566	7198	5998
Significance	S.D.	S.D.	S.D.	S.D.	S.D.	

## ALFALFA VARIETY TEST FOR PASTURE - DOUGLAS, 1963 SEEDING, PURE STANDS

Yield in pounds of dry matter per acre

Variety	June 2	July 7	August 24	September 25	Total 4 cuts
DuPuits	3159	1580 a	473 a	783 a	5995 a
Alfa	3158	1445 ab	388 b	507 bc	5498 ab
Vernal	3193	1405 b	376 b	472 bc	5446 b
Glacier	2906	1471 ab	363 b	466 bc	5206 bc
Cayuga	2901	1248 c	356 b	541 b	5046 bc
Narragansett	2841	1338 bc	364 b	382 c	4925 c
Significance	N.S.	S.D.	S.D.	S.D.	S.D.
C.V.		7.5%	12.9%	20.4%	6.9%

Very dry summer at Douglas in 1964.  
 No differential winter injury in 1965 -  
 Test plowed in spring of 1965

## ALFALFA PERFORMANCE TRIAL 1963 - HAY AND PASTURE MANAGEMENT - KEMPTVILLE

## 1964 Results

Average Yield of Alfalfa Varieties and Bromegrass Under Pasture Management  
1964 - lbs. D.M. per acre

Variety	Cut 1 (May 5)		Cut 2 (July 7)		Cut 3 (Aug.6)		Total Yield	Relative Rank	% Grass June 17
	Yield	Relative Rank	Yield	Relative Rank	Yield	Relative Rank			
Alfa	2411	88.4	3073	100.0	1986	95.5	7470	97.3	33
DuPuits	2569	94.2	3066	99.7	2078	100.0	<sup>7113</sup> <del>7675</del>	100.0	23
Glacier	2694	98.8	2974	96.7	<sup>1930</sup> <del>1263</del>	60.7	7598	98.7	29
Narragansett	2699	99.0	2819	91.7	1623	78.1	<sup>7141</sup> <del>7124</del>	92.8	35
Vernal	2725	100.0	2769	90.1	1568	75.4	7062	92.0	34
Cayuga	2637	96.7	2862	93.1	1554	74.7	<sup>7053</sup> <del>7032</del>	91.6	37

Average Yield of Alfalfa Varieties and Bromegrass under Hay Management 1964  
lbs. D.M. per acre

Variety	Cut 1 (June 17)		Cut 2 (July 17)		Total Yield	Relative Rank	% Grass June 17
	Yield	Relative Rank	Yield	Relative Rank			
Alfa	6307	93.0	2426	88.7	8733	95.7	58
DuPuits	6386	94.2	2735	100.0	9120 <sup>2</sup>	100.0	56
Glacier	6276	92.6	2399	87.8	8675	95.1	60
Narragansett	6523	96.2	1962	71.7	8485	93.0	69
Vernal	6775	100.0	1704	62.3	8480 <sup>29</sup>	92.9	69
Cayuga	6563	96.8	2060	75.4	8623	94.5	68

W. O. A. S.

## ALFALFA PERFORMANCE TRIALS - Seeded 1963

1964 Results

	June 22		July 29		August 31		Total Yield
	% Legume	Yield	% Legume	Yield	% Legume	Yield	
<u>DUPUITS SERIES</u>							
DuPuits	63	6553	83	2026	83	1641	10220
Glacier	63	6490	83	1945	83	1505	9940
Alfa	64	6583	83	1980	81	1507	10070
		N.S.		N.S.		N.S.	
C.V. =		6.4%		7.1%		9.9%	
<u>VERNAL SERIES</u>							
Cayuga	63	6624	78	3283	89	2082	11989
Vernal	64	6886	74	3300	85	1961	12147
Narragansett	63	6726	75	3060	83	1846	11632
		N.S.		173 lb.		121 lb. 173 lb.	
C.V. =		5.1%		6.4%		4.8%	

## DUPUITS TYPE PERFORMANCE TRIAL, 1963 SEEDING, GUELPH

## 1964 Forage Yields of Mixture in Pounds of Dry Matter per Acre

Test 575

Hay and aftermath pasture	Cut 1 June 16	Alfalfa Fraction	Cut 2 July 10	Cut 3 August 25	Total
DuPuits	4673	70%		2680	7353
Tuna	4762	50%		2578	7340
Glacier	4696	50%		2823	7519
Alfa	4648	65%		2789	7437
Pasture	May 27			August 6	
DuPuits	3807	65%		1693	5500
Tuna	3580	65%		1610	5190
Glacier	3704	60%		1649	5353
Alfa	3591	65%		1601	5192

Comments: The second cut was discarded because of extensive variability caused by drought.  
During August there was very little growth on the pasture section. It was accordingly decided not to cut this section again in September.

## ALFALFA INTRODUCTIONS FROM ARGENTINA AND AUSTRALIA, 1963 SEEDING

## Yields in lb. dry matter; per cent legume

11E Test	Cut 1		Cut 2		Cut 3	
Range of four Argentina strains	4710-5100	40%			2780-2875	
DuPuits	4675	60%			2680	
6E Test						
Argentina	6138	45%	2403	70%	2415	65%
Australia	6371	35%	2305	70%	2641	75%
DuPuits	6436	65%	3011	95%	2717	95%

Comments: Winter-kill of the Argentine introductions was negligible but both spring vigor and speed of recovery after harvest were markedly inferior to that of DuPuits.  
The Australian Introduction suffered severe winter damage. Many plants were killed and most of the remainder were injured.  
For all introductions and for all cuts the percent legume was conspicuously below that of DuPuits.

## 'ONTARIO VARIEGATED' SEED LOTS, HALDIMAND COUNTY, 1962

Pounds Dry Matter per Acre, 1963-1964

Variety	1963		1964		1963-1964 Ave.	
	June 25	Total (3 cuts)	June 12	Total (3 cuts)	June	Total
Ontario Variegated 1	3362	6252	-	-	-	-
2	3177	5431	-	-	-	-
3	3329	6041	3892	7688	3611	6865
4	3638	6207	3891	7713	3765	6960
5	3500	6302	-	-	-	-
6	3575	5843	-	-	-	-
7	3973	6932	3912	7834	3943	7383
8	3724	6347	-	-	-	-
9	3453	6347	-	-	-	-
10	3575	6467	3849	8056	3712	7262
11	3295	6097	3806	7719	3550	6908
12	3781	6597	3870	7828	3825	7213
13	3481	6205	3929	7917	3705	7061
Average of 7 lots	3582	6364	3878	7822	3730	7093
Vernal	4259	6871	4190	7788	4225	7329
Ranger	3824	6795	3532	6859	3678	6827
Beaver	3674	6074	3884	7285	3779	6679
Cayuga	3673	6478	3857	7751	3765	7115

Variety Recommendations for Birdsfoot Trefoil

It was the opinion of the committee that no change be made in the variety recommendation for birdsfoot trefoil. This decision had its origin in two causes.

- (i) In almost all tests conducted across the province, all varieties had been harvested on the same date in any one test. This presumably produced a bias in favor of the earlier varieties. Such tests as have been harvested on a stage of maturity basis have provided some evidence that the yield of Empire is equal to that of Viking. Further testing will be required to corroborate or to disprove this hypothesis.
  
- (ii) No information is yet available on the reaction of Leo to poor drainage. Since trefoil is likely to be used for the present on poorly drained areas this information is essential before a decision on recommending Leo can be made.

Birdsfoot Trefoil Strain Trials, Verner and Ottawa, 1961 Seeding  
Yield of Trefoil-Timothy in lb. D M. per acre

OTTAWA													
Ottawa	HAY MANAGEMENT						PASTURE MANAGEMENT						H.P.
	1962 Total	1963 Total	1964 Cut 1    Cut 2		1964 Total	1962-4 Mean	1962 Total	1963 Total	1964 Cut 1    Cut 2		1964 Total	1962-4 Mean	1962-4 Mean
✓ Viking	7380	8764	4325	2223	6548 <sup>1</sup>	7564 <sup>1</sup>	7120	5308	3042	2087	5129 <sup>2</sup>	5852 <sup>1</sup>	6708
✓ Leo	7100	8477	4131	2046	6177 <sup>4</sup>	7251 <sup>4</sup>	7380	5654	3067	2209	5276 <sup>1</sup>	6103 <sup>2</sup>	6677
✓ Empire	6740	7544	4150	1459	5609 <sup>5</sup>	6631 <sup>5</sup>	7780	5246	2980	1727	4707 <sup>3</sup>	5911 <sup>3</sup>	6271
✓ Douglas	7460	8519	4063	2177	6240 <sup>3</sup>	7406 <sup>3</sup>	7880	5542	3319	1887	5206 <sup>2</sup>	6209 <sup>1</sup>	6808
✓ Mansfield	7520	8362	4382	1995	6377 <sup>2</sup>	7420 <sup>2</sup>	7300	5139	3109	1655	4764 <sup>2</sup>	5734 <sup>5</sup>	6577
✓ Roskilde	7080	8410	4276	1829	6105 <sup>5</sup>	7198 <sup>5</sup>	7040	5137	3071	1582	4653 <sup>2</sup>	5610 <sup>5</sup>	6404
Mean	7213	8346	4221	1955	6176	7244	7417	5338	3098	1858	4956	5904	6574
LSI	N.S.	N.S.	N.S.	N.S.	N.S.		N.S.	N.S.	N.S.	N.S.	N.S.		

VERNER													
Verner	HAY MANAGEMENT						PASTURE MANAGEMENT						H.P.
	1962 Total	1963 Total	1964 Cut 1    Cut 2		1964 Total	1962-4 Mean	1962 Total	1963 Total	1964 Cut 1    Cut 2		1964 Total	1962-4 Mean	1962-4 Mean
✓ Viking	4663	5556	1514	403	1917	4045 <sup>1</sup>	3631	3143	1036	662	1698	2824 <sup>1</sup>	3435
✓ Leo	4203	5437	1664	292	1956	3865 <sup>3</sup>	3688	3080	937	504	1441	2736 <sup>3</sup>	3300
✓ Empire	3646	4889	1136	178	1314	2283 <sup>6</sup>	3000	2686	880	330	1210	2299 <sup>6</sup>	2791
✓ Douglas	4358	5278	1418	321	1739	3792 <sup>5</sup>	3427	3027	883	525	1408	2621 <sup>4</sup>	3207
✓ Mansfield	4279	5378	1534	316	1850	3836 <sup>4</sup>	3208	2969	794	505	1296	2491 <sup>5</sup>	3164
✓ Roskilde	4468	5624	1580	431	2011	4034 <sup>2</sup>	3563	3104	1114	645	1759	2809 <sup>2</sup>	3422
Mean	4270	5360	1474	323	1797	3809	3419	3000	921	529	1470	2630	3220
ISD	116	125	N.S.	S.D.	S.D.		96	82	N.S.	S.D.	S.D.		

Birdsfoot Trefoil Strain Trial, Kapuskasing  
1962 seeding  
Yield in pounds D.M. per acre

	1964						1963			1963-4			
	PASTURE			HAY			H-P Ave.	Pasture	Hay	Mean	Pasture	Hay	H-P. Average
	Cut 1 July 6	Cut 2 Aug. 17	Total	Cut 1 July 8	Cut 2 Aug. 27	Total							
<u>Pure Stand</u>													
Empire	3927	1563	5490 2	3652	790 2	4442	4966	2953	4464	3709	4222	4453	4337
Viking	3724	1806	5530 1	3526	1134 2	4660	5095	4198	5700	4949	4864	5180	5022 1
Morshansk	2973	1312	4285 4	4006	876 1	4882	4583	4454	5619	5037	4369	5250	4820 2
Roskilde	3485	1020	4505 3	3560	885 3	4445	4475	1902	3666	2784	3204	4055	3630
Mean	3527	1425	4952	3686	921	4607	4779	3376	4862	4119	4164	4735	4452
Significance	N.S.	410		N.S.	N.S.								
<u>Trefoil-Timothy</u>													
Empire	4186	1417	5657 2	4256	768 3	5024	5340	3033	5122	4078	4345	5073	4709 3
Viking	4364	1708	6072 1	4484	1166 1	5650	5861	3678	5830	4754	4875	5740	5307 1
Morshansk	3884	1500	5384 4	4319	798 2	5117	5250	4009	5618	4814	4697	5367	5032 2
Roskilde	3944	1467	5411 3	3847	931 1	4778	5094	2448	4332	3390	3930	4555	4243 4
Mean	4094	1536	5631	4226	916	5142	5386	3292	5226	4259	4462	5184	4823
Significance	N.S.	N.S.		N.S.	223								

Birdsfoot Trefoil Provincial Strain Trials, Ridgetown and Guelph  
1963 Seeding

Yield of trefoil-timothy in lb. D.M. per acre; percent legume

*Seeding*

Ridgetown	HAY MANAGEMENT				PASTURE MANAGEMENT							
	Cut 1 June 19		Cut 2 July 20		Cut 1 June 10		Cut 2 (3) July 15		Total			
	lbs.	% legume	lbs.	% legume	lbs.	%	lbs.	%				
✓ Viking	3407	66	1912	84	5319	3	2379	61	1853	83	4232	3
✓ Leo	4199	82	2173	83	6372	1	2982	73	2185	84	5167	2
✓ Empire	3454	72	1772	83	5226	4	2291	53	1852	82	4143	6
✓ Douglas	2672	50	1717	83	4389	7	2019	58	1863	78	3882	7
✓ Composite	3569	75	2098	84	5667	2	3157	73	2355	83	5512	1
✓ Barr	2769	61	2028	85	4797	6	2238	57	1943	74	4181	8
✓ Fargo	3050	57	1842	85	4892	5	2235	59	1963	82	4198	11
Mean	3303		1935		5238		2472		2002		4474	?
Significance	713		300				525		331			
Guelph	June 18 / 1964 / July 23				May 28		July 10		Sept 2			
✓ Viking	6102	24	2230		8332		3250	27	2320	1517	7087	4
✓ Leo	6310	23	2638	July 31	8948		3241	19	2382	1282	6905	5
✓ Empire	6144	11	3337	Aug. 18	9481		3115	16	2210	1572	6897	6
✓ Douglas	6137	20	2386		8523		3056	26	2555	1544	7155	2
✓ Composite	6032	26	2538		8570		3224	32	2673	1521	7418	1
✓ Barr	5902	23	2030		7932		3119	30	2465	1539	7123	3
✓ Fargo	6216	12	3423	Aug. 18	9639		3016	11	1912	1506	6434	7
Mean	6120		2296	4 strains	8416	4 strains	3145		2359	1497	7001	
Significance	N.S.		2655	7 strains	8775	7	N.S.		S.D.	N.S.		

B-4

## A Summary of Yield Trials

	<u>Ottawa</u> 3-year mixture	<u>Verner</u> 3-year mixture	<u>Kapuskasing</u> 2-year alone mixture		<u>Ridgetown</u> 1-year mixture	<u>Guelph</u> 1-year mixture	
Viking							
Hay	7564	4045	5180	5740	7822	5319	8332
Pasture	5852	2824	4864	4875	6955	4232	7087
Leo							
Hay	7251	3865	5250	5367	7650	6372	8948*
Pasture	6103	2736	4369	4697	6150	5167	6905
Empire							
Hay	6631	3283	4453	5073	7314	5226	9481**
Pasture	5911	2299	4222	4345	6485	4143	6897
Douglas							
Hay	7406	3792				4389	8523
Pasture	6209	2621				3882	7155
Mansfield							
Hay	7420	3836					
Pasture	5734	3164					
Roskilde							
Hay	7198	4034	4055	4555			
Pasture	5610	2809	3204	3930			
Barr							
Hay						4797	7932
Pasture						4181	7123
Fargo							
Hay						4892	9639*
Pasture						4198	6434
Composite							
Hay						5667	8570
Pasture						5512	7418
Mean							
Hay	7244	3809	4735	5184		5238	8416(4)
Pasture	5904	2630	4164	4462		4474	8775(7)

\* cut 8 days later than Viking, etc.

\*\* cut 26 " " " "

A Brief Note on Birdsfoot Trefoil Strains

- Barr - An accession from the Kemptville district where it had been growing for several years. Recorded as an Empire type but its growth habit indicated that this strain was not greatly different from Viking.
- Composite - a mixture of a few O.A.C. lines showing superiority in seedling vigor. The seed came from polycross nurseries containing about 25 clones. Only about ~~five~~ <sup>five</sup> maternal parents were used as a seed source, *S-51-3, S-61-18, S-61-43, S-61-47, S-61-48, S-61-49, S-61-50, S-61-51, S-61-52, S-61-53, S-61-54, S-61-55, S-61-56, S-61-57, S-61-58, S-61-59, S-61-60, S-61-61, S-61-62, S-61-63, S-61-64, S-61-65, S-61-66, S-61-67, S-61-68, S-61-69, S-61-70, S-61-71, S-61-72, S-61-73, S-61-74, S-61-75, S-61-76, S-61-77, S-61-78, S-61-79, S-61-80, S-61-81, S-61-82, S-61-83, S-61-84, S-61-85, S-61-86, S-61-87, S-61-88, S-61-89, S-61-90, S-61-91, S-61-92, S-61-93, S-61-94, S-61-95, S-61-96, S-61-97, S-61-98, S-61-99, S-61-100*
- Douglas - an Oregon strain developed by mass selection out of European introductions.
- Empire - presumably by selection and compositing of a number of parental lines drawn from naturalized ecotypes in the Hudson Valley. A Cornell variety, released in 1948.
- Fargo - mass selected out of Empire for winter-hardiness. A North Dakota variety.
- Leo - "mass selected" out of a Russian introduction designated as Morshansk. A Macdonald College variety developed by Dr. J. Bubar.
- Mansfield - A collection of clones drawn from Viking and Roskilde. A Vermont variety developed by Dr. Gershoy.
- Roskilde - a winter-hardy European strain developed in Denmark.
- Viking - A collection of high-yielding strains drawn from European introductions including Roskilde. Developed by Dr. H. MacDonald at Cornell, and released in 1949.

A Brief Note on O.A.C. Polycross Material

Seed from four polycross nurseries was used to establish 28-progeny line tests at Ottawa and Guelph. The former was for forage yield only while those at Guelph were for both forage and seed production.

At the O.A.C. emphasis was placed on the establishment of all lines in first class shape and no yields were taken although the rows were clipped back in August leaving a 3-inch stubble. An excellent stand was achieved.

At Ottawa the rows were graded for seedling vigor and were harvested in August and in October. A brief note on the Ottawa data is given below for three replicates in which a perfect stand was established.

	<u>Progeny rows</u>		<u>Viking</u>
	Range	Mean	
Seedling vigor grade(5 is best)	3-5	4.1	2.3
Yield, cut 1	1046-1911	1601, 125	1242
Yield, cut 2	1893-2357	2115, 115	1853
Total	3018-4120	3716, 120	3095
<i>7/15, 1949</i>	<i>3743-4120</i>	<i>3122, 171</i>	<i>3125</i>

RED CLOVER VARIETY TESTS

1964

FORAGE CROP SUB-COMMITTEE

OF THE

ONTARIO COMMITTEE ON FIELD CROP RECOMMENDATIONS

RED CLOVER VARIETIES

No uniform red clover tests were established in Ontario in 1963 or 1964, and no new data are reported for double-cut varieties. The attached tables I & II are summaries of 1961-1963 data on forage and seed yield, previously reported. Table III gives 1964 data on a single-cut test established in 1962 at Kapuskasing. Superior yield, in the second crop year, for the tetraploid variety Ulva is noteworthy.

Recommendations of varieties for 1965 remain the same. Lasalle and Dollard are the recommended two-cut varieties. Lakeland and Ottawa, which yield about equally well, will be recommended as seed supplies become available and as Lasalle supplies diminish. Altaswede is the recommended one-cut variety for northern Ontario.

RED CLOVER VARIETIES

C-2

(1) Two cut types

Chesapeake

Breeder -

Breeding Method - A naturalized variety from the farm of Elmer Stevens, Talbot County, Maryland.

Description - High yielding and persistent in the area of origin with some resistance to southern anthracnose disease.

Dollard

Breeder - Macdonald College

Breeding Method - Mass selection of strains introduced from Orel and Silesia in 1911. It was licensed in 1937.

Description - High yielding winter hardy, persistent, slightly later in maturity and more variable in plant type than Ottawa; a very high percentage of plants are free of leaf mark, highly resistant to northern anthracnose disease.

Lakeland

Breeder - Wisconsin Agricultural Experiment Station and Crop Research Division, U.S.D.A.

Breeding Method - Recurrent mass selection with artificial screening for resistance to fungi causing northern anthracnose and powdery mildew diseases. Source varieties include Wisconsin Mildew Resistant, Dollard, Kenland with smaller contributions from Ottawa, Redon, Cumberland and Scott.

Description - A high yielding variety equal to Ottawa and Dollard in forage yield and persistence in Ontario tests. It is also one of the highest seed producers. It is resistant to powdery mildew disease and highly resistant to northern anthracnose.

Lasalle

Breeder - Macdonald College, Ste Anne de Bellevue and Central Experimental Farm, Ottawa.

Breeding Method - A composite variety resulting from mixing equal portions of seed of Ottawa and Dollard varieties at the foundation stock level.

Description - High yielding, hardy and persistent. This variety has been dropped from the Canadian Forage seed project.

Breeder - Central Experimental Farm, Ottawa.

Breeding Method - Mass selection from adapted regional strains. It was licensed in 1936.

Description - High yielding, winter-hardy, persistent, uniform for type and growth habit. Plants are hairy and resist damage by the potato leaf hopper. The variety possesses some resistance to prevalent diseases including sclerotinia crown rot.

(2) Single-cut types

Altaswede

Breeder - University of Alberta.

Breeding Methods - Artificial and natural selection from late Swedish red clover introduced in 1914. It was named and distributed in 1919.

Description - It is winter-hardy and high yielding and persists longer than two cut varieties. Plants are variable with respect to the degree of hairiness.

Silo

Breeder - Swedish Seed Association, Svalöf, Sweden.

Breeding Methods - Selected from Merkur which, in turn, was selected from a southern Swedish strain.

Description - Medium-late with rapid growth and regrowth after cutting. At Kapuskasing it did not persist as well as Altaswede.

Molstad

Breeder - Norway.

Breeding Method - A local Norwegian strain that has been grown for more than 60 years.

Description - Winter-hardy, persistent.

TABLE 1 - SUMMARY OF RED CLOVER VARIETY TESTS FOR HAY, 1961 TO 1963  
(AVERAGE SEASONAL YIELDS BY STATIONS FOR THE FIRST CROP YEAR IN LBS.  
OF DRY MATTER PER ACRE)

Variety	<u>Fort Frances</u>	<u>Fort William</u>	<u>Kapuskasing</u>	<u>Noelville</u>	<u>Verner</u>	<u>Mindemoya</u>
	<u>1961</u>	<u>1961</u>	<u>1962</u>	<u>(2 yr.av.)</u> <u>1961,1962</u>	<u>(2 yr.av.)</u> <u>1962,1963</u>	
Lasalle(Cert.-East)	4198	6672	6246 a	6967 ab	4721 a	8377 a
Lasalle(Cert.-West)	4259	6222	5887 ab	6848 ab	4665 ab	8579 a
Lakeland	4144	6134	5972 ab	6892 ab	4834 a	7868 bcd
Dollard (Foundation)	4045	5604	5739 abc	6691 ab	4336 b	7518 d
Dollard (Cert.Calif.)	4384	5444	5461 bcd	7096 a	4595 ab	8137 abc
Ottawa (Foundation)	4076	5966	5990 a	6402 b	4634 ab	7795 cd
Ottawa (Bishops Comm.)	3656	5999	5106 cd	6430 b	4706 ab	8276 ab
Chesapeake	3696	5674	4999 d	6606 ab	4548 ab	7868 bcd
Tetraploid - Ottawa	--	--	5859 ab	--	3665 c	--
L.S.D. P=.05	425	435	--	--	--	--
	<u>Ottawa(3 yr.</u>	<u>Guelph</u>	<u>Ridgetown</u>	<u>Foxboro</u>	<u>Average</u>	
	<u>av. 1961,</u>	<u>1962</u>	<u>1961</u>	<u>1962</u>	<u>(10 Stations)</u>	
	<u>1962, 1963</u>					
Lasalle(Cert.-East)	9186	7386	11581	6676	7201	
Lasalle(Cert.-West)	8615	7118	11248	6732	7017	
Lakeland	8792	7210	11120	7028	6999	
Dollard (Foundation)	8737	6837	10823	6110	6644	
Dollard (Cert.Calif.)	8723	7375	11428	6257	6890	
Ottawa (Foundation)	8797	6823	11071	6396	6795	
Ottawa (Bishops-Comm.)	8622	6753	10510	5984	6604	
Chesapeake	8620	7090	12188	6290	6758	
Tetraploid Ottawa	--	5828*	--	5456	--	
L.S.D. P=.05	--	N.S.	--	--	--	

\* Not included in analysis.

TABLE II - SUMMARY OF RED CLOVER VARIETY TESTS FOR SEED 1961 AND 1963  
(AVERAGE YIELD IN POUNDS PER ACRE)

C-5

Variety	Williams- town 1963	Fox- boro 1961	Ottawa 1963	Ottawa 1961	Mindemoya 1961	Noelville 1961	Noelville 1962	Average* (6 tests)
Lasalle(Cert.-East)	167 ab	177	353 cd	355 bc	84 b	140 a	108 bc	203
Lasalle(Cert.-West)	--	230	399 bc	362 bc	74 bc	133 a	106 bc	217
Lakeland	193 a	167	570 a	438 a	85 b	144 a	138 a	257
Dollard(Foundation)	--	160	493 ab	357 bc	73 bc	134 a	100 bc	219
Dollard(Cert.Calif.)	143 bc	231	373 c	396 ab	78 b	139 a	104 bc	220
Ottawa(Foundation)	--	155	333 cd	323 c	54 c	108 a	82 c	176
Ottawa(Bishops-Comm.)	121 c	149	259 d	348 bc	94 b	140 a	114 ab	184
Chesapeake	147 bc	226	319 cd	350 bc	119 a	142 a	124 ab	213
L.S.D., P=.05	40		--	--	--	N.S.	--	--

\* Average of 6 stations excluding Williamstown.

Note - Williamstown Test 1963 by J.G. Provencher.  
 Ottawa Test 1961 " " "  
 Ottawa Test 1963 " L.M. Casserly  
 Mindemoya Test 1961 " C.B. Dalton  
 Noelville Test 1961 and 1963 by C.B. Dalton  
 Foxboro Test 1961 by A.Skepasts

Table III - Red clover - Single-cut varieties for hay -  
Kapusksing, 1963-64. (Yield in pounds D.M. per acre)

Varieties	1964	1963
<u>I. Red Clover</u>		
Ulva	5465	5569
Silo	3729	6414
Molstad	3966	5266
Altaswede	4642	5955
Average	4450	
L.S.D.	858	
<u>Alsike</u>		
Ott. tetra 136	3597	5814
Aurora	2813	4266
	July 15	July 12
<u>II Red Clover</u>		
Ulva	4674	4446
Silo	2910	4833
Molstad	4048	4579
Altaswede	3549	4352
Average	3795	
L.S.D.	663	
<u>Alsike</u>		
Ott.tetra 136	2111	4544
Aurora	2114	3980
	July 15	July 17
<u>III. Red Clover</u>		
Ulva	4737	6357
Silo	2875	5469
Molstad	3768	5025
Altaswede	3036	6077
Average	3609	
L.S.D.	995	
<u>Alsike</u>		
Aurora	1288	3953
	July 13	July 22

This test was established in 1962, and was kept after the 1st crop year to observe the survival and yields in the 2nd crop year. All four varieties still produced close to 2 tons of dry matter in their second crop year. The most striking data are those of the tetraploid Ulva which out-yielded all others by a good margin. The better survival and yielding capacity of this variety in the second year supports conclusions reported in Sweden by Bingefors and Ellerstrom (1964). They reported that Ulva outyielded all diploid varieties in the second year and also had better persistence and winter-hardiness.

From observations taken after harvest this year, no further regrowth or survival can be expected in the third crop year, even from Ulva. Also of interest is the better survival of the tetraploid strain of Alsike: Ott. tetra 136 compound with that of diploid Aurora.

WHITE CLOVERSUMMARY

The yield differences between varieties in the 1961 seedings at Ottawa and Verner generally were not significant. Ottawa Syn. A was the highest ranking in the 3-year average yield at Ottawa. California Certified ranked highest in the 2-year average at Verner. Both of these trials now are completed.

Merit, Pilgrim and S-100 have yielded well in the trials seeded in 1962. Nordic has performed relatively better at Kapuskasing and Verner than at Guelph and Ottawa.

In seed yields, the Ottawa Synthetics and Nordic have been the highest ranking in most instances.

A new trial of five varieties and strains was seeded in 1964. The establishment was reported fair to good at Fort William, Guelph, Kapuskasing and Kemptville (forage trials) and at Williamstown (seed trial). Trials at Verner for forage and seed did not establish satisfactorily due to the dry conditions and were discarded.

No change in white clover recommendation or variety licensing is suggested at this time. Additional data will be obtained on Merit and the Ottawa Synthetics from the 1964 seeding.

SUMMARY OF WHITE CLOVER SEEDINGS

Variety	1961 Seeding		1962 Seeding				1964 Seeding	
	Forage	Seed	Forage	Seed	Forage	Seed	Forage	Seed
	Ottawa Verner*	Ottawa	Guelph Kapuskasing Ottawa* Verner*	Ottawa* Williamstown (Test 1)* Williamstown (Test 2)*	Fort William Guelph Kapuskasing Kemptville Verner*	Verner* Williamstown		
Ott. Syn. A	X X	X	X X X X	X X X	X X X X X	X X		
Ott. Syn. B	X X	X	X X X X	X X X	X X X X X	X X		
Merit			X X X X	X X X	X X X X X	X X		
Calif. Cert.	X X	X	X X X X	X X X	X X X X X	X X		
White Dutch			X X X X	X X X	X X X X X	X X		
Pilgrim	X X	X	X X X X	X X X				
Kersey	X X	X	X X X X	X X X				
Nordic	X X	X	X X X X	X X X				
S-100	X X	X	X X X X	X X X				
N.Z. Cert.			X X X X	X X X				
G-2385			X	X	X			
G-2386			X	X	X			
Kivi				X X	X			
Granladino			X					

\* Tests discarded. No data in 1964.

Summary of White Clover Trials - 1961 Seeding.

	Ottawa					Verner			
	1962 (3 cuts)	1963 (3 cuts)	1964 (2 cuts)	3-year Mean	Rank	1962 (1 cut)	1963 (1 cut)	2-year Mean	Rank
Ottawa Syn.A	7400a	7684a	4463a	6515	1	2881a	2904 c	2893a	6
Kersey	7100a	7930a	4260a	6430	2	3156a	3071 bc	3114a	2
Calif. cert.	7200a	7592a	4211a	6334	3	2936a	3465a	3201a	1
Nordic	7740a	7030a	4228a	6333	4	3176a	2835 c	3006a	4
Pilgrim	6940a	7584a	4384a	6302	5	2871a	3353ab	3112a	3
S-100	7220a	7424a	4242a	6295	6	2999a	2933 c	2966a	5
Ottawa Syn. B.	7160a	7492a	3774a	6142	7	2973a	2760 c	2866a	7

Summary of White Clover Trials - 1962 Seeding.

	Guelph		2-year Mean	Rank	Kapusksasing		2-year Mean	Rank
	1963 (3 cuts)	1964 (4 cuts)			1963 (3 cuts)	1964 (1 cut)		
Merit	5764	7182 b	6473	3	4277a	3193a	3735	1
S-100	5197	7974a	6585	2	3612 cd	3113a	3362	5
Pilgrim	5680	7078 bc	6379	4	4191ab	2709a	3450	2
Calif. Cert.	5667	7032 bc	6350	5	3834 bc	2921a	3378	4
Nordic	5281	6134 d	5708	10	3781 c	3094a	3438	3
Kersey	5368	7936a	6652	1	3547 cd	2910a	3228	8
Ottawa Syn. A	5222	6513 cd	5867	7	3791 c	2711a	3251	6
Ottawa Syn. B	4986	6563 cd	5775	9	3831 bc	2451a	3141	9
N.Z. Cert.	4829	7188 b	6008	6	3144 e	3354a	3249	7
Comm. Wh. D.	4859	6771 cd	5815	8	3275 de	3084a	3180	10
G-2385	5014	-	-	-	-	-	-	-
G-2386	4858	-	-	-	-	-	-	-
Kivi	-	-	-	-	-	-	-	-
Granladino	5337	7249 b	6293	-	-	-	-	-

	Ottawa		Verner	
	1963 (3 cuts)	Rank	1963 (1 cut)	Rank
Merit	4554ab	2	1168ab	2
S-100	4260abc	4	1178a	1
Pilgrim	5055a	1	1117abc	7
Calif. Cert.	4249abc	5	1127abc	6
Nordic	4004 bc	7	1149abc	3
Kersey	3730 c	9	1142abc	4
Ottawa Syn. A	4231 bc	6	994 c	10
Ottawa " B	4475ab	3	1114abc	8
N.S. Cert.	3552 c	10	1131abc	5
Comm. Wh. D.	3880 bc	8	1006 bc	9
G-2385	4323abc	-	-	-
G-2386	3896 bc	-	-	-
Kivi	3899 bc	-	1242	-
Granladino	-	-	-	-

(Yields followed by the same letter are not significantly different at P=.05)

SUMMARY OF WHITE CLOVER SEED YIELDS (LB./A.)

Variety	Ottawa(1) 1963-64	Ottawa(2) 1963	Williamstown(3) 1963	Average
Nordic	44	77	124	82
Ottawa Syn. B.	48	73	108	76
Ottawa Syn. A.	42	81	100	74
Pilgrim	40	67	70	59
Kersey	36	51	78	55
S-100	34	59	73	55
Calif. Cert.	47	63	56	55
Wh. Dutch	-	37	60	-
N.Z. Cert.	-	37	40	-
Merit	-	49	42	-

- (1) 1961 Seeding  
 (2) 1962 Seeding  
 (3) 1962 Seeding - Ave. of 2 Trials.

LADINO CLOVER VARIETY WITH TIMOTHY FOR PASTURE (TRIAL #44)-  
OTTAWA 1962-1964

General Information:

Location: Central Experimental Farm, Ottawa.  
Soil Type: Uplands sandy loam.  
Experimental Design: Randomized blocks, 6 replications.  
Plot Size: Seeded 5' x 20'; harvested 3'-3" x 18'.  
Nurse Crop: Barley at 1 bushel per acre.  
Seeding Rate: Clover 2 lb. per acre; Timothy 8 lb. per acre.  
Seeding Date: May 11, 1961.  
Sampling for D.M.: One 500-gram sample per plot per cut.  
Project Leader: L.M. Casserly.  
Results:

Performance of Ladino Varieties with Timothy for Pasture  
 (Yield of dry matter in pounds per acre)

Varieties	1962	1963	1964	1964	1964	Mean 3 yr
	3 cuts Total	3 cuts Total	1st cut	2nd cut	2 cuts Total	
Syn. A	7400	7684	2859	1604	4463	6515
Kersey	7100	7930	2810	1450	4260	6430
Calif. Cert.	7200	7592	2651	1560	4211	6334
Nordic	7740	7030	2747	1481	4228	6333
Pilgrim	6940	7584	2803	1581	4384	6302
S-100	7220	7424	3054	1188	4242	6295
Syn. B	7160	7492	2247	1527	3774	6142
Significance	N.S.	N.S.	N.S.	N.S.	N.S.	

LADINO CLOVER VARIETIES FOR SEED (TRIAL NO. 45 & 63) 1963-1964General Information:

Location: Central Experimental Farm, Ottawa.

Soil Type: Uplands sandy loam (Trial 45)  
Matilda sandy loam (Trial 63)

Experimental Design: Randomized blocks, 6 replications.

Plot Size: Seeded 5' x 20': harvested 3'-3" x 14'.

Seeding Rate: 3 lbs. per acre.

Seeding Date: May 11, 1961 (Trial 45),  
and June 5, 1962 (Trial 63)

Project Leader: L.M. Casserly.

Results:

Performance of Ladino Clover Varieties for Seed  
(Yield in lbs. per acre)

Varieties	Test 45		Test 63 1963	Mean Test 45 and 63 2 yr.
	1963	1964		
Ottawa Syn. B	46	51	73	57
Ottawa Syn. A	36	47	81	55
Nordic	41	46	77	55
Calif. (cert.)	50	45	63	53
Pilgrim	33	48	67	49
S-100	38	31	59	43
Kersey	38	34	51	41
Merit			49	
Commercial White Dutch			37	
<u>New Zealand (Cert.)</u>			37	
Significance	N.S.	N.S.	S.D.	

White Clover Strain Trial, O.A.C., 1962 Seeding

\*  
Yield in lb. dry matter per acre, and percent legume

	Cut 1 Yield	May 26 % Legume	1964 Cut 2 Yield	Cut 3 Yield	Cut 4 Yield	Sept. 2 % Legume	Season Yield	1963 Season Yield	Rank	1963-4 Average Yield	Rank
Sl00	2579ab	31	1768a	1973ab	1654a	70	7974a	5197	8	6585	2
California	2441abc	15	1222 c	1871 bc	1498ab	70	7032 bc	5667	3	6350	5
Ottawa A	2210 cd	18	1130 c	1788 bc	1385 bc	60	6513 cd	5222	7	5867	8
Kersey	2687a	35	1762a	1913ab	1574ab	75	7936a	5368	4	6652	1
N. Zealand	2409 bc	31	1556ab	1710 bc	1513ab	65	7188 b	4829	11	6008	7
Granladino	2420 bc	22	1243 c	1968ab	1618ab	70	7249 b	5337	5	6293	6
Filgrim	2463abc	22	1266 c	1890abc	1459ab	65	7078 bc	5680	2	6379	4
Common	2230 cd	32	1501 b	1627 c	1413abc	55	6771 cd	4859	10	5815	9
Ottawa B	2122 d	20	1196 c	1871 bc	1374 bc	55	6563 cd	4986	9	5775	10
Nordic	2350 bcd	22	1330 bc	1286 d	1168 c	50	6134 d	5281	6	5708	11
Merit	2456abc	20	1157 c	2125a	1444a	65	7182 b	5764	1	6473	3
Mean	2397		1375	1821	1461		7054	5290		6172	
Significant at 5% level	S.D.		S.D.	S.D.	S.D.		S.D.				

\* Combined weight of white clover and orchardgrass.

White Clover Strain Trials, O.A.C.Comments

The outstanding feature of the 1964 season at Guelph was the performance of the two white clover strains, S-100 and Kersey. Their yields were at least 10% above those of all other varieties over the entire 1964 season and for each of the four cuts these two were well above average. The legume fraction for these two was also always above average.

Merit which appeared very promising in 1963 appeared in a somewhat less favourable light in 1964.

The two Ottawa synthetics were below average in yield in most of the cuts. To a not inconsiderable degree this was related to a level of establishment in 1962 that left something to be desired. This feature was again in evidence in 1964 when a new strain trial was established. The other four varieties appeared to establish well in this latest seeding.

1964 Seeding

Ottawa Syn. A	White dutch
Ottawa Syn. B	Merit
California certified	Ladino
Sown with orchardgrass in six replicates.	

WHITE AND LADINO CLOVER - KAPUSKASING 1964

Varieties	1964	1963	Total
	<u>one cut</u>	1st cut	
Pilgrim	2709 (9)	2268	4191
Merit	3193 (2)	2257	4277
Ott. Syn. A	2711 (8)	2016	3791
Ott. Syn. B	2451 (10)	2069	3831
Calif. Cert.	2921 (6)	1997	3834
Nordic	3094 (4)	2281	3781
Kersey	2910 (7)	2076	3547
New Zealand Cert.	3354 (1)	1795	3144
S. 100	3113 (3)	2199	3612
Common White Dutch	3084 (5)	2124	3275
Average	2954	2108	3728
L.S.D.	NS		

July 8

The stand overwintered well but was heavily invaded with dandelions.

Only one cut was taken. Yield patterns were almost the reverse of last year, the white clovers outyielding most of the Ladinos, except Merit. The latter variety continued to yield well.

A new trial was established in 1964. Despite a late seeding, fall stands were good. Varieties included were:

Merit  
 California Certified  
 Ott. Syn. A.  
 Ott. Syn. B.  
 White Dutch

WHITE CLOVER - PURE STAND - PASTURE

1. Location - Fort William, Ont.
2. Year - 1964
3. Soil Type - sandy loam
4. Experimental design - randomized block, 6 replicates
5. Plot Size - 5' X 20'
6. Size Sample Harvested N/A in 1964      D.M. Sample Size N/A in 1964
7. Variety N/A
8. Fertilizers - 300# 0-20-20 just prior to seeding; 300# 0-20-20 on August 10th.
9. Pesticides - dates and rates
  - a. Herbicides - 16 oz. 2,4-DB / acre on July 15th.
  - b. Insecticides
  - c. Fungicides
10. Seeding Date - May 28, 1964
11. Harvest Date - N/A in 1964
12. Previous Crop - Fallow
13. Seeding Method - Broadcast without companion crop
14. Harvest Method - N/A in 1964
15. Seeding Rate - 12.0# / acre.

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REMARKS -	<u>VARIETY</u>	<u>LEGUME %</u>	<u>WEEDS %</u>
	Merit	70.0	30.0
	Syn- A	66.5	33.5
	Syn- B	68.5	31.5
	White Dutch	71.5	28.5
	California Cert.	66.5	33.5

By late fall all varieties exhibited satisfactory growth with differences in stands as between varieties remaining small. Test rated fair to good, with good chance of securing further data in 1965.

CO-OPERATOR - W.B. Towill

DESCRIPTION OF  
WHITE CLOVER VARIETIES AND STRAINS

Ottawa Synthetics A & B

Breeder - H. A. McLennan, Research Station, Ottawa

Breeding Method - The program was started in 1949 by recurrent selection in plants derived chiefly from Oregon Certified Ladino. Selections later were made from Pilgrim and a few high seed-setting plants were selected from the POC strains developed by L. Dessureaux. Since 1954, the maternal line selection method has been used.

Description - The plants were selected primarily for true Ladino type with high seed-setting ability. Selection was made also for satisfactory forage characteristics, hardiness and tolerance under natural field infections to Fusarium, Sclerotinia and Typhula diseases. The two strains have been found to be quite similar. It is planned to increase seed of Syn. A and to discontinue work with Syn. B.

Merit

Breeder - C. P. Wilsie, Iowa State Univ., Ames.

Breeding Method - Merit is a synthetic variety developed by combining 30 clones selected over a 3-year period from a spaced nursery of certified Ladino clover from Oregon and California. Breeder seed was produced in 1950 and 1951. Merit was released under the variety name in 1960.

Description - Merit is characterized by the high percentage of plants which are of the Ladino type. It is variable in white leaf markings and is not distinguished from other Ladino clover except through its certificate history. This variety has shown superiority in persistence, summer drought tolerance and resistance to leaf hoppers.

Pilgrim

Breeder - U.S. Bureau of Plant Industry, Soils and Agricultural Engineering in co-operation with the Agricultural Experiment Stations of the Northeastern and North Central States.

Breeding Method - Pilgrim is a 21-plant synthetic variety. Seventy selected clones, originating from Ladino seed collections from old pastures throughout the Northeastern States and Canada, were distributed to several State Experiment Stations in 1946. In 1948, 21 clones were selected as the parents of the variety Pilgrim.

Description - This is a tall growing, leafy variety of white clover similar in type to Ladino. It is high yielding and hardy. As the seed supply of Pilgrim has not been increased on a commercial scale, this

variety is being dropped from our testing program.

D-13

S-100

Breeder - Welsh Plant Breeding Station, Aberystwyth

Breeding Method - Selections from New Zealand, White Dutch and Wild White Clovers.

Description - The plants have large leaflets borne on long stems arising from relatively stout surface runners. S-100 begins growth earlier in the spring than wild white clover and continues growing later into the autumn.

Kersey

Breeder - (England)

Breeding Method - Developed from a single plant found growing in a field in Suffolk in 1924.

Description - Kersey is a vigorous, productive variety that recovers rapidly after cutting or grazing. It commences growth earlier in the season (in England) than S-100 but its later productivity is lower. It is slightly more upright in growth habit than S-100.

Kivi

Breeder - Swedish Seed Company, Svalöf.

Breeding Method - Selection for winter hardiness in New Zealand certified.

Description - Kivi is very persistent and high yielding in Sweden, especially during the latter part of the summer and in the autumn.

Nordic

Breeder - (Germany)

Breeding Method -

Description - This is a Ladino-type white clover.

G-2385 and G-2386

Breeder - Central Bureau, Holland.

Breeding Method -

Description - The former is a leafy hay strain; the latter is a permanent pasture strain.

## YIELD PERFORMANCE OF BERSEEM CLOVER RELATIVE TO OTHER LEGUMES

Guelph 1963-1964 (Tests 237, 238)

Yield in pounds D.M. per acre

Variety	1964				1963	1963-64 Mean
	Cut 1 (July 9)	Cut 2 (Aug.11)	Cut 3 (Sept.24)	Season Total	Season Total	
Hustler	3735	2832	3003	9394	5223	7308
Nile	3125	2645	2833	8603	5239	6921
Common	3661	2366	2301	8328	5068	6703
DuPuits	3021	2280	2390	7691	4891	6291
Vernal	3509	1968	1880	7358	4731	6044
Lasalle	2704	2040	2312	7056	5490	6273
Berseem + Vernal + Saratoga	3611	2442	2549	8602	5246	6924
Mean	3313	2368	2467	8147	5127	6637

In both years this test was seeded without a companion crop. In 1963 the test was sprayed with 3,4-DB which injured the red clover reducing the yield drastically in the first cut. In 1964, the test was not sprayed with herbicide resulting in a high weed content in cut 1, particularly the Berseem clover varieties (40% of the yield). Berseem clover made up only about 5% of the yield in the mixture and seems to have no place as a companion crop for establishment of forage stands.

Berseem clover could be used as an annual legume forage crop in Ontario if seeded early in the spring. However, since the yield is not a great deal higher than alfalfa or an alfalfa mixture, and the alfalfa stand is available for subsequent years, Berseem clover appears to have little potential in the province.

BROME VARIETIES UNDER TEST IN PURE STANDS IN ONTARIO IN 1964

Variety	Guelph			Ottawa			Verner		Kapuskasing			
	Test 223			Test 226		Test 235 1964	Test 54			1963	1964	
	1962	1963	1964	1963	1964		1962	1963	1964			
Saratoga	X	X	X	X	X	X	X	X	X	X	X	X
Lincoln	X	X	X	X	X	X				X	X	X
Redpatch				X	X		X	X	X			X
Ott. Syn. B				X	X		X	X	X	X	X	
Ott. Syn. D				X	X	X						
Ott. Syn. A							X	X	X	X	X	
Ott. Syn. 6						X						
Ott. Syn. 7						X						
Blair				X	X							
Baylor				X	X							
S-5563	X	X	X				X	X	X			
S-6213	X	X	X				X	X	X			
S-6214	X	X	X				X	X	X			
S-5824				X	X	X						
S-6324						X						
S-6325						X						
Brandon 986						X						
Brandon 988						X						
G 2252	X	X	X									
G 2253	X	X	X									
Guelph Syn.1						X						
Fischer							X	X	X	X	X	X
Wisc. B55							X	X	X	X	X	X
Manchar							X	X	X	X	X	
Achenbach							X	X	X			
Sac							X	X	X	X	X	X
Carlton							X	X	X	X	X	X
Can. Common	X	X	X				X	X	X			

BROME SYNTHETIC TEST, GUELPH, 1961 (TEST 223)

Yield - lb. D.M./acre

Variety	1964			1963	1962	3-Year Mean		
	Cut 1 June 29	Cut 2 Sept.3	Season Total	Season Total	Season Total	Cut 1	Cut 2	Season Total
Saratoga	6402	2921	9323	10226	7538	6031	2664	9029
Lincoln	6228	2742	8971	10159	7447	6450	2409	8859
Canadian Common	4855	2398	7254	9517	6176	5424	2225	7649
S-5563	4894	2386	7279	8940	6284	5263	2235	7501
S-6213	5569	2489	8058	9990	6896	5936	2379	8315
S-6214	5606	2445	8041	9373	7041	5898	2257	8152
G-2252	6030	2804	8849	9838	7413	6175	2525	8700
G-2253	6564	2583	9147	9846	7468	6299	2521	8820
	5770	2596	8366	9735	7033	5976	2402	8378
L.S.D. .05	186	273	798	790	355			
C.V. (%)	6.9	7.2	6.4					

Pure stand - 12 lb./acre seeding rate

Fertilization - 70 + 50 lb. N/acre; 60 lbs.  $K_2O$ ; 60 lbs.  $P_2O_5$

Remarks: This test has been concluded. None of the numbered strains appear worthy of further evaluation. Although G-2253 and G-2252 are equal in yield to the check varieties, their lack of superiority over the check varieties does not warrant further testing.

## BROME VARIETY TRIAL - PURE STAND - GUELPH - 1962 (TEST 226)

Yield in Pounds D.M. per Acre

Variety	1964			1963 Season Total	1963-64 Mean
	Cut 1 June 26	Cut 2 Aug. 13	Season Total		
Saratoga	6777	3060	9838	10290	10064
Lincoln	7306	2524	9829	10010	9920
Redpatch	6999	2758	9758	11209	10484
Ott. Syn. B	7264	2929	10193	10225	10209
Ott. Syn. D	6892	2692	9584	11088	10336
Blair	8142	2745	10886	9828	10357
Baylor	7262	2760	10022	10290	10156
Sask. S-5824	7048	2509	9557	11064	10310
	7211	2747	9958	10479	10218
L.S.D. .05	N.S.	322	N.S.		
.01	N.S.	N.S.	N.S.		
C.V. (%)	7.6	7.9	5.8		

Seeding rate: 12 lb. per acre

Fertilization: 70 + 50 lb. of N/acre; 60 lbs. P<sub>2</sub>O<sub>5</sub>; 240 lbs. K<sub>2</sub>O

## BROME VARIETY SCREENING TRIAL, GUELPH, 1963 (TEST 234)

Variety	Yield (lb. D.M./acre)			% grass in mixture		% spring ground cover
	Cut 1 June 26	Cut 2 Aug. 13	Season Total	Cut 1	Cut 2	
Saratoga	7200	3063	10263	60.0	45.0	74
Lincoln	7504	2874	10378	62.5	41.2	79
S-6324	7067	2684	9751	55.0	40.0	66
S-6325	8181	2630	10810	61.2	41.2	65
S-5824	6515	2672	9188	58.7	40.0	69
Brandon 986	7421	2892	10313	62.5	43.5	68
Brandon 988	6675	2728	9403	58.7	41.2	70
Ott. Syn. D	7201	2969	10170	62.5	41.2	78
Ott. Syn. 6	7556	2848	10404	62.5	40.0	74
Ott. Syn. 7	7614	2504	10119	61.2	38.7	65
Guelph Syn. 1	7364	2746	10109	62.5	37.5	66
	7300	2783	10082			
L.S.D. .05	893	289	N.S.			
.01	N.S.	N.S.	N.S.			
C.V. (%)	8.5	7.2	7.1			

Establishment: Seeded May 3, 1963, in pure stand (12 lb./acre) except 5 foot strip at end of plots overseeded with Vernal alfalfa (8 lb./acre). No companion crop used.

Fertilization: N - 75 + 50 lbs.;  $P_2O_5$  - 60 lbs.;  $K_2O$  - 240 lbs.

Yield: Measured only on pure stand.

% Grass: estimated from overseeded portion of plots.

No remarkable differences in maturity, height, etc.

## BROME VARIETIES - HAY (TRIAL NO. 54) 1962-1964

Location: Central Experimental Farm, Ottawa.

Soil Type: Uplands sandy loam

Experimental Design: Randomized blocks, 6 replications.

Plot Size: Seeded 5' x 20'; harvested 3'3" x 18'.

Nurse Crop: Barley at 1 bushel per acre.

Seeding Rate: 12 lb. per acre

Date of Seeding: May 15, 1961

Sampling for D.M.: One 500-gram sample per plot per cut

Project Leader: L.M. Casserly.

Performance of Brome Varieties for Hay  
(Yield in pounds of dry matter per acre)

Varieties	1963	1963	1964	1964	1964	1962-1963-1964
	2 cuts	2 cuts	1st cut	2nd cut	2 cuts Total	3-year Mean
Ottawa Syn. B	5680 ab	10300 a	3887	1058	4945	6975
Saratoga	6180 a	9708 ab	3785	1141	4926	6938
Ottawa Syn. A	6140 a	9531 ab	3682	1091	4773	6815
Fischer	6020 a	9561 ab	3263	1103	4366	6649
Wisc. B. 55	6020 a	9588 ab	3256	1016	4272	6627
Manchar	6100 a	9253 ab	3371	1040	4411	6588
Achenbach	5660 ab	9286 ab	3299	1030	4329	6425
S-6214	5600 ab	9125 abc	3581	905	4486	6404
S-6213	6200 a	8514 bc	3284	1190	4474	6396
Redpatch	5220 ab	9449 ab	3253	983	4236	6301
Sac	5500 ab	9005 bc	2908	999	3907	6137
Carlton	5960 a	8039 c	3063	1035	4098	6032
Can. Common	4880 b	6962 d	2926	746	3672	5171
S-5563	4680 b	6947 d	2861	992	3853	5160
Significance	S.D.	S.D.	N.S.	N.S.	N.S.	
C.V.		9.57%				

## BROMEGRASS VARIETY TEST FOR HAY - 1964

Location: Verner, Ontario

Soil Type: Casey silty clay loam, imperfectly drained

Fertilizer Treatment: 300 lb. 8-16-16 per acre applied on May 6, 1964

Test Design: Randomized, 6 blocks

Plot Size: 5' x 20', area harvested being 39" x 16½'

Seeded: May 27, 1961

Rate Seeded: 12 lb. pure seed per acre

Treatment: First cut taken at or prior to full bloom, and aftermath to be harvested in fall as pasture

Results: Due to extreme drouth conditions only 1 harvest taken at full blossom

<u>Variety</u>	<u>Yield of D.M./acre (lb.)</u>
Lincoln	4012
Saratoga	3882
Ott. Syn. B	3802
Wisc. B-55	3800
Ott. Syn. A	3786
Manchar	3771
Fischer	3741
Wisc. B-81	3640
Carlton (S-4088)	3416
Significance	N.S.

## BROME VARIETY TEST - HAY - KAPUSKASING

(Pure stand)

Varieties	1964			1963		
	1st cut	2nd cut	Total	1st cut	2nd cut	Total
Saratoga	2868	1405	4273	3751	888	4639
Ott. Wyn. C	2891	1346	4237	4295	729	5024
Fischer	2918	1306	4224	4015	762	4777
Lincoln	2878	1206	4083	4086	710	4795
Carlton	2582	1191	3773	3841	752	4593
Wisc. 55	2633	1110	3743	3711	738	4449
Wisc. 81	3033 (1)	1122	4155	4251	707	4958
Average	2829	1241	4070	3993	755	4748
	N.S.	N.S.				
	Jul.9	Aug.27		Jul.12	Aug.19	

Varietal differences were narrow. Carlton and Wisc. 55 being the lower producers, as in 1963. First cut yields were lower but aftermath higher than last year. Saratoga and Ott. Syn. C continued to perform well.

## BROME VARIETY TRIAL - PASTURE

(Pure stand)

Varieties	1964			1963		
	1st cut	2nd cut	Total	1st cut	2nd cut	Total
Saratoga	1368	1578	2946	2878	872	3749
Ott. Syn. C	1469	1521	2990	2726	809	3536
Fischer	1333	1526	2859	2669	806	3470
Lincoln	1498	1672	3170	2279	751	3030
Carlton	1202	1578	2780	2572	725	3297
Average	1374	1575	2949	2624	792	3416
	N.S.	N.S.				
	Jun.22	Aug.10		Jul.27	Aug. 7	

## BROME VARIETY TEST - HAY KAP. 1964

(with alfalfa)

Varieties	1964			1963 1st cut
	1st cut	2nd cut	Total	
Saratoga	6126	1383	7509	5366
Ott. Syn. C	5962	1160	7122	5278
Fischer	5962	1333	7295	4898
Lincoln	6158	1241	7399	5244
Carlton	6214	1220	7434	5244
Average	6084	1267	7352	5200
	N.S.	N.S.		
	Jul. 6	Aug. 27		Jul. 9

## BROME VARIETY TEST - PASTURE

(With Empire trefoil)

Varieties	1964			1963 1st cut
	1st cut	2nd cut	Total	
Saratoga	4860	518	5378	2474
Ott. Syn. C	5591	523	6114	2432
Fischer	5309	561	5870	2404
Lincoln	4707	434	5141	2361
Carlton	4850	472	5322	2314
Average	5063	502	5565	2397
	N.S.	N.S.		
	Jul. 6	Aug. 7		Jun. 27

## UNIFORM BROME VARIETY TEST IN MIXTURE WITH VERNAL ALFALFA, 1961

Three-Year (1962-63-64) Average Yield of the Brome-Alfalfa Mixture at  
Guelph, Kemptville and Ridgetown

Pounds Dry Matter per Acre

Brome Variety	Cut 1	Cut 2	Cut 3	Season Total
<u>PASTURE MANAGEMENT</u>				
Saratoga	3459	2727	2340	8526
Lincoln	3407	2747	2311	8465
Manchar	3336	2618	2222	8176
Common	3273	2796	2358	8427
Wisc. B55	3375	2678	2295	8348
Sac	3458	2690	2349	8497
Carlton	3191	2852	2382	8425
<u>HAY MANAGEMENT</u>				
Saratoga	5686	2777		8995
Lincoln	5711	2695		8932
Manchar	5607	2610		8732
Common	5287	2625		8421
Wisc. B55	5683	2708		8925
Sac	5561	2644		8715
Carlton	5363	2769		8661

Average Yield of the Brome-Alfalfa Mixture at Three Locations - Guelph,  
Kemptville, Ridgetown - in 1964

Pounds dry Matter per Acre

Brome Variety	Cut 1	Cut 2	Cut 3	Season Total
<u>PASTURE MANAGEMENT</u>				
Saratoga	3954	3095	2460	9509
Lincoln	3816	3176	2508	9499
Manchar	3891	2998	2431	9319
Can. Common	3839	3143	2568	9549
Wisc. B55	3803	3029	2456	9287
Sac	3972	3074	2515	9562
Carlton	3764	3243	2504	9510
<u>HAY MANAGEMENT</u>				
Saratoga	6170	2854	2396	10622
Lincoln	6041	2844	2367	10463
Manchar	6053	2836	2317	10434
Can. Common	5815	2848	2340	10189
Wisc. B55	6166	2857	2404	10626
Sac	5995	2754	2294	10278
Carlton	5732	2915	2380	10234

\* Guelph and Ridgetown locations only

## UNIFORM BROME VARIETY TEST, GUELPH, 1961 (TEST 224)

Yield of mixture in pounds D.M. per acre and  
percent grass in the mixture in 1964

Variety	Mixture Yield				% grass in mixture		
	Cut 1 May 28	Cut 2 Jul.18	Cut 3 Sept.3	Season Total	Cut 1	Cut 2	Cut 3
<u>PASTURE MANAGEMENT</u>							
Saratoga	3794	2909	2715	9418	32	12	4
Lincoln	3740	3126	2910	9776	22	4	1
Manchar	3824	2823	2627	9274	42	25	12
Can. Common	3637	3012	2821	9470	20	12	3
Wisc. B55	3652	2856	2754	9262	19	4	2
Sac	3720	3072	2811	9603	21	7	3
Carlton	3424	3191	2749	9364	9	3	1
Mean	3685	2998	2769	9452	23	10	4
<u>HAY MANAGEMENT</u>							
Saratoga	5594	3248	2130	10972	40	17	1.5
Lincoln	5505	3252	2129	10886	28	7	0.7
Manchar	5522	3186	2106	10814	42	31	3.0
Can. Common	5416	3100	2120	10636	28	16	1.2
Wisc. B55	5628	3328	2133	11089	26	6	1.0
Sac	5503	3064	2019	10586	32	16	5.0
Carlton	5119	3333	2229	10681	27	15	0.7
Mean	5469	3216	2124	10809	32	15	1.8

Mixture: Brome varieties - 10 lbs./acre; overseeded with Vernal alfalfa 10 lbs./acre

Fertilization: Fall 1963 - 60 lbs./acre P<sub>2</sub>O<sub>5</sub>; 240 lbs./acre K<sub>2</sub>O

Previous years - 60 lbs./acre P<sub>2</sub>O<sub>5</sub>; 60 lbs./acre K<sub>2</sub>O + 50 lbs. K<sub>2</sub>O  
immediately after first hay cut.

Harvest Management: Pasture - cut at just prior or at very early bud of alfalfa.  
Hay - cut at late to 1/10 bloom of alfalfa (except Cut 3).

W. O. A. S.

## UNIFORM BROMEGRASS VARIETY TRIAL (Seeded 1961)

## 1964 Results

Variety	June 1		July 17		September 1		Total
	% Legume	Yield	% Legume	Yield	% Legume	Yield	
<u>PASTURE MANAGEMENT</u>							
Saratoga	69	5769	77	3718	88	2592	12079
Lincoln	80	5554	84	3686	94	2479	11719
Manchar	65	5747	70	3461	83	2507	11715
Canadian Common	80	5751	78	3690	93	2773	12214
Wisc. 55	75	5663	88	3753	93	2593	12009
Wisc. 81	73	5772	83	3592	95	2676	12040
Carlton	86	5698	80	3911	93	2670	12279
L.S.D. @ 5%		N.S.		257 lb.		N.S.	
C.V.		3.3%		5.9%		8.8%	
<u>HAY MANAGEMENT</u>							
	<u>June 19</u>		<u>July 17</u>		<u>September 1</u>		
Saratoga	58	6807	76	2731	79	2662	12200
Lincoln	70	6498	83	2688	90	2605	11791
Manchar	57	6507	67	2638	75	2529	11674
Canadian Common	71	6145	74	2648	88	2560	11353
Wisc. 55	64	6694	79	2742	87	2674	12110
Wisc. 81	61	6682	80	2612	86	2570	11864
Carlton	68	6068	75	2875	92	2531	11474
L.S.D. @ 5%		464 lb.		N.S.		N.S.	
C.V.		6.1%		6.2%		8.5%	

W. O. A. S.

SUMMARY - UNIFORM BROMEGRASS TRIAL (Seeded 1961)

Variety	1962				1963				1964				3-Year Total
	May 18	Jun.22	Aug.16	Total	May 21	Jul. 8	Aug.21	Total	June 1	Jul.17	Sept.1	Total	
<u>PASTURE MANAGEMENT</u>													
Saratoga	3517	2282	2734	8532	3776	4421	2509	10706	5769	3718	2592	12079	31317
Lincoln	3654	2476	2941	9070	3656	4402	2594	10652	5554	3686	2479	11719	31441
Manchar	3192	2180	2544	7916	3610	4250	2298	10158	5747	3461	2507	11715	29789
Can. Common	3082	2479	2785	8346	3554	4594	2565	10713	5751	3690	2773	12214	31273
Wisc. 55	3359	2341	2966	8666	3640	4464	2446	10550	5664	3753	2593	12009	31225
Wisc. 81	3396	2334	2885	8615	3636	4289	2467	10392	5772	3592	2676	12040	31047
Carlton	2920	2440	2712	8071	3244	4413	2533	10190	5698	3911	2670	12279	30540
L.S.D. @ 5%	337	202	N.S.		202	N.S.	N.S.		N.S.	257	N.S.		
<u>HAY MANAGEMENT</u>													
	<u>Jun. 7</u>	<u>Aug.16</u>			<u>Jun.11</u>	<u>Jul.19</u>			<u>Jun.19</u>	<u>Jul.17</u>	<u>Sept.1</u>		
Saratoga	5988	3117		9105	6612	2901		9513	6807	2731	2662	12200	30818
Lincoln	5875	2836		8711	6895	2620		9515	6498	2688	2605	11791	30017
Manchar	5690	2842		8532	7002	2456		9458	6507	2638	2529	11674	29664
Can. Common	4922	2418		7340	6404	2593		8994	6145	2648	2560	11353	27690
Wisc. 55	5808	3008		8816	6676	2590		9266	6694	2742	2674	12110	30192
Wisc. 81	5826	3121		8948	6532	2721		9253	6682	2612	2570	11864	30065
Carlton	5495	3207		8702	6402	2596		8998	6068	2875	2531	11474	29174
L.S.D. @ 5%	404	468			N.S.	N.S.			464	N.S.	N.S.		

## UNIFORM BROME VARIETY TEST, 1961 - KEMPTVILLE

Average Yield in lb. D.M. per Acre 1964

Project No. 1.717

Seeded May 25, 1961, with 10 lb. bromegrass and 10 lb. Vernal alfalfa per acre.

Variety	Cut 1 (May 13)	Cut 2 (June 29)	Cut 3 (Aug. 8)	Total	Relative Rank %	% Grass May 25
<u>PASTURE MANAGEMENT</u>						
Saratoga	2300	2658	2072	7030	99.8	30.8
Lincoln	2153	2716	2134	7003	99.4	26.7
Manchar	2101	2709	2160	6969	98.9	22.5
Canadian Common	2128	2726	2110	6964	98.8	23.3
Wisc. 55	2093	2477	2021	6591	93.5	21.7
Wisc. 81 (Sac)	2425	2559	2058	7042	100.0	26.7
Carlton (S.4088)	2170	2625	2093	6888	97.8	16.7

<u>HAY MANAGEMENT</u>	Cut 1 (June 19)	Cut 2 (July 22)			
Saratoga	6110	2583	8693	98.6	35
Lincoln	6120	2592	8712	98.8	33
Manchar	6129	2685	8815	100.0	30
Canadian Common	5883	2795	8578	97.3	33
Wisc. 55	6177	2501	8678	98.4	24
Wisc. 81 (Sac)	5796	2586	8383	95.0	33
Carlton (S.4088)	6009	2538	8547	96.9	31

## BROMEGRASS VARIETY TRIAL (1963 seeding) KEMPTVILLE

Average Yield of Forage in lb. D.M. per Acre 1964

Project No. 1.716

Seeded 1963 - Brome 10 lb., Vernal alfalfa 10 lb.

Brome Variety	Cut 1 (June 16)		Cut 2 (July 20)		Cut 3 (Oct. 15)		Total	Relative Rank	% Grass June 16
	Yield	Relative Rank	Yield	Relative Rank	Yield	Relative Rank			
Saratoga	5911	94.5	2270	95.5	1800	98.8	9981	97.6	40
Lincoln	5910	94.5	2318	97.5	1719	94.4	9947	97.3	34
Redpatch (Ott.Sym.C)	5808	92.8	2378	100.0	1821	100.0	10007	97.9	40
Blair (RP 100)	6253	100.0	2309	97.1	1661	91.2	10223	100.0	35
Sac	5784	92.4	2356	99.1	1701	93.4	9841	96.3	31

W. O. A. S.

## BROMEGRASS PERFORMANCE TRIAL (1964 Results)

Seeded- May 1963

Variety	June 22		July 17		August 31		Total
	% Grass	Yield	% Grass	Yield	% Grass	Yield	
Saratoga	32	5827	32	2389	16	1489	9705
Lincoln	32	6143	25	2390	15	1516	10049
Redpatch (Ott. Syn. C)	32	5773	29	2306	16	1457	9536
Blair (RP 100)	31	6064	27	2278	14	1551	9893
Sac	29	5748	27	2175	17	1421	9344
L.S.D. @ 5%		280 lb.		N.S.		N.S.	

## PERFORMANCE OF BROME VARIETIES IN MIXTURE WITH VERNAL ALFALFA, GUELPH, 1963 (TEST 235)

Variety	Mixture Yield (lb. D.M./acre)				% grass in mixture		
	Cut 1 June 26	Cut 2 Aug. 7	Cut 3 Sept. 3	Season Total	Cut 1	Cut 2	Cut 3
Saratoga	6031	3326	1484	10841	55	28	15
Lincoln	6130	3540	1588	11259	54	26	12
Redpatch	6510	3190	1608	11307	61	33	16
Blair	6741	3327	1527	11595	55	20	8
Sac	6461	3383	1662	11516	55	25	8
	6377	3353	1574	11304	56	27	12
L.S.D. .05	N.S.	N.S.					
C.V.	8.2	9.3					

Seeded: May 3, 1963

Mixture: 10 lb./acre brome; 10 lb./acre Vernal alfalfa. No companion crop used.

Fertilizer: Fall 1963 - 60 lbs./acre P<sub>2</sub>O<sub>5</sub>  
240 lbs./acre K<sub>2</sub>O

Harvest Date: First to 1/10 bloom of alfalfa.

## BROME VARIETY PERFORMANCE TRIAL (1963 seeding)

(Brome 10 lb./acre; Vernal alfalfa 10 lbs./acre)

Average Yield of Mixtures (in lb. D.M. per Acre) at Kemptville, Ridgetown and Guelph  
in 1964

Brome Variety	Cut 1	Cut 2	Cut 3	Season Total
Saratoga	5923	2662	1591	10176
Lincoln	6061	2749	1608	10418
Redpatch	6030	2625	1629	10283
Blair	6353	2638	1580	10570
Sac	5998	2638	1595	10234

## NEW TESTS SEEDED IN 1964

Ottawa: Test 85 - Brome performance for hay.  
The following brome varieties seeded in mixture with Vernal alfalfa: Saratoga, Redpatch, Blair, Sac, Lincoln, and S-6324 (Syn. 1). Stand establishment was rated excellent.

Test 81 - Brome screening test.  
The following varieties were planted in pure stand except for a 5' strip at the end of each plot which was overseeded with Vernal alfalfa: Saratoga, Lincoln, S-6325 (Syn. 1), S-6324 (Syn. 1), S-5824 (Syn. 2), Ottawa Syn. D, Ottawa Syn. 6, Ottawa Syn. 7, Guelph Syn. 1, Brandon 986, and Brandon 988. Stand establishment was rated excellent.

Fort William: The following brome varieties were seeded in mixture with Vernal alfalfa (10 lb./acre of each component): Saratoga, Lincoln, Redpatch, Ottawa Syn. D, Blair, Sac, S-6324 and S-6325.

Remarks (W.B. Towill): Stands for all mixtures included in this trial were classed as just fair by the end of the crop growing season. Brome was slow to germinate and establish although by year-end it equalled in some instances the percent legume in the sward. Weed population was high in this test due to the lack of competition from cultivated species and inability to control Horsetail using herbicides.

Meadow Fescue Varieties - Summary

No change in variety recommendations is suggested.

A pasture trial is being conducted at Guelph and Ottawa, while a hay and a seed yield trial are being conducted at Ottawa only.

Under a pasture management, Mimer and Trader are equal in yield. A number of other strains appear promising but additional data are required for final evaluations.

B.R. Christie,  
Co-ordinator.

Summary - Meadow Fescue Varieties - Seeded Alone (Pasture)

Variety	<u>O t t a w a</u>				<u>G u e l p h</u>		
	1962	1963	1964	Mean	1964	1964	Mean
	(3 cuts)	(1 cut)	(1 cut)		(2 cuts)	(2 cuts)	
C.B.						3260	
Ensign	4140	3020	1880	3010	2970		3000
Mefon	3960	3480	1950	3130			
Mimer	4260	3600	2070	3310		3180	3230
O280						3010	
Ottawa Syn. B.					3230		
Ottawa Syn C.					3520		
S-215	4400	3550	1800	3250	3860		3400
SK-6	4480	3770	1770	3340			
Skreszowicka					3460	2960	
SV. 01217						3110	
Trader	4460	3680	2040	3390	3440		3400
W.A.S.-9						3280	
W.A.S.-11						3000	
W.A.S.-22						2880	
W.A.S.-23						2640	
W.A.S.-24					3350		

Meadow Fescue Varieties (Trial No. 57) 1962-1964.General Information:

Location: Central Experimental Farm, Ottawa.  
Soil Type: Uplands sandy loam.  
Experimental Design: Randomized blocks, 6 replications.  
Plot Size: Seeded 5' x 20': harvested 3'-3" x 18'.  
Nurse Crop: Barley at 1 bushel per acre.  
Seeding Rate: 12 pounds per acre.  
Seeding Date: May 15, 1961.  
Sampling for D.M.: One 500-gram sample per plot per cut.  
Project Leader: L.M. Casserly  
Results:

Performance of Meadow Fescue Varieties for Pasture  
 (Yield of dry matter in pounds per acre)

Varieties	1962 Total 3 cuts	1963 1cut	1964 1 cut	1964 Mean 3 yr.
Trader	4460	3675 a	2035	3390
Sk-6	4480	2769 a	1772	3340
Mimer	4260	3602 a	2073	3312
S-215	4400	3547 a	1799	3249
Mefon	3960	3480 a	1948	3129
Ensign	4140	3019 b	1876	3012
Significance	N.S.	S.D.	N.S.	
C.V.		7.82%		

Meadow Fescue - Hay (Trial No. 67 and 68) - 1963-1964.General Information:

Location: Central Experimental Farm, Ottawa.  
Soil Type: Kars gravelly sandy loam.  
Experimental Design: Randomized blocks, 4 replications.  
Plot Size: Seeded 5' x 20'; harvested 3'-3" x 18'  
Seeding Rate: 18 lbs. per acre.  
Seeding Date: June 5, 1962.  
Sampling for D.M.: One 500-gram sample per plot per cut.  
Project Leader: L.M. Casserly  
Results:

Performance of Meadow Fescue for Hay  
 (Yield of dry matter in lbs. per acre)

Variety	1963	1963	1964	1964
	Test 67 1 cut	Test 68 2 cuts	Test 68 1 cut	Mean 2 yrs. 67-68
Syn. B.	4937	7136	3240	7656
Trader	4990	6861	2860	7355
Syn. C.	4902	6928	2480	7155
Mimer	5071	6198	3021	7145
S-215	4563	6702	2952	7109
Sk-6	4643	6327	3117	7043
Significance	N.S.	N.S.	N.S.	

Meadow Fescue - Seed Trials - Test 67-69 - 1963-1964General Information:

Location: Central Experimental Farm, Ottawa.  
Soil Type: Kars gravelly sandy loam  
Experimental Design: Randomized blocks, v 4 replications.  
Plot Size: Seeded 5' x 20'; 1963 harvested 3'-3" x 5'.  
 1964 2 square yards.  
Seeding Rate: 18 lb. per acre.  
Seeding Date: June 5, 1962.

Varieties	<u>Test 67</u>		Mean 2 yr.	<u>Test 69</u>		Mean 2 yr.	Mean 67-69 2 yr.
	1963	1964		1963	1964		
	(lb. per acre)						
Mimer	417	390	403				403
Ensign	413	368	391	260	404	332	361
Syn. B.	375	237	306	203	362	282	294
SK-6	357	224	290				290
Syn. C.	392	219	305	205	344	274	289
Trader	336	184	260	205	359	282	271
S-215	335	195	265				265
Significance	N.S.	N.S.		N.S.	N.S.		

Exp. 636. Meadow Fescue - Provincial Performance Trial, 1963. - GUELPH

Yield - Lbs. of D.M./Acre - 1964

Entry	Cut 1 (May 21)	Cut 2 (Aug.4)	Cut 3 <sup>1</sup> (Sept.3)	Total
<u>A. Seeded alone</u>				
S-215	2190	1670		3860
Ottawa Syn. C.	1950	1570		3460
Skreszowicka	1990	1470		3460
Trader	1920	1520		3440
W.A.S.-24	1850	1500		3350
Ottawa Syn. B.	1920	1310		3230
Ensign	1760	1210		2970
Frode , (Orchardgrass)	2350	1270		3620
<u>B. Seeded with Ladino</u>				
Ottawa Syn. C.	2520 (45) <sup>2</sup>	2800(15) <sup>2</sup>		5320
S-215	2540 (50)	2620(20)		5160
Trader	2430 (47)	2630(10)		5060
Ottawa Syn. B.	2460 (46)	2530(15)		4950
Skreszowicka	2460 (50)	2490(15)		4950
C.B.	2390 (46)	2530(15)		4920
Ensign	2280 (47)	2480(12)		4760
Frode (Orchardgrass)	2370 (60)	2470(40)		4840

1.= No yields taken as there were no visible differences among varieties.  
Estimated yield for pure stands = 1,000 lbs.; for mixed stand = 2,000 lbs.

2.= Percent grass

Comments:

Differences among varieties were non-significant within either seeding. Differences between seedings were significant at the 1% level.

100 lbs. of aeroprills were applied in early spring and after Cut 1. This level was too low.

Ensign was badly infested by rust in late August. Some rust was also observed on Skreszowicka. In one replication, there was some evidence of rust on Trader.

Exp. 637. Meadow Fescue Strain Trial, 1963.

- GUELPH

Yield - Lbs. of D.M./Acre - 1964

Strain	Cut 1 (May 21)	Cut 2 (Aug. 3)	Cut 3 (Sept. 3)	Total
W.A.S. 9	2060	1220		3280
C. B.	1880	1380		3260
Mimer	2020	1160		3180
Sv. 01217	1870	1240		3110
0280	1910	1100		3010
W.A.S. 11	1900	1100		3000
Skreszowicka	1960	1000		2690
W.A.S. 22	1730	1150		2880
W.A.S. 23	1710	930		2640

Comments:

Yields were rather low in this test, probably due to a lack of nitrogen. 100 lbs. of aeroprills were applied in early spring and after Cut 1.

Meadow Fescue Varieties - Seeded 1964,

- OTTAWA

Seeding and Management

Variety	Alone (seed yield)	Alone (pasture)	Mixture (Pasture)
Ensign			
Ottawa Syn.A.	x	x	x
" Syn.B.	x	x	x
" Syn.C.	x	x	x
S-215	x	x	x

No change in varietal recommendations are anticipated for 1965. Frode, Rideau and Tardus II continue to be among the highest yielding varieties and no requests for the licensing of other varieties have been received.

In the tables immediately following, all data on variety yields which have been submitted to this meeting since 1959, are summarized. A number of the varieties included are still under test, and the final evaluation of these can be made later. However, from these tables, the following observations or conclusions can be made:

1. A number of varieties, not currently under test, appear to be very high in yield. These are Akaroa, Chinook, Elis, Potomac, Scandia and Sterling. These have been tested at only one location. Chinook, Potomac and Sterling are very early in maturity, perhaps too early for Ontario conditions. More information is needed to finalize the position of Akaroa, Elis and Scandia.

2. Sufficient data are available on the following varieties to indicate that they are lower yielding than Frode. Aurora, Barenza, Grasslands, Masshardy, Ottawa 100. S-26, S-37, S-143 and Trifolium 1631.

3. The following varieties appear to be more or less equal in yield: Frode, Rideau, Tardus II, Avon, Hercules, Latar and Pennlate. Ample yield data are available on these varieties. Avon may be too early in maturity. Data on leafiness submitted in 1959, 1960 and 1961, indicate that Hercules is often less leafy than Frode, while Pennlate and Latar are slightly more leafy, and are later in maturity.

In a table immediately following the data summaries, there is a list of the varieties currently under test.

B.R. Christie,  
Co-ordinator.

Orchardgrass Varieties - Summary of Yields, 1959-1964.Management - Pasture, with and without a legume.

Variety	No. Locations	No. Tests - years	Total Yield
Frode	4	16	5610
Hercules			5420
Frode	4	15	5730
Hercules			5570
Danish			5560
Frode	4	13	5520
Hercules			5310
Tardus II			5330
Hercules	4	13	5280
Rideau			5230
Frode	4	9	6040
Hercules			5860
Letar			5860
Trifolium 1631			5690
Hercules	3	10	6150
Pennlate			6420
Hercules	2	11	5250
S-143			4730
Frode	2	6	5280
Hercules			5140
S-37			4730
Hercules	2	6	5070
Ottawa 100			4720
Frode	1	3	4550
Hercules			4380
Akaroa			4360
Barenza			4170
Elis			4430
Oron			4320
S-26			3720
Scandia			4550
Syn F. (Cornell)			3430

Orchardgrass Varieties - Summary of Yields, 1959-1964.Management: Hay (or silage) + Aftermath Pasture, Seeded Alone.

Variety	No. Locations	No. Test-years	Yield	
			Cut 1	Total
Frode	2	12	4210	6740
Tardus II			4160	6680
Frode	2	10	4060	7050
Hercules			3990	6840
S-143			2910	5710
Frode	2	9	4490	7850
Rideau			4280	7350
Frode	2	7	3820	7950
Danish			3940	7950
Latar			4310	7600
Frode	1	6	4030	6230
Avon			3980	6120
Oron			4120	6240
Ottawa 100			3140	5100
Potomac			4060	6260
Frode	1	4	4320	6240
Masshardy			3810	5210
Motycka			4170	6320
Frode	1	4	4100	8280
Sterling			4590	8840
Trifolium 1631			3800	7880
Frode	1	3	3430	5180
Akaroa			3200	5090
Barenza			2760	4450
Scandia			3440	4980
Syn. F. (Cornell)			2760	4070
Frode	1	3	4630	7280
Aurora			4310	6230
S-37			4310	6230

Orchardgrass Varieties - Summary of Yields, 1959-1964.Management - Hay (or silage) + Aftermath Pasture - seeded with a legume.

Variety	No. Locations	No. Test - years	Yield	
			Cut 1	Season Total
Frode	4	24	4110	7220
Danish			4220	7210
Frode	4	21	4000	6940
Hercules			3974	6860
Frode	3	16	4230	7180
Pennlate			4260	7270
Frode	3	14	4352	7390
Tardus II			4410	7410
Frode	3	10	3840	6510
Latar			3800	6510
Trifolium 1631			3710	6500
Frode	3	12	4220	7000
Rideau			4260	7110
Frode	2	9	4190	7570
S-37			3380	7240
Frode	2	2	6110	10,250
Coxa			6180	10,410
Motycka			6140	10,360
Frode	1	3	4860	8030
Grasslands			4480	7880
Ottawa 100			4770	7960
Frode	1	2	5140	10,300
Chinook			5220	10,220

Summary - Orchardgrass Varieties - Location and Year of SeedingManagement - PastureSeeded - Alone or with a legume.

Variety	Ottawa 1956	Guelph 1956	Ridge- town 1959	Ottawa 1959	Guelph 1959	Kapuska- ing 1959	Ottawa 1961	Ottawa 1963	Guelph 1964*	Ottawa 1964*
Frode	X	X	X	X	X	X		X	X	X
Rideau			X	X	X	X	X	X	X	X
Tardus II	X		X	X	X	X		X	X	X
Akaroa	X									
Barenza	X									
Chinook								X		
Coxa								X	X	X
Danish	X	X	X	X	X	X				
Elis	X									
Hercules	X	X	X	X	X	X	X	X		
Latar			X	X	X	X			X	X
Masshardy							X			
Oron	X									
Ottawa 100		X					X			
Pennlate		X	X		X		X	X	X	X
Potomac							X			
S-26	X									
S-37	X	X								
S-143	X	X			X		X			
Scandia	X									
Syn. F.(c)	X									
Trifolium 1631			X	X	X	X				
Motycka									X	X

\* Provincial Performance Trial

Summary - Orchardgrass Varieties - Location and Year of Seeding.Management - Hay + Aftermath PastureSeeded - Alone

Variety	Ottawa 1956	Ottawa 1958	Ottawa 1959	G u e l p h					Ottawa 1964*	Fort William 1964**
				1959	1961	1963*	1964*	1964**		
Brode	X	X		X	X	X	X	X	X	X
Bideau		X	X	X		X	X	X	X	X
Tardus II	X		X	X	X	X	X	X	X	X
Akaroa	X									
Avon	X	X								
Aurora		X								
Barenza	X									
Coxa			X					X		X
Danish	X			X						
Floreal						X				
Heidemij						X	X		X	
Hercules	X	X		X						
Isbar		X		X				X		X
Masshardy					X					
Mommerstieg			X							
Malycka					X			X		X
0276						X				
0278						X				
Oron	X	X								
Ottawa 100	X	X								X
Ott. Syn. 5						X				
Pajberg III						X	X		X	
" Milka						X	X		X	
Pennlate								X		X
Potomac	X	X								
R.P. 200										
R.P. 300										
S-37		X								
S-143	X	X		X						
S-345						X	X		X	
Scandia	X									
Seeempter						X	X		X	
Sterling				X						
Sv. 01009						X	X		X	
Syn. F. (C)	X									
Trifolium II						X	X		X	
" 1631				X						
Va 58-V-1							X		X	
Pennmead							X		X	
Dorise							X		X	
Guelph PX							X			
Vertas							X			
6L.23							X			
Prairie									X	
Ottawa-Strain K										X

\* Provincial Screening Trial

\*\* Provincial Performance Trial

Orchardgrass Varieties - Locations and Year of SeedingManagement - Hay + Aftermath PastureSeeded - With Legume

Variety	Guelph 1956	Kempt- ville 1956	Ridge- town 1959	Ottawa 1959	Kempt- ville 1959	Ridge- town 1962	Ridge- town 1963*	Kempt- ville 1963*	Guelph 1964*	Ott. 1964*	Fort William 1964*
Frode	X	X	X	X	X	X	X	X	X	X	X
Rideau			X	X	X		X	X	X	X	X
Tardus II			X	X	X	X	X	X	X	X	X
Chinook						X					
Coxa							X	X	X	X	X
Danish	X	X	X	X	X	X					
Grasslands	X										
Hercules	X	X	X	X	X						
Letar			X	X	X				X	X	X
Motycka							X	X	X	X	X
Pennlate	X	X	X				X	X	X	X	X
Ottawa 100	X										
S-37	X	X									
Trifolium 1631			X	X	X						
Ottawa 100											X
" Strain K											X

\* Provincial Performance Trials



## Orchardgrass variety descriptions (con'd).

- Motycka      Breeder -      Central Board of Plant Breeding  
and Seed Production, Warsaw, Poland.  
Entered by -      Ontario Seed Cleaners and Dealers Ltd.,  
Breeding Method- Selection based upon early spring  
growth and winter hardiness. Was  
licensed in Poland before 1939.  
Description -      Medium maturity. At Guelph,  
appears similar to Frode.
- 0276              Breeder -  
Entered by -      Hogg & Lytle Ltd.  
Breeding Method-  
Description -
- 0278              Breeder -  
Entered by -      Hogg & Lytle  
Breeding Method-  
Description -
- Ottawa Syn 5 Breeder -      Dr. W.R. Childers, C.E.F. Ottawa  
Entered by -      Planning Committee  
Breeding Method-  
Description -
- Pajberg III      Breeder -      Pajbjergfonden, Børkop, Denmark.  
Entered by -      Breeder  
Breeding Method- A synthetic variety based on  
about 20 families.  
Description -      Early hay type. In Denmark, is  
earlier than Hercules.
- Pajberg Milka Breeder -      Pajbjergfonden, Børkop, Denmark.  
Entered by -      Breeder  
Breeding Method- A synthetic variety based on  
10 families.  
Description -      Later than Pajberg III, having  
less spring vigour but more summer  
growth. In Denmark is also earlier  
than Hercules.
- Pennmead        Breeder -      Penn. Agr. Expt. Sta., U.S.D.A.  
Pasture Lab. and others.  
Entered by -      Planning Committee  
Breeding Method- A number of superior phenotypic  
clones were progeny tested (poly-  
cross progeny) at several locations in the  
northeastern U.S.A. Four superior clones  
selected & combined for the synthetic.  
Description -      Earlier than Pennlate.

- Pennlate      Breeder -      Penn. Agric. Exp. Sta., U.S.D.A.  
Regional Past Lab.  
Entered by -      Planning Committee  
Breeding Method-A synthetic variety. Parent clones  
selected on basis of phenotype and  
polycross progeny performance.  
Description -      A late-maturing variety.
- S-345      Breeder -      Welsh Plant Breeding Station.  
Entered by -      Planning Committee  
Breeding Method-Developed from collections made  
in Southwestern France.  
Description -      An early, leafy, hay type.  
Provides earlier and more abundant  
growth than Danish.
- Sceempter      Breeder -      N.V. Zwaan & De Wiljes, Netherlands  
Entered by -      Ontario Seed Cleaners & Dealers.  
Breeding Method-Originated from material collected in  
old pastures.  
Description -      Medium to late maturity, leafy. Leaves  
are narrow & soft. Was developed for  
winter resistance & ability to  
withstand heavy grazing.
- 61.23      Breeder -      Gebr. van Engelen, Netherlands  
Entered by -      Ontario Seed Cleaners & Dealers  
Breeding Method-A synthetic variety based upon  
clones of good phenotype and high  
in general combining ability.  
Description -
- Sv. 01009      Breeder -      Swedish Seed Ass'n., Svalof, Sweden.  
- Entered by -      Hogg & Lytle, Ltd.,  
Breeding method-  
Description -
- Trifolium Early (Trifolium II)  
Breeder -      Trifolium Frø, Kobenhavn Valley, Denmark.  
Entered by -      Breeder  
Breeding Method-Developed by mass selection from the  
Danish variety, Alsgaard. Maintained  
by family selection.  
Description -      An early variety resistant to frost & drought.
- Va. 58-V-1      Breeder -      Virginia Agr. Expt. Station  
Entered by-      Planning Committee  
Breeding Method-  
Description -
- Vertas      Breeder -      Gebr. van Engelen, Netherlands.  
Entered by -      Ont. Seed Cleaners & Dealers  
Breeding Method-Plants selected from material indigenous to Holland  
Tested for general combining ability. Superior  
clones combined into a synthetic.  
Description -      A leafy, pasture-hay type. Resistant to frosting.

General Information:

Location: Central Experimental Farm, Ottawa.  
Soil Type: Uplands sandy loam.  
Experimental Design: Randomized blocks; 6 replications.  
Plot Size: 5' x 20'; harvested 3'-3" x 18'.  
Nurse Crop: Barley at 1 bushel per acre.  
Seeding Date: May 17, 1961.  
Sampling for D.M.: One 500-gram sample per plot per cut.  
Project Leader: E.M. Casserly.  
Results:

Performance of Orchard Grass Varieties Seeded for Pasture  
 (Yield of dry matter in pounds per acre)

Varieties	1962	1963	1964	1964	1964	1964	Mean 3 year
	Total 4 cuts	Total 3 cuts	1st cut	2nd cut	3rd cut	Total 3 cuts	
Pennlate	4660 a	5484 a	1576	916	1207	3699	4614
Potomac	4680 a	5415 a	1438	801	1222	3461	4519
Hercules	4120 ab	5402 a	1479	743	955	3177	4233
Rideau	4320 ab	5150 ab	1418	782	910	3110	4193
Masshardy	3660 b	5097 b	1496	695	807	2998	3918
Ottawa-100	3860 b	4815 b	1268	819	800	2887	3854
S-143	3660 b	4319 c	844	839	905	2588	3522
Significance	S.D.	S.D.	N.S.	N.S.	N.S.	N.S.	
C.V.		9.90%					

Orchardgrass Variety Test - Pasture - 1964General Information:

Location: Project Farm, Douglas, Ontario  
Soil Type: Renfrew Clay Loam  
Experimental Design: Randomized blocks, 6 replications.  
Plot Size: Seeded 5' x 20'; harvested 3'-3" x 18'.  
Nurse Crop: None  
Seeding Rate: 12 pounds per acre.  
Seeding Date: May, 1963.  
Sampling for D.M.: One 500-gram sample per plot per cut.  
Project Leader:  
Results:

Performance of Orchard Grass Varieties  
 (Dry Matter/acre)

Varieties	June 2	July 7	Sept. 25	Total 3 cuts
	Chinook	3588 a	453 c	215 b
Coxa	3146 ab	595 a	434 a	4175 a
Pennlate	3133 ab	512 bc	450 a	4095 a
Tardus II	2858 bc	605 a	465 a	3928 a
Frode	2807 bc	538 ab	445 a	3790 a
Rideau	2364 c	520 bc	293 b	3177 b
Hercules	2395 c	460 c	265 b	3120 b
Significance	S.D.	S.D.	S.D.	S.D.
C.V.	13.5%	10.0%	22.9%	11.8%

W. O. A. S.

Orchardgrass Variety Trial (Seeded 1962)  
(1964 Results - Lbs. D.M./Acre)

Seeded May 1963

	<u>June 23</u>		<u>July 29</u>		<u>Aug. 31</u>		<u>1964 Total</u>
	<u>% Legume</u>	<u>Yield</u>	<u>% Legume</u>	<u>Yield</u>	<u>% Legume</u>	<u>Yield</u>	
Common	73	5708	83	3362	85	1763	10833
Chinook	70	5706	85	3436	86	1669	10811
Tardus II	78	5714	80	3379	88	1643	10736
Frode	80	5749	83	3452	93	1747	10948
C.V. =		N.S. 3.4%		N.S. 8.1%		N.S. 7.9%	

W. O. A. S.

Orchardgrass Performance Trials  
1964 Results

	<u>June 22</u>		<u>July 17</u>		<u>Aug. 31</u>		<u>1964 Total</u>
	<u>% Legume</u>	<u>Yield</u>	<u>% Legume</u>	<u>Yield</u>	<u>% Legume</u>	<u>Yield</u>	
Tardus II	75	6354	90	1618	87	1570	9542
Rideau	79	6265	92	1740	90	1553	9558
Motycka	79	6259	88	1657	85	1517	9433
Coxa	75	6523	88	1669	87	1608	9800
Pennlate	76	6286	91	1645	88	1517	9448
Frode	78	6059	93	1518	88	1402	8979
		N.S.		N.S.		N.S.	

Division of Field Husbandry, K.A.S.

H-13

Project No. 1.818

1964

Title:

Orchardgrass Variety Trial  
Seeded May 15, 1963 Orchard 8# Dupuits 10#

M A N A G E M E N T : Silage & Aftermath

Average yield of Forage in lb. D.M. per Acre, 1964

Variety	Cut 1(June 16)		Cut 2(July 15)		Cut 3(Oct.15)		Total	Relative Rank	% Grass May 25
	Yield	Relative Rank	Yield	Relative Rank	Yield	Relative Rank			
Coxa	5837	94.7	2638	96.3	2541	93.7	11016	95.7	31
Motycha	6021	97.7	2693	98.4	2563	94.5	11277	97.9	18
Pennlate	5987	97.2	2512	91.7	2362	87.1	10861	94.3	27
Frode	6161	100.0	2640	96.4	2713	100.0	11514	100.0	31
Tardus II	6118	99.3	2597	94.8	2559	94.3	11274	97.9	25
Rideau	5970	96.8	2737	100.0	2381	87.8	11088	96.3	26

Division of Field Husbandry, K.A.S.

1964

Project no. 1.818

Title:

Orchardgrass Variety Trial

Seeded May 15, 1963, Orchard 8# Dupuits 10#

M A N A G E M E N T : Silage & Aftermath

Summary of Notes Taken November 6th, 1963.

<u>Variety</u>	<u>Vigor</u>	<u>% Grass</u>
Coxa	1.1	37.5
Motycha	1.1	41.6
Pennlate	1.0	32.5
Frode	1.0	40.0
Tardus II	1.3	38.3
Rideau	1.0	36.6

Exp. 627 - Orchardgrass - Provincial Screening Trial, 1963 - GUELPH.Date from Pure Stands - Hay + Aftermath Pasture - 1964.

Variety	Relative <sup>1)</sup>	Bloom Date	Vigour <sup>2)</sup>	Yield <sup>3)</sup>	Vigour Ratings <sup>2)</sup>	
	Height (May 19)				(June)	(June 10)
S-345	2.0	9	2.0	5040	3.5	3
Floreal	2.0	10	1.5	5530	3.5	3
O278	1.0	10	2.0	6310	3.0	3
Trifolium II	1.0	10	1.5	6250	3.5	3
O276	1.5	11	1.5	6240	2.5	3
Pajberg III	1.0	11	1.0	5940	2.5	3
Tardus II	2.0	12	2.5	6030	4.0	4
Frode (Cert.)	1.5	13	3.0	6590	3.0	3
Frode (Breeder's)	2.5	14	3.0	6580	2.5	3
Heidemij	2.0	14	3.5	5210	2.0	2
Pajberg Milka	1.0	14	2.5	5430	2.5	1
Sceempter	2.0	14	3.0	5310	3.0	2
Rideau	3.0	16	3.5	6020	4.0	4
Sv. 01009	2.5	16	4.0	5000	2.5	3
Ottawa Syn. 5	3.0	20	4.0	5380	4.5	5

1) Rating: 1 (High) to 5 (Low)

2) Rating: 1 (Good) to 5 (Poor)

3) Pounds of dry matter per acre

Exp. 627 (continued)

Miscellaneous Notes - 1964

Variety	Pasture Aftermath Vigour <sup>1)</sup> (June 19)	Vigour and Stand of Grass With Dupuits			
		Vigour (June 10)	% Grass (June 10)	Vigour (Sept. 14)	% Grass (Sept. 14)
S-345	3.5 2)	1.5	45	4.0	50
Floreal	3.5	2.0	60	4.0	40
O278	3.0	1.5	70	3.5	40
Trifolium II	3.5	1.0	75	4.0	50
O276	4.5	1.5	65	3.0	75
Pajberg III	3.0	2.0	75	3.0	60
Tardus II	3.5	3.0	60	4.5	40
Frode (Cert).	3.5	3.0	65	3.5	60
Frode (Breeders)	2.5	3.0	65	3.0	60
Heidemij	3.5	3.0	45	2.5	50
Pajberg Milka	4.0	2.5	75	3.0	75
Sceempter	3.0	3.0	50	3.5	60
Rideau	2.5	4.0	40	4.5	60
Sv. 01009	3.5	4.0	45	3.0	40
Ottawa Syn. 5	1.0	4.5	45	5.0	20

1) Vigour ratings: 1 (good) to 5 (poor)

2) Pasture section of plot cut on May 20 and June 21.

Comments: -

Good stands were obtained in only two of the four replications seeded. Consequently, data was collected from only two replications.

Alfalfa - stands were good. There was no evident effect of orchardgrass varieties on vigour of the alfalfa.

Disease - no evidence of disease on the varieties.

Frost Injury - all varieties showed signs of frost injury in late September. Ottawa Syn. 5 showed the most damage, and Heidemij the least.

Pajberg Milka has shown exceptional vigour in early spring and in the fall.

No yields were taken on the aftermath cuts as differences among varieties appeared to be small.

Yield and Vigour, 1964

Entry	Cut 1 (June 12)	Vigour 1) (Sept. 14)
R. P. 300	5000 a	3.5
Re-selected Frode	4850 a	2.5
R.P. 200	4740 ab	4.5
Tardus II	4630 abc	3.0
Frode	4490 abcd	3.0
Pennlate	4440 abcd	2.0
Latar	4090 bcd	3.0
Motycka	4020 cd	2.0
Masshardy	3920 cd	4.0
Rideau	3840 d	3.5

1) Rating: 1(good) to 5 (poor)

Exp. 627-2 Orchardgrass - Provincial Preliminary Trial, 1964.

Seeded, May 8, 1964.

Observations, 1964

Entry	Vigour <sup>1)</sup>			% Grass <sup>2)</sup> in Alfalfa
	June 1	July 7	Sept. 14	Sept. 14
Pajberg Milka	1.0	2.5	3.0	75
Dorise	2.0	4.0	4.0	60
Rideau	2.0	2.5	3.5	55
S-345	2.0	3.0	2.5	65
Trifolium II	2.0	1.0	2.5	80
Frode	3.0	2.0	3.0	75
Guelph PX	3.0	3.0	3.5	60
Heidemij	3.0	3.0	3.0	50
Pennmead	3.0	3.0	2.5	80
Pajberg III	3.0	2.0	3.0	80
Sceempter	3.0	3.5	3.0	65
SV. 01009	3.0	3.0	3.5	60
Tardus II	3.0	2.0	3.5	80
VA. 58-V-1	3.0	3.0	3.0	80
Vertas	4.0	4.0	3.5	65
61.23	5.0	4.0	4.0	

1) Vigour ratings are 1 (good) to 5 (poor)

2) Estimated % grass by weight of top growth in portion of plot overseeded with Dupuits.

Comments:

The establishment in all plots was excellent. The variety Pajberg Milka was outstanding in its early spring vigor.

## Exp. 620. Orchardgrass Miscellaneous Strains, 1961. - GUELPH

Entry	Yield - 1962-64, lbs. of D.M./Acre				Cut 2 Mean	Season Total Mean
	C u t 1					
	June 21/62	June 14/63	June 12/64	Mean		
Frode	3770 abc	4190 abc	4850 a	4270 ab	2160	6430 ab
Motycka	3990 a	3800 cd	4850 a	4210 ab	2320	6530 ab
Tardus II	3680 abc	3890 cd	4820 a	4130 ab	2080	6210 ab
Re-selected Frode	3470 abc	4190 abc	4480 a	4050 ab	2140	6190 ab
Masshardy	3021 bc	3750 cd	4560 a	3780 bc	1690	5470 c
American Common						
#1	4250 a	4270 abc	4730 a	4420 ab	2250	6670 a
#2	4140 a	4760 a	4750 a	4550 a	2060	6610 ab
#3	3480 abc	4070 bcd	4740 a	4100 ab	2060	6160 ab
#4	3970 ab	4630 ab	4730 a	4440 ab	2200	6640 ab
Mean	3960	4430	4740	4380	2140	6520
Danish Common						
#1	3670 abc	4140 bc	4780 a	4200 ab	2180	6380 ab
#2	3510 abc	4050 bcd	4780 a	4110 ab	2080	6190 ab
#3	3410 abc	3900 cd	4470 a	3930 ab	2060	5990 bc
#4	2990 c	3490 d	3400 b	3290 c	2200	5490 c
Mean	3400	3900	4360	3890	2130	6020
American vs Danish	**	**	*	**	N.S.	**

## Exp. 620 Orchardgrass Miscellaneous Strains.

GUELPH

## Composition of First Cut Forage

Entry	% Vegetative 1)				% Leaf 2)				Relative <sup>3)</sup> Maturity
	1962	1963	1964	Mean	1962	1963	1964	Mean	
Frode	69 b	68 bc	24	54	13.9a	31ab	21	22	S
Motycka	68 b	63 bc	40	57	16.5a	34ab	15	22	L
Tardus II	71 b	66 bc	34	57	19.9a	39a	20	26	S
Re-Selected Frode	84a	85a	27	65	14.2a	29 b	25	23	S
Masshardy	69 b	69 bc	32	57	12.7a	30ab	25	23	L
American Common									
#1	63 c	66 bc	22	50	13.4a	27 b	23	21	E
#2	52 c	58 c	27	46	13.3a	27 b	18	19	E
#3	58 bc	61 c	19	46	15.1a	32ab	19	22	S
#4	63 bc	68 bc	20	50	15.4a	27 b	19	20	E
Mean	59	63	22	48	14.3	28	20	21	
Danish Common									
#1	60 bc	74ab	16	50	16.5a	34ab	16	22	S
#2	51 c	66 bc	36	51	15.1a	31ab	20	22	S
#3	64 bc	65 bc	23	51	13.7a	30ab	19	21	E
#4	87a	68 bc	33	63	14.3a	33ab	20	22	L
Mean	66	68	27	54	14.9	32	19	22	
American vs Danish	**	**	N.S.	**	N.S.	N.S.	N.S.	N.S.	

1) All shoots without visible heads were classed as vegetative.

2) % leaf on those shoots with visible heads.

3) Relative maturity compared to Frode: E = early, S = same, L = later.

TIMOTHYSUMMARY

Yield data were received from Kapuskasing, Kemptville, Guelph and the Developmental Research Group, Ottawa. New tests were established at Fort William, Kapuskasing, Kemptville, Guelph, Developmental Research and the Forage Section of the Ottawa Research Station.

Climax continues to be the highest yielding variety of those widely tested. T-41 (Astra) was licensed in 1963. Average yield data for this variety does not look promising. A large number of new varieties has been established in screening trials at Ottawa and Guelph. Seven farm plantings were established with Climax, Drummond and Astra.

Good establishment of the uniform timothy test was obtained at Kapuskasing, Fort William and Kemptville. The uniform pasture test was established at the Ottawa Forage Section and Kapuskasing.

Some data are presented indicating the performance of the pasture strain at Ottawa.

SUMMARY OF TIMOTHY TESTS

	Kap-P 1963-64	Kap-H 1963-64	Kemp-H 1963-64	Guelph-H 1960-61	Dev.-H 1962-64	Mean
Climax	2699	4009	4259	6210	7386	4912
Clair	2557		-	-	6804	
Drummond	2489	3660	4077	5980	6503	4541
Bottnia II	2369	3557	-	-	6398	
T-41 Astra	2420	3602	3706	6100	6789	4523
Milton	2500	-	-	-	-	
Essex			4559	5550	6707	
Medon			4358	-	-	
Wisc. T-1			4005	-	7091	

TIMOTHY VARIETY TRIAL - KAPUSKASING 1964

(PASTURE)

Varieties	1964			1963			Mean
	1st cut	2nd cut	Total	1st cut	2nd cut	Total	
<u>Pure stand</u>							
Climax	2064	726	2790	1879	718	2597	2699
Clair	1648	1029	2677	1690	749	2437	2557
Drummond	1850	716	2566	1673	739	2412	2489
Bottnia II	1966	654	2620	1581	538	2119	2369
T-41 (Astra)	1885	924	2809	1377	654	2031	2420
Milton	1755	915	2670	1800	530	2330	2500
Average	1861	827	2688	1667	654	2321	
L.S.D.	NS	219					
<u>With Empire</u>							
Climax	3419	1548	4967	2378	1524	3902	4435
Clair	2904	1550	4454	1640	1271	2911	3683
Drummond	3215	1212	4427	1990	1655	3645	4036
T-41 (Astra)	3405	1442	4847	2085	1466	3551	
Average	3236	1438	4674				
L.S.D.	NS	NS					
	July 2	Aug.7		June 26	Aug.7		

Yields were generally slightly higher than in the first crop year. Climax and T-41 were the best two producers, both in pure stand and in mixture with trefoil.

No change in recommendation.

A new test was established in 1964, including

Climax  
 Climax check (MacVicar's)  
 Drummond  
 Heidemy  
 King  
 Ott. P-1  
 Ott. P-2  
 Ott. P-3

## TIMOTHY VARIETY TRIAL - KAPUSKASING 1964

(HAY)

Varieties	1964			1963			Mean
	1st cut	2nd cut	Total	1st cut	2nd cut	Total	
<u>Pure stand</u>							
Climax	2163	712	2875	4394	750	5144	4009
Drummond	2214	593	2807	3851	662	4513	3660
Bottnia II	2221	544	2765	3663	685	4348	3557
T-41 (Astra)	1958	601	2559	3962	682	4644	3602
Average	2139	612	2751	3968	695	4662	
L.S.D.	NS	NS					
<u>With Rhizoma</u>							
Climax	4046	1035	5081	4977	2392	7369	6225
Drummond	4214	1160	5374	4959	2430	7379	6377
T-41 (Astra)	4732	1144	5876	5023	2348	7371	6624
Average	4331	1113	5444				
L.S.D.	NS	NS					
	July 9	Aug.19		July 9	Aug.16		

Yields in this test were considerably lower than in 1963, averaging almost two tons less. It was noted that on July 7, Timothy was very short, heads were out but not in bloom yet.

A new test was seeded in 1964, including the following varieties;

Climax  
 Climax check (MacVicar's)  
 Astra  
 Clair  
 Milton  
 T-1  
 Ott. 7  
 Ott. P.1  
 Drummond  
 Essex  
 Ott. 1

Fall stands were good.

TIMOTHY VARIETY TEST (HAY)

	Yield - Lb. of D.M./acre		Location Kemptville	
	1963 Cut June 26		1964 Cut June 23	Mean
Essex	4170a		4947	4559
Medon	3510ab		5186	4348
T41 (Astra)	3280ab		4131	3706
Wisconsin T1	3100 b		4910	4005
Drummond	3070 b		5084	4077
Climax	3040 b		5479	4259
Essex + Empire*	4010a		5172	4591
Climax + " *	3810ab		5455	4633
Drummond + " *	3290ab		4944	4117

\* 99% Timothy

EXPT. 617 (A&B) - TIMOTHY-PROVINCIAL PERFORMANCE TRIAL  
GUELPH - 1960-61

Yield - Lbs. of Dry Matter/Acre - Cut 1

<u>Entry</u>	<u>Exp. 617A</u>	<u>Exp. 617B</u>	<u>Mean</u>
Climax	5860a <sup>1</sup>	6570a <sup>1</sup>	6210
Astra	5520a	6670a	6100
Drummond	5860a	6100 b	5980
Essex	5200 b	5910 b	5550
O-233	5700a	-	-
S-51	5060 b	-	-
Wisc. Syn. T-1	-	6260ab	-
WT-48	-	6130 b	-
<hr/>			
C.V.	7.2%	7.9%	

<sup>1</sup> Any two figures followed by the same letter are not significantly different at the 5% level (Duncan's Multiple Range Test).

Comments

Cut 1 was taken on July 7 (617B) and July 10 (617A). No aftermath cuts were taken, as there was very little growth and no obvious differences among entries.

When the first cut was taken, all entries had bloomed except Essex.

Samples for leaf-stem separations were taken at harvest. These have not been completed yet, but the data available is summarized below:

<u>Entry</u>	<u>% Vegetative<sup>1</sup></u>	<u>% Leaf<sup>2</sup></u>
Climax	52.4	33.6
Astra	49.6	31.6
Drummond	53.1	34.4
Essex	55.0	36.0
Wisc. Syn. T-1	60.8	31.0
WT-48	40.4	29.9

<sup>1</sup> Percentage of shoots with no visible head.

<sup>2</sup> Percentage of leaves on shoots with a visible head.

TIMOTHY VARIETY TEST FOR HAY (TRIAL NO. 53) 1962-1964

I7

General Information:

Location: Central Experimental Farm, Ottawa.  
Soil Type: Uplands sandy loam.  
Experimental Design: Randomized blocks; 6 replications.  
Plot Size: Seeded 5' x 20'; harvested 3'-3" x 18'.  
Nurse Crop: Barley at 1 bushel per acre.  
Seeding Rate: 10 pounds per acre.  
Seeding Date: May 15, 1961.  
Sampling for D.M.: One 500-gram sample per plot per cut.  
Project Leader: L.M. Casserly.  
Results:

Performance of Timothy Varieties Seeded for Hay.  
 (Yield of dry matter in pounds per acre)

Varieties	1962 Hay and Aftermath	1963 Hay and After- math	1964 Hay	1964 After- math	1964 Hay and After- math	Mean of 3 years
Ottawa 7 (Syn. 1)	6080	10690 a	4111	1673	5784	7518
Climax	5640	10475 ab	4499	1546	6045	7386
Wisc. Syn.T. 1	4920	10460 ab	4291	1604	5895	7091
Weibulls T. 48	5100	9680 ab	4281	1494	5775	6851
Clair	5880	9513 ab	3305	1715	5020	6804
Weibulls T. 41	5040	9341 b	4342	1644	5986	6789
Essex	4720	10420 ab	3410	1573	4983	6707
Drummond	4500	9483 ab	3976	1550	5526	6503
Bottnia 11	4580	9243 b	3897	1474	5371	6398
Significance	N.S.	S.D.	N.S.	N.S.	N.S.	
C.V.		9.59%				

Dry matter yield in pounds per acre from 1961 spaced-planting of timothy lines. Ottawa.  
 (Plot size - 5'x10'. Plant spacing - 1' each way)

Treat	Line No.	1962				1963			
		Cut 1 (June 28)	Cut 2 (Aug. 23)	Cut 3	Total	Cut 1 (June 27)	Cut 2 (Sept. 23)	Cut 3	Total
A	9	3746a*	2578	--	6323a	6284a	2169	--	8453a
	5	3368a	2547	--	5915 b	5260 bc	2050	--	7310 b
	11	3483a	1883	--	5366 c	5816ab	1289	--	7104 bc
B	9	(June 6) 2294 bc	(July 31) 1079	(Aug. 23) 504	3877 de	(June 10) 4933 cd	(Aug. 8) 650	(Sept. 23) 400	5985 de
	5	1773 d	973	349	3095 f	4108 d	604	436	5148 ef
	11	2398 b	755	150	3303 f	4489 cd	253	243	4985 f
C	9	(June 6) 2516 b	(July 12) 455	(Aug. 23) 1233	4204 d	(June 10) 5286 bc	(July 25) 624	(Sept. 23) 482	6392 cd
	5	1911 cd	399	1180	3489 ef	4410 cd	412	478	5300 ef
	11	2303 bc	160	819	3282 f	4646 cd	133	264	5043 f

\* Yields followed by the same letter are not significantly different. (P = .05)

Treat.	Line No.	1964			Total	1962-64 Ave.
		Cut 1 (June 24)	Cut 2 (Sept. 28)	Cut 3		
A	9	4969a	2637	--	7606a	7461
	5	4167a	1810	--	5977 b	6401
	11	4704a	1062	--	5766 b	6079
B	9	(May 26) 2229 b	(July 23) 772	(Sept. 28) 1006	4007 cd	4623
	5	2025 b	728	998	3751 cde	3998
	11	1878 b	1201	441	3520 de	3936
C	9	(May 26) 2112 b	(July 8) 892	(Sept. 28) 1572	4576 c	5057
	5	2099 b	504	1172	3775 cde	4188
	11	1580 b	760	674	3014 e	3780

19 Dry matter yield in pounds per acre from 1962 row-seeding of timothy lines. Ottawa.  
(Plot size - 5' x 10'. Rows - 1' apart)

Line No.	1963				1964				1963-64 Ave.
	Cut 1 (May 30)	Cut 2 (July 23)	Cut 3 (Sept.20)	Total	Cut 1 (May 26)	Cut 2 (July 23)	Cut 3 (Sept.28)	Total	
1	3081 c *	1255a	1644 c	5980 c	3255a	850a	1357 c	5462a	5721
2	3161 c	1351a	2009ab	6521abc	3404a	825a	1479 bc	5709a	6115
5	3283 bc	1092a	2088ab	6463abc	3258a	732a	1558ab	5548a	6006
6	3506a	1280a	2173a	6959a	3347a	716a	1603ab	5667a	6313
7 **	3222 bc	928a	1933 b	6082 bc	3083a	751a	1552ab	5385a	5734
9	3435ab	1036a	2123ab	6593ab	3428a	635a	1667a	5730a	6162

\* Yields followed by the same letter are not significantly different. (P=.05)

\*\* Not used in polycross pasture strain

PASTURE TIMOTHYSpaced Plantings:

Cuttings were made from plants of two pasture timothy lines (Nos. 5 & 9) and from one plant of Climax (No.11) on August 25, 1961. The cuttings were transplanted to the field on September 22, 1961.

The area was fertilized with 8-16-16 at 300 lb./A. in the spring of 1961. The equivalent of 0-16-16 or 0-20-20 at 300 lb./A. was applied in April of each subsequent year. A nitrogen application of 60 lb./A. in April and 40 lb./A. in late July or early August was made each year.

Row Seedings:

Five pasture timothy lines (Nos. 2, 5, 6, 7 and 9) and Climax (No. 1) were seeded on June 1, 1962. No companion crop was used.

An application of 8-16-16 at 300 lb./A. was made before seeding and on August 15 of the seeding year. The equivalent of 0-16-16 or 0-20-20 at 300 lb./A. was applied in April, 1963 and 1964. Nitrogen at 60 lb./A in April and 40 lb./A. in late July or early August was applied each year.

EXP. 638-1. TIMOTHY-PROVINCIAL PRELIMINARY TRIAL  
GUELPH - 1963

<u>Entry</u>	<u>Bloom Date</u> (1964)
Clair	June 29
S-352	June 30
Vanadis	July 1
Heidemý	July 4 (variable)
Omnia	July 4
Climax	July 5
Barenza Hay	July 5
Kampe II	July 5
WT-59	July 5

Comments

Establishment of these plots was very variable. Consequently, no yields were taken, and the plots were observed for maturity, only.

1964 TIMOTHY UNIFORMITY TEST - KEMPTVILLE

I<sub>12</sub>

1. Essex
2. Climax
3. Drummond
4. Ottawa 1
5. Ottawa P-1
6. Ottawa 7
7. Wisconsin T-1
8. T-41 (Astra)
9. Climax - R

This test was seeded in spring and became infested with annual grasses. The test was re-seeded on September 16. The test shows good emergence but light top growth.

F.A. Stinson

UNIFORM TIMOTHY TRIAL - PURE STAND - HAY CROP

Location - Fort William, Ontario

Year - 1964

Soil Type - sandy loam

Experimental design - Randomized Block, 6 replicates

Plot Size - 5' X 20'

Size Sample Harvested N/A in 1964 - D.M. Sample Size N/A in 1964

Variety - N/A

Fertilizers 300# 10-10-10 / ac. at seeding &amp; 120# 33-0-0 on Aug. 10.

Pesticides - dates and rates

a. Herbicides - 2,4-DB-20 oz./ ac July 15.

b. Insecticides

c. Fungicides

Seeding Date - May 28, 1964

Harvest Date - N/A

Previous Crop - Fallow

Seeding Method - Broadcast without nurse crop

Harvest Method

Seeding Rate - 8.0# / acre

<u>REMARKS</u>	<u>VARIETY</u>	<u>GRASS %</u>	<u>WEEDS %</u>
	O 296	83.0	17.0
	Climax A	76.0	24.0
	Ottawa- P-3	76.0	24.0
	Drummond	70.0	30.0
	T-41	75.0	25.0
	Essex	75.0	25.0
	T-1	82.0	18.0
	Ottawa-7	72.0	28.0
	Ottawa-1	73.0	27.0
	Ottawa- P-1	79.0	21.0
	Climax-B	79.0	21.0

Varietal establishment hindered during early season due to unseasonable cool wet weather in June followed by hot, dry July. Plant growth was further retarded by the severe infestation of horsetail in the plot area and for which chemical control was found unsatisfactory. A return of more normal temperatures and precipitation patterns by fall facilitated the establishment of all varieties under test and it is hoped a satisfactory stand will be available in 1965.

EXP. 638-2. TIMOTHY-PROVINCIAL PRELIMINARY TRIAL  
GUELPH - 1964

Date Seeded: May 7, 1964.

<u>Entry</u>	<u>Vigour<sup>1</sup></u>		<u>% Grass in Alfalfa<sup>2</sup></u> <u>(Sept. 14/64)</u>
	<u>July 7/64</u>	<u>Sept. 14/64</u>	
TM-60-101	1.0	2.0	35
TM-60-100	1.5	2.5	20
0296	1.5	3.5	45
Astra	2.0	3.5	25
Barenza	2.0	3.5	35
Climax	2.0	3.5	35
TM-59-50	2.0	3.0	15
TM-60-102	2.0	3.0	20
TM-60-103	2.0	3.5	25
TM-60-104	2.0	3.0	20
Heidemy	2.5	3.0	40
Vanadis	2.5	3.0	40
Combi	3.0	4.0	35
Erecta	3.0	3.0	45
Kampe II	3.0	3.0	35
Omnia	3.0	4.0	35
S-352	3.0	3.5	25
King	3.5	5.0	35
Lofar	4.0	4.0	35
Sceempter	4.0	4.0	25
WT-59	4.0	4.0	35

<sup>1</sup> All vigour ratings are 1 (good) to 5 (poor).

<sup>2</sup> Estimated per cent by weight of top growth.

Comments

In this test, establishment is good with 75-100% ground cover in all plots. The six entries of TM- (from Cornell) appeared very distinctive in this seedling year, with very upright growth and some heads were produced. The percentage of timothy in the portion of the plot overseeded with Vernal is rather low. This is the third test in which timothy has established very poorly with Vernal.

TRIAL 88 - TIMOTHY SCREENING FOR HAYGeneral Information:

Location: Ottawa  
Seeded: May 23, 1964  
Varieties: 21  
Reps: 4  
Plot Size: 5', 3# x 20'  
Treatment: With 5' Vernal alfalfa strip  
Fall Condition: Fair

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Varieties

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King  
Scempter  
Erecta  
Combi  
T.M. 59-50  
T.M. 60-100  
T.M. 60-101  
T.M. 60-102  
T.M. 60-103  
T.M. 60-104  
O. 296  
Lofar  
Barenza  
Kamp II  
Omnia  
Astra  
Climax  
Heidemy  
S-352  
Vanadis  
Weibulls T.59

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1. Barenza Hay:

Breeder - Barenbrug's-Zaadhandel N.V., Netherlands

\*Method of Breeding - Individual plants were selected from different strains and combined to form a synthetic. The original clones have been maintained for foundation seed.

\*\*Description - An erect, leafy type, resistant to most leaf diseases. In the Netherlands, is later than American Commercial. At Guelph, was similar to Climax in maturity and had very broad leaves.

2. Clair:

Breeder - University of Kentucky

\*Method of Breeding - Plants were selected from an old stand near Vevay, Indiana. Maintained by mass selection.

Description - In Kentucky, is earlier than common but more leafy at same stage of maturity. Its outstanding feature is persistence and high yield in stands more than two years old. At Guelph, has been slightly lower in yield than Climax under pasture management.

3. Erecta (Melle Hay):

Breeder - Rijksstation voor Plantenveredeling, Belgium

\*Method of Breeding - A synthetic strain whose original clones were selected from local material. The breeder's seed is produced from the original clones.

Description - In Belgium, is erect, early and persistent. At Guelph has appeared to be similar to Climax.

4. Heidemy:

Breeder - D.J. Van der Have, Netherlands

Method of Breeding - Plants were selected from old pastures in different parts of the Netherlands.

Description - A pasture-type, later than Climax. At Guelph appears to lack spring vigour.

5. Kampe II:

Breeder - Plant Breeding Institute, Weibullsholm, Sweden

Breeding Method - Selection from Weibull's Kampe.

Description - Medium-late in maturity, high yielding in first cut and resistant to rust. At Guelph, was earlier than Climax and appeared to be very vigorous.

6. King:

Breeder - D.J. Van der Have, Netherlands

Breeding Method - Clones were selected from material collected in old pastures in the Netherlands.

Description - A late pasture type which is very persistent. At Guelph, was later than Climax and low in spring vigour.

(continued)

7. Omnia:

Breeder - Swedish Seed Association, Svalof, Sweden

Breeding Method - Originated from a single plant selection in a line inbred for two generations.

Description - An erect, leafy, hay type, resistant to rust. At Guelph has appeared similar to Climax in maturity and vigour.

8. Ottawa Syn. 7: (Upstart)

Breeder - Dr. W.R. Childers, C.E.F., Ottawa

Breeding Method - Polycross (5 clones)

Description - Four to five days later than Climax, taller and wider leaves than Climax.

9. S-352:

Breeder - Welsh Plant Breeding Station, Wales

Breeding Method - Originated from material introduced from a number of northwestern European countries.

Description - Heads 14 days earlier than S-48, is very leafy and resistant to rust. More productive in mid-summer than S-51.

10. Vanadis:

Breeder - Otto J. Olson & Son, Ltd., Hammenhog, Sweden

Breeding Method - Developed from clones selected from a local strain.

Description - Good aftermath growth and resistance to drought. At Guelph, has been earlier than Climax.

11. Weibull's T-59:

Breeder - Plant Breeding Institute, Weibullsholm, Sweden

Breeding Method - No information

Description - At Guelph, has been similar to Astra in maturity, but appears more vigorous.

12. Combi (formerly Brabantia Pasture Hay):

Breeder - Gebr van Engelen, Netherlands

Breeding Method - Based upon selections from British and Dutch material.

Description - Late in maturity, but very leafy. A pasture type.

13. Ottawa 1:(Labelle)

Breeder - W.R. Childers, Ottawa Research Station

Breeding Method - Polycross technique, 9 clones.

Description - Wide-leaved, tall, vigorous hay type.

TIMOTHY - DESCRIPTION OF STRAINS TO BE TESTED, 1964

I18

(continued)

14. Ottawa P-1: (Thruster)

Breeder - W.R. Childers, Ottawa Research Station

Breeding Method - Polycross, 4 clones.

Description - Pasture type, excellent recovery and more continuous mid-summer production.

15. Milton:

Breeder - J.N. Bird, Macdonald College

Breeding Method - Combination of inbred lines selected against rust.

Description - Hay-type similar to Climax in yield and maturity.

16. Essex:

Breeder - R.P. Murphy, Cornell University

Breeding Method - Polycross, 4 clones.

Description - Late, leafy, 10 days later than Climax?

17. Drummond:

Breeder - J.N. Bird, Macdonald College.

Breeding Method - Maternal line selection.

Description - Late leafy, bushy type of growth.

18. Climax:

Breeder - R.M. MacVicar, Ottawa Research Station

Breeding Method - Synthetic variety

Description - Tall, fine stemmed, leafy, erect hay-type.

19. Climax B, R, Climax:(MacVicar's Check)

20. Sceempter:

Breeder - N.V. Zwaan, Netherlands

Breeding Method - Synthetic from clones picked up in old pasture.

Description - Late semi-prostrate.

Reed Canary Grass Varieties - Summary

Reed canary grass trials were conducted at Ottawa and Kapuskasing.

Under a pasture management, Loreed was outstanding at Ottawa, but was not included in the test at Kapuskasing.

Under the hay management, Frontier, Ottawa Syn. A and Ottawa Syn. B were high in yield, but differences are probably not significant.

No reports of 1964 seedings have been received.

B.R.Christie,  
Co-ordinator.

Summary - Reed Canarygrass Varieties - Pasture, Seeded Alone

Seasonal Production - Lbs. of D.M./Acre

Variety	<u>O t t a w a</u>			<u>K a p u s k a s i n g</u>		
	1963 (3 cuts)	1964 (3 cuts)	Mean	1963	1964	Mean
Common				3410	2840	3120
Frontier	6970	5670	6320	4280	3080	3680
Ioreed	7790	6820	7310			
Mandan 315	6440	5580	6010			
Ottawa Syn. A.	6830	5430	6130			
Ottawa Syn. B.	6810	5420	6120			
Ottawa Syn. C.	6990	5450	5220			
RC-1	6540	4820	5680			
RCG. 1133-138	7210	6090	6650			
R.P. 100	7230	6170	6700			
R.P. 200	6550	5690	6120			
S-5573	6420	5760	6090			
Sask. Common	7180	5720	6450			
Syn. 1				3590	3110	3300
Syn. 2				3660	2900	3280
Syn. 3				3340	2900	3120

Summary - Reed Canarygrass Varieties - Seeded AloneManagement: HayYield (lbs/Acre) - Cut 1

Variety	<u>Ottawa (Verner)</u>			<u>Kapuskasing</u>		
	1963	1964	Mean	1963	1964	Mean
Common	4600	2940	3770	4980	3460	4220
Frontier	5180	3110	4140	4900	3220	4060
Ioreed	4590	2910	3750			
S-5573	4530	2580	3550			
Ottawa Syn. A.	5110	2720	3920			
Ottawa Syn. B.	5030	2850	3940			
Ottawa Syn. C.	3810	2200	3000			
Syn. 1				5080	3490	4280
Syn. 2				4650	3740	4200
Syn. 3				3610	3070	3340

Yield (lbs/Acre) - Season Total (2 cuts)

Variety	<u>Ottawa (Verner)</u>			<u>Kapuskasing</u>		
	1963	1964	Mean	1963	1964	Mean
Common	5560	3330	4440	6170	4940	5550
Frontier	6260	3500	4880	6000	4540	5270
Ioreed	5610	3320	4270			
S-5573	5180	2770	3980			
Ottawa Syn. A.	6130	3040	4580			
Ottawa Syn. B.	6060	3150	4600			
Ottawa Syn. C.	4610	2510	3560			
Syn. 1				6060	4770	5420
Syn. 2				5560	5090	5320
Syn. 3				4480	4190	4340





## Reed Canary. Pasture - Kapuskasing 1964

Varieties	1964			1963		
	1st cut	2nd cut	Total	1st cut	2nd cut	Total
<u>Pure stand</u>						
Syn. 1	1558	1554	3112	2802	788	3590
Syn. 2	1496	1402	2898	2885	778	3663
Syn. 3	1520	1382	2902	2686	650	3336
Frontier	1645	1436	3081	3348	934	4282
Common	1480	1358	2838	2669	740	3409
Average	1540	1426	2966			
L.S.D.	NS	NS				
<u>With Empire Trefoil</u>						
Syn. 1	2416	2950	5366	3329	1438	4767
Syn. 2	2452	2643	5095	3034	1329	4363
Syn. 3	2330	2791	5121	2854	1410	4264
Frontier	2313	3191	5504	3325	1301	4626
Common	2417	2759	5176	3378	1547	4925
Average	2385	2867	5252			
L.S.D.	NS	NS				
	June 22	Aug. 14		June 26	Aug. 6	

Reed Canary grew more slowly in June, retarded by cold temperature (about 3 degrees lower than average). However aftermath was better than in 1963, maybe showing Reed Canary's advantage under abnormally wet conditions.

Varietal differences were slight, Syn. 1 was the best of the three synthetics.

## Reed Canary - Hay. 1964

Varieties	1964			1963		
	1st cut	2nd cut	Total	1st cut	2nd cut	Total
<u>Pure stand</u>						
Syn. 1	3490	1283	4773	5084	981	6065
Syn. 2	3743	1348	5091	4650	909	5559
Syn. 3	3071	1116	4187	3606	879	4485
Frontier	3222	1315	4537	4904	1092	5996
Common	3462	1479	4941	4973	1200	6173
Average	3398	1308	4706			
L.S.D.	669	249				
<u>With Empire Trefoil</u>						
Syn. 1	4683	1648	6331	5177	1407	6584
Syn. 2	4480	1556	6036	5018	1326	6344
Syn. 3	4316	1488	5804	4398	1359	5757
Frontier	4680	1610	6290	5044	1254	6298
Common	4450	1723	6173	5096	1458	6554
Average	4522	1605	6127			
L.S.D.	NS	157				
	July 13	Aug. 26		July 9	Aug. 26	

Reed canary's first cut for hay was also lighter than in 1963 while Aftermath was better. Syn. 3 appeared as the less productive synthetic both at the first and second cuts. Varietal differences were narrow.

Annual Grass Varieties - Summary

Data from one trial are presented. Yields are rather low, probably because of inadequate nitrogen fertilization.

The Westerwolth ryegrasses as a group were highest in yield, followed by orchardgrass, then the Italian ryegrasses.

B.R. Christie,  
Co-ordinator.

Exp. 633-2.

Annual Grass Trial, 1964

Yield - Lbs. per Acre

GUELPH

Variety	Species	Cut 1 (July 16)	Cut 2 (Sept. 10)	Total
		1)		
Tewera	Westerwolth Ryegrass	2880 a	2440 a	5320 a
C.B.	Westerwolth Ryegrass	2910 a	2080 abc	4990 ab
Billion	Westerwolth Ryegrass	2410 ab	2410 a	4820 abc
Waldi	Westerwolth Ryegrass	2460 ab	2350 ab	4810 abc
Vertas Hybrid	Westerwolth Ryegrass	2500 ab	2180 abc	4680 abc
Frode	Orchardgrass	2390 ab	2290 abc	4680 abc
Tetila	Italian Ryegrass	2410 ab	2150 abc	4560 abc
Tiara	Italian Ryegrass	2000 ab	2080 abc	4080 bc
Tetrone	Italian Ryegrass	2120 ab	1950 c	4070 bc
Vertas Poly	Italian Ryegrass	1920 b	1990 bc	3910 c
C.B.	Italian Ryegrass	2010 ab	1810 c	3820 c
C.V.(%)		19.1	10.6	

1) Any two means followed by the same letter are not significantly different (5% level)

Cut 1 - % Weeds

<u>Variety</u>	<u>% Weeds</u>
Tewera	38
C.B.	22
Billion	24
Waldi	20
Vertas Hybrid	22
Frode	30
Tetila	47
Tiara	25
Tetrone	37
Vertas Ploy	50
C.B.	38

Summary

The summaries of the mixture trials for well and imperfectly drained areas were included in the 1962 and 1963 reports. Data from these studies were used as the bases for the changes made in mixture recommendations for 1964.

The only suggested change in mixture recommendations for 1965 is the inclusion of the mixture; trefoil alone 8 lbs. This mixture can be designated for use where trefoil seed is to be produced or for forage production where suitable weed practices are employed.

Because any recommended variety or mixture must be linked to cutting management for high yields a new series of trials were introduced in 1963 to investigate this aspect of forage production. Trials designed to determine the effect of location on growth and development of alfalfa and trefoil, and trials intended to evaluate cutting schedules of alfalfa and alfalfa mixtures were seeded at four locations in 1963. The 1964 data from Ridgetown, Kemptville, Verner and Guelph are included in this report.

Hay Growth Trials.

Time of spring growth and the rate of continual accumulation of dry matter account for the differences in spacing and shape of the dry matter curves among location of each variety. Growth was earliest at Ridgetown and latest at Verner. Growth at Kemptville and Guelph was similar. Stage of development of each of the four varieties were very similar at Kemptville and Guelph, whereas wider differences in stage of development were noted between Verner and Ridgetown at any one date.

Approximately 75% of the total yield and 90% of the D.D.M. per acre was achieved when either variety of alfalfa reached the mid to late bud stage. Similarly 75-80 per cent of the total yield and 95 per cent of the D.D.M. per acre was reached when either Viking or Empire reached the late bud or very early flower stage.

When the per cent digestible dry matter was plotted on a calendar date basis there appeared to be three distinct stages: 1) the early vegetative period where digestibility does not vary greatly 2) the decreasing period where approximately one half per cent per day is lost and 3) the levelling off period.

In the second stage there appeared to be distinct straight line regression for each location for each variety. Where the per cent D.D.M. of Vernal was plotted on a stage of development basis only one regression line appears possible. This stage of development appears to be a better indicator of when to harvest alfalfa than calendar date.

Alfalfa Mixture. Management.

Three harvests were obtained prior to September 1 when the late bud system was used at Ridgetown, Guelph and Kemptville. Two harvests prior to September were obtained when harvested at 25 per cent bloom.

Dates of the last harvests were August 19, 25 and 26 when harvested at the late bud stage and July 22, 20 and 29 when cut at 25 per cent bloom for Kemptville, Guelph and Ridgetown respectively. The earlier date of last cut as used in the 25 per cent bloom system resulted in a higher proportion of the total

seasonal yield ready for harvest in September or October than the later date as used in the late bud system.

Seasonal total yields were high 10-11,000 pounds of dry matter. On the average the yield of dry matter from the late bud system was 800-1000 pounds lower than that from the 25 per cent bloom system. However this is accounted for by the large differences between the systems at Kemptville (2-3000 lbs). Differences at Guelph and Ridgetown were small.

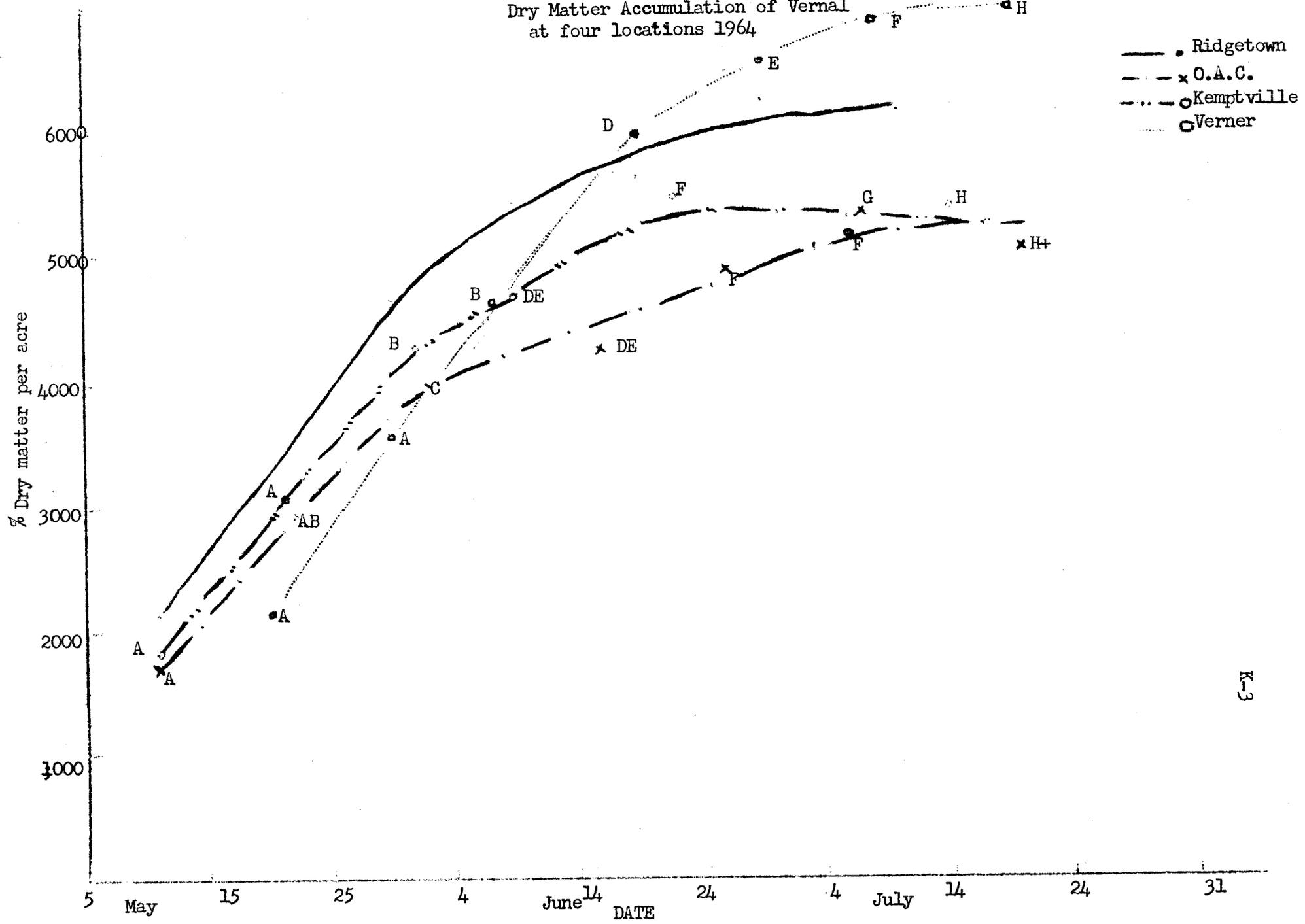
The effect of these systems of harvest on quality of product, yield of pure stands and mixtures and persistence must await the availability of the In Vitro data, botanical separations, analysis and spring evaluation of alfalfa stands.

### Status of Trials

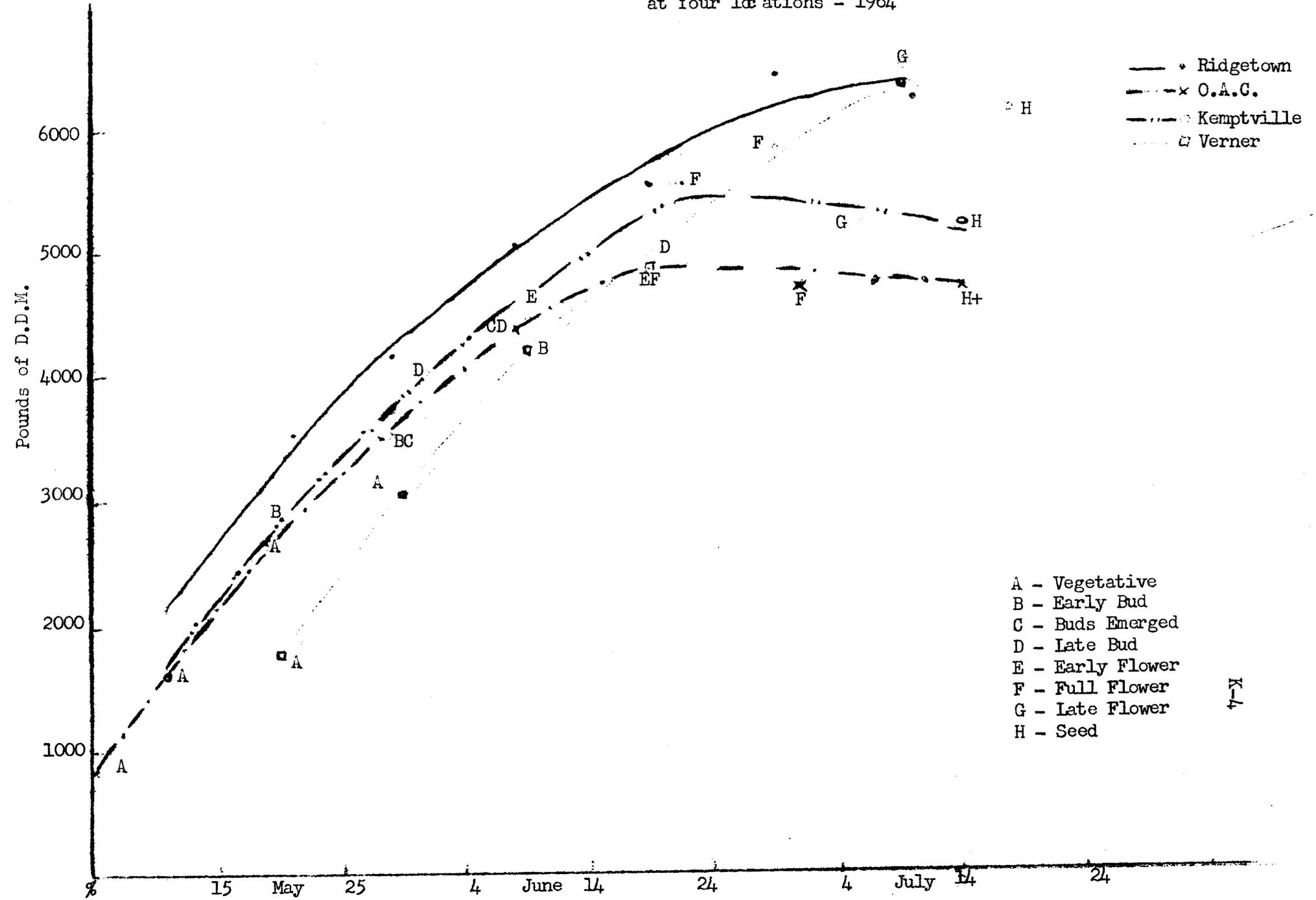
#### Locations and Dates of Seedings

	<u>Hay Growth Trials</u>		<u>Mixture Management</u>	
Ridgetown	1963 (Good)	1964	1963 (Good)	1964
Guelph	1963 (Good)	1964 (Fair)	1963 (Good)	1964 (Fair to good)
Kemptville	1963 (Good)	1964 (Good)	1963 (Good)	1964 (Good)
Ottawa		1964		1964
Williamstown				
Verner	1963 (Good)	1964 (Fair)	1963 (Good)	1964 (Fair)
Kapuskasing		1964 (Good)		1964 (Good)
New Liskeard		1964 (Poor)		1964 (Poor)
Fort William		1964 (Good)		1964 (Good)

Provincial Hay Growth Trials 1963  
 Dry Matter Accumulation of Vernal  
 at four locations 1964



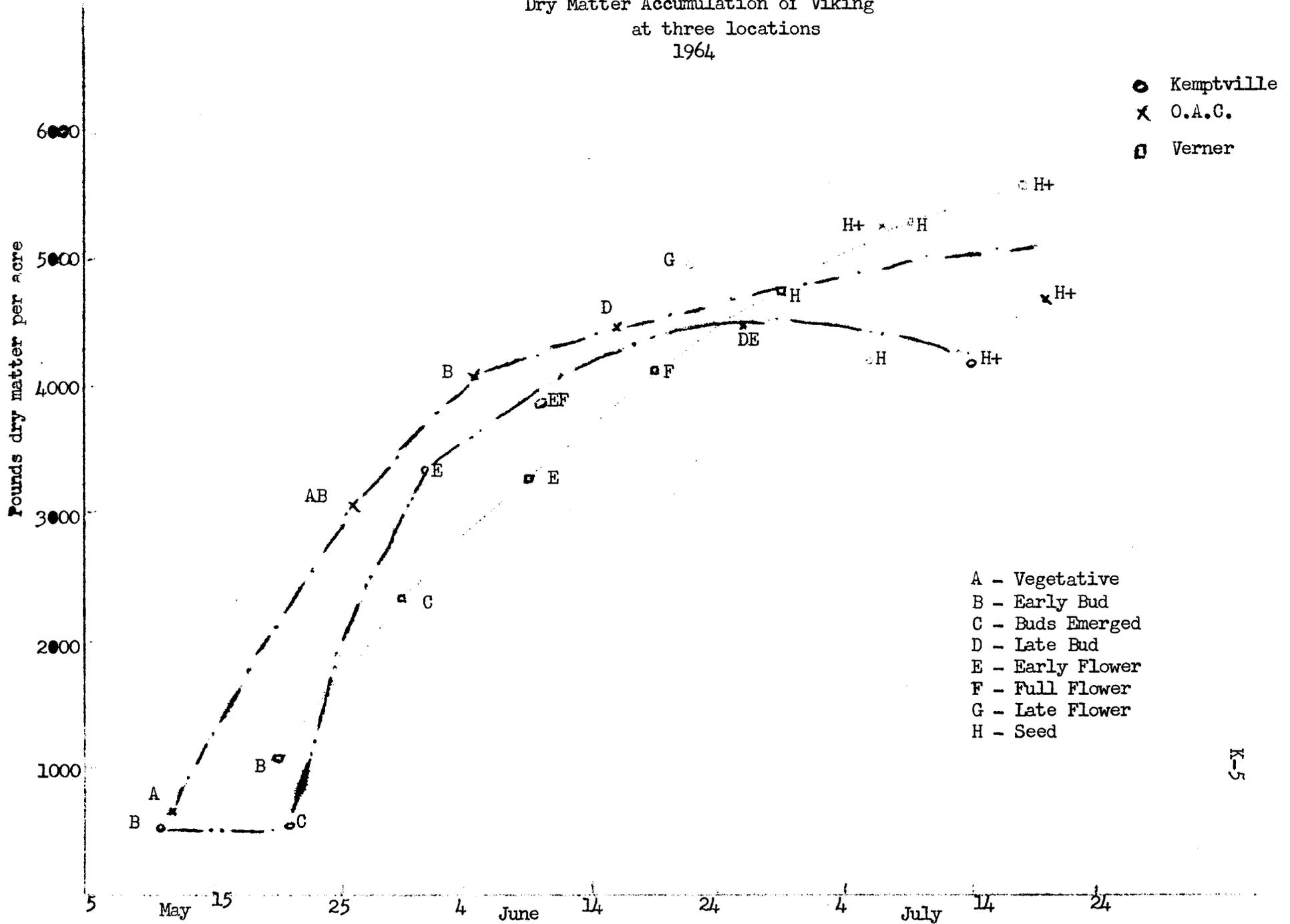
Provincial Hay Growth Trials  
 Dry Matter Accumulation of Dupuits  
 at four locations - 1964



- A - Vegetative
- B - Early Bud
- C - Buds Emerged
- D - Late Bud
- E - Early Flower
- F - Full Flower
- G - Late Flower
- H - Seed

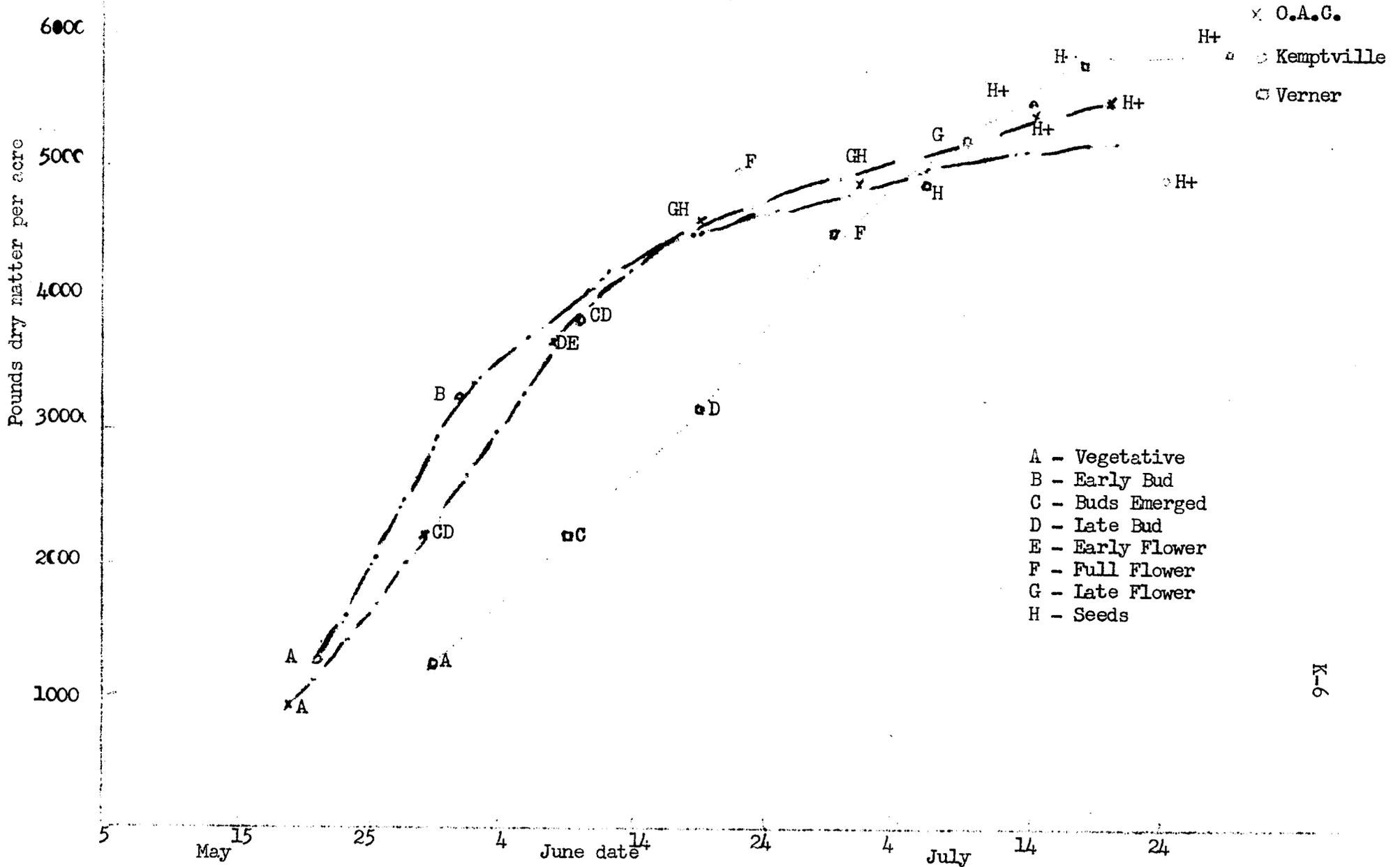
K-4

Provincial Hay Growth Trials 1963  
 Dry Matter Accumulation of Viking  
 at three locations  
 1964



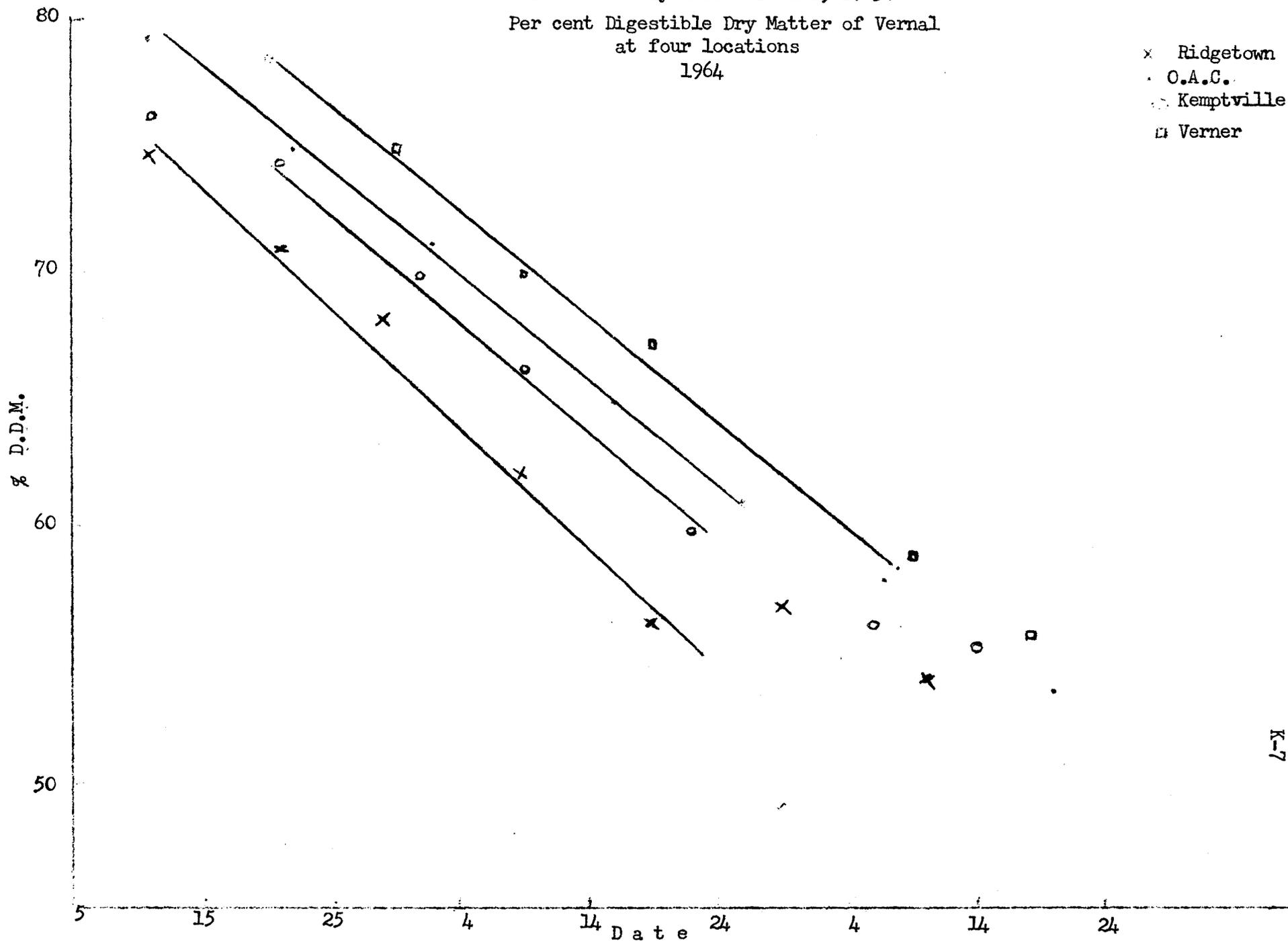
Provincial Hay Growth Trials - 1963  
 Dry Matter Accumulation of Empire  
 at three locations

1964

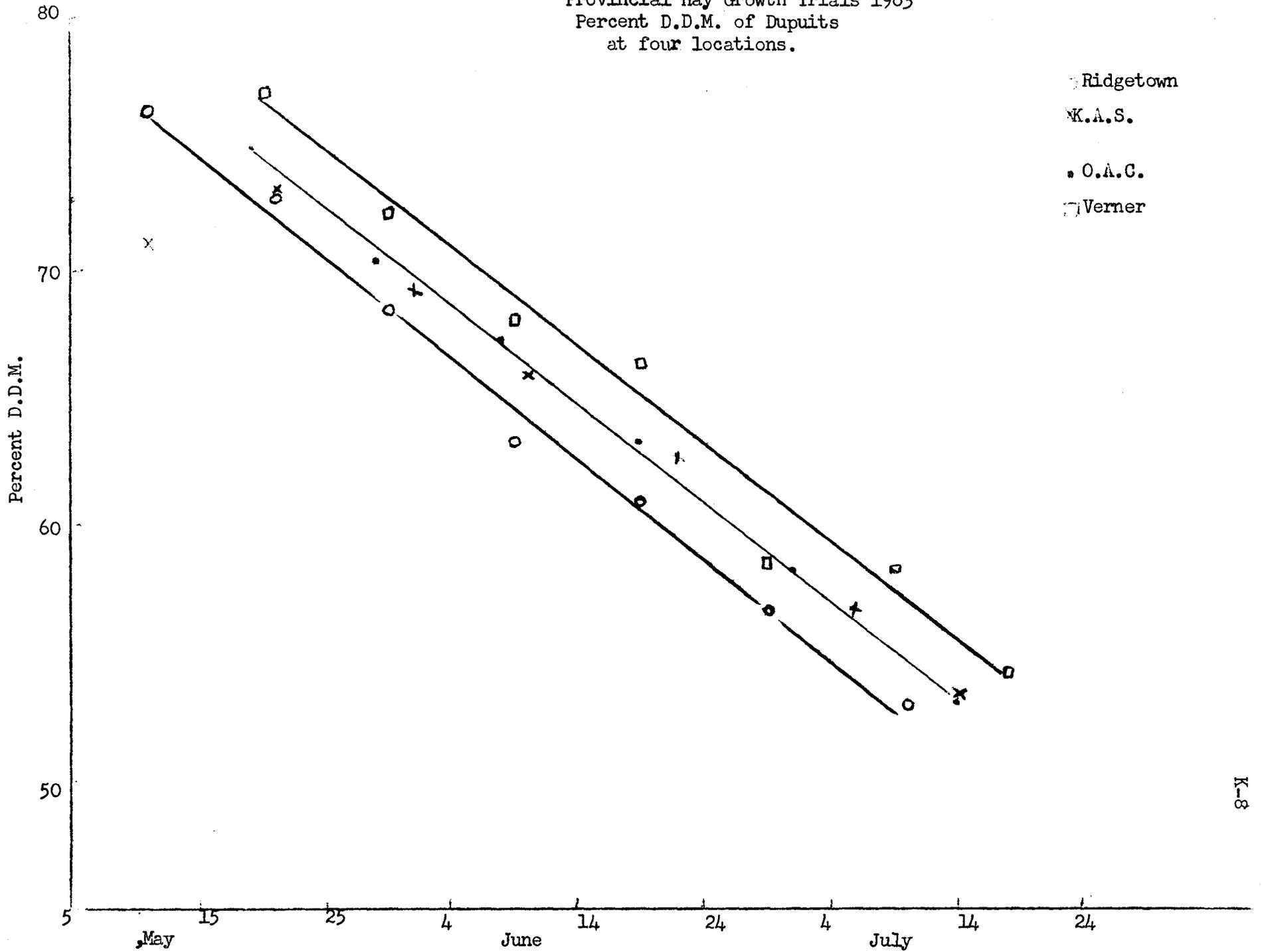


- A - Vegetative
- B - Early Bud
- C - Buds Emerged
- D - Late Bud
- E - Early Flower
- F - Full Flower
- G - Late Flower
- H - Seeds

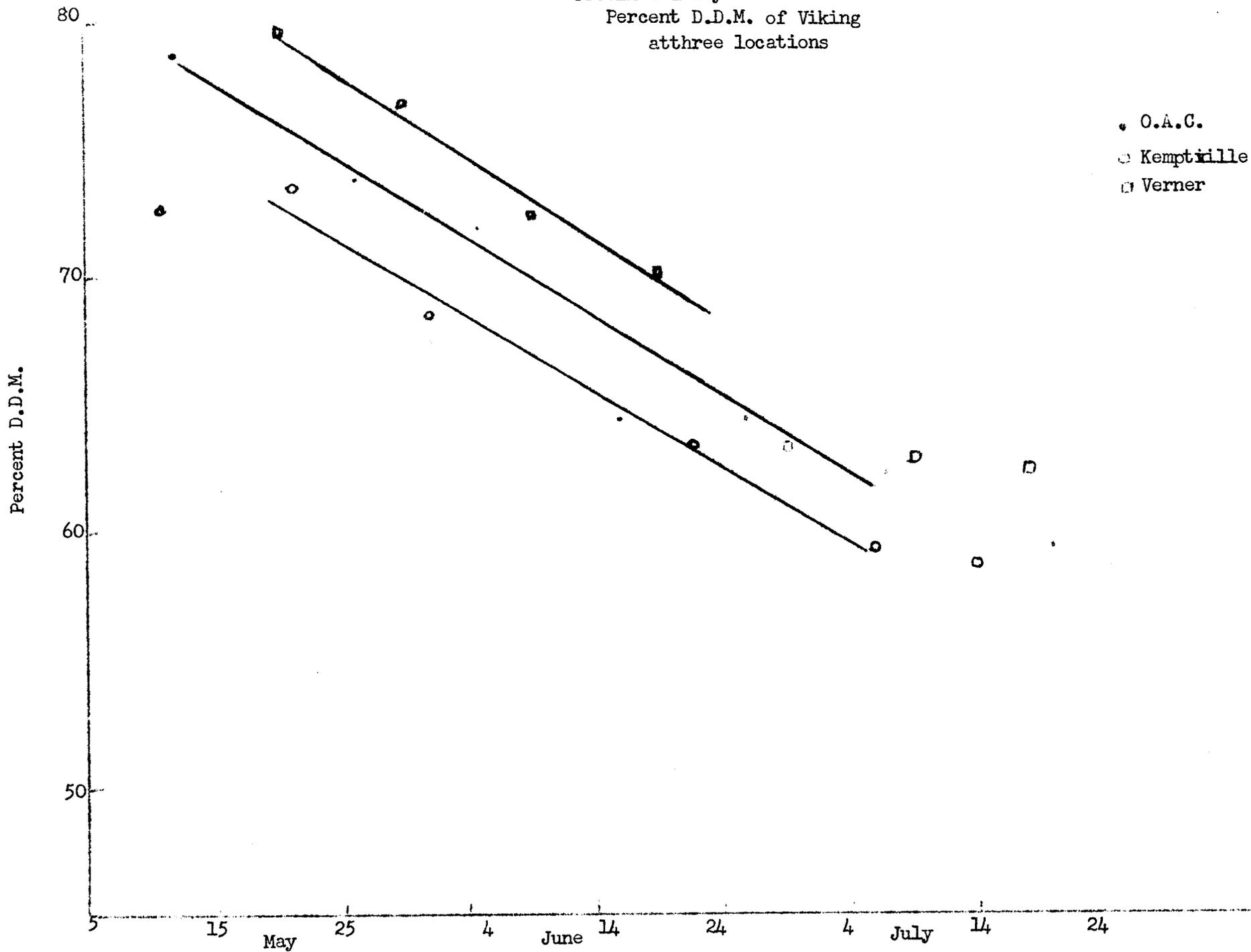
Perennial Hay Growth Trials, 1963.  
 Per cent Digestible Dry Matter of Vernal  
 at four locations  
 1964



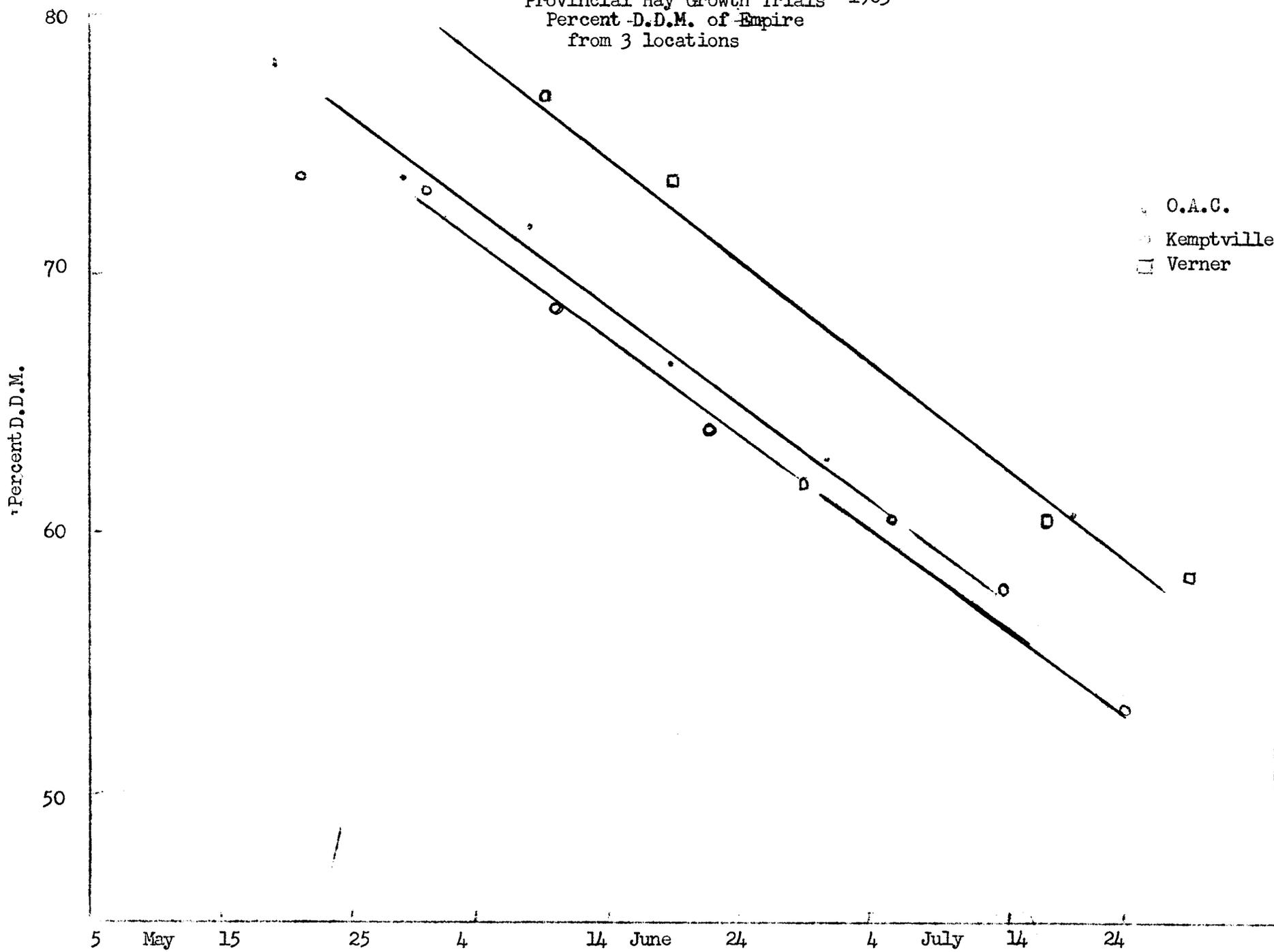
Provincial Hay Growth Trials 1963  
 Percent D.D.M. of Dupuits  
 at four locations.



Provincial Hay Growth Trials  
Percent D.D.M. of Viking  
at three locations

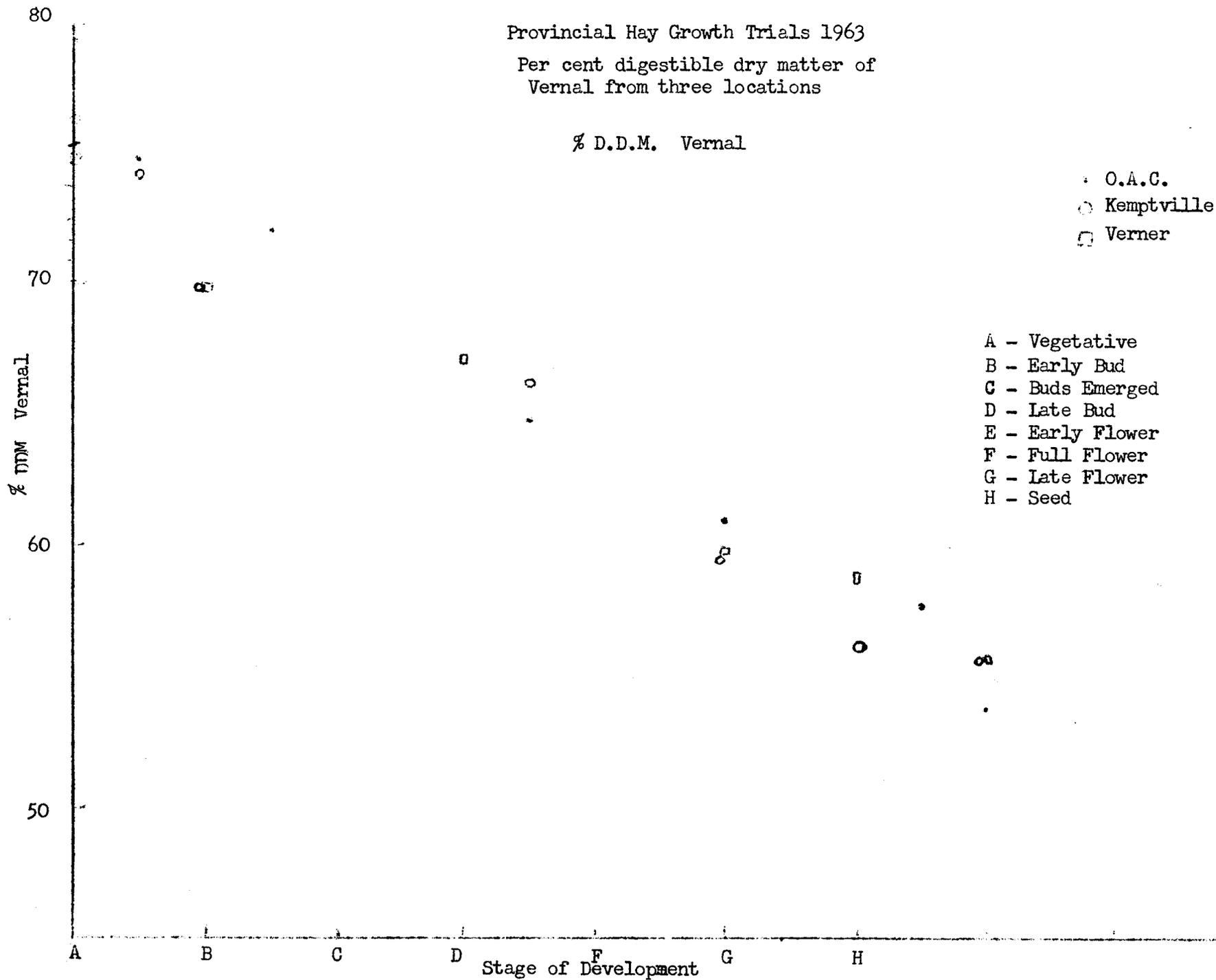


Provincial Hay Growth Trials 1963  
 Percent D.D.M. of Empire  
 from 3 locations



Provincial Hay Growth Trials 1963  
 Per cent digestible dry matter of  
 Vernal from three locations

% D.D.M. Vernal



Provincial Hay Growth Trial - 1963

K-12

Ridgetown

1964 Harvest

Dupuits

<u>Date of harvest</u>	<u>Stage of harvest</u>	<u>Height cms.</u>	<u>Lbs. D.M. acre</u>	<u>% of yield</u>	<u>% D.D.M</u>	<u>Lbs.DDM acre</u>	<u>% of total D.D.M.</u>
May 11			2147	34	76.3	1690	51
21			3517	56	72.7	2557	77
29			4168	66	68.4	2851	85
June 9			5076	81	63.2	3208	96
19			5555	88	61.0	3388	102
29			6437	102	56.6	3643	109
July 10			6296		53.0	3337	

Vernal

<u>Date of harvest</u>	<u>Stage of harvest</u>	<u>Height cms.</u>	<u>Lbs. D.M. acre</u>	<u>% of yield</u>	<u>% D.D.M</u>	<u>Lbs.DDM acre</u>	<u>% of total D.D.M.</u>
May 11			2154	35	74.6	1607	49
21			3312	54	70.8	2345	71
29			4641	76	68.0	3156	95
June 9			5427	88	62.0	3364	102
19			5624	92	59.6	3351	101
29			6239	102	56.8	3544	107
July 10			6132		54.0	3311	

## O.A.C.

1964 Harvest.

## Dupuits

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. acre	% of total yield	% D.D.M.	Lbs.DDM acre	% of total DDM/acre
May 5	A	17.0	808	17	72.7	587	23
19	A	50.7	2654	56	74.9	1988	78
29	AB	61.9	3512	74	70.4	2472	97
June 8	CD	70.3	4397	93	67.2	2955	116
19	EF	76.2	4860	103	63.2	3071	120
July 1	F	84.9	4736	101	58.2	2756	108
14	H	70.5	4711		54.3	2558	

## Vernal

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. acre	% of total yield	% D.D.M.	Lbs.DDM acre	% of total DDM/acre
May 11	A	26.5	1716	34	79.4	1362	51
22	AB	46.5	2927	58	74.9	2192	82
June 2	BC	61.2	3964	79	72.0	2854	107
16	DE	67.7	4256	85	64.9	2762	103
26	F	76.7	4880	97	61.0	2977	111
July 7	GH	87.5	5315	106	57.9	3077	115
20	H	119.0	5009		53.5	2678	

## Viking

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. acre	% of total yield	% D.D.M.	Lbs.DDM acre	% of total DDM/acre
May 12	A	15.7	634	13	78.7	499	18
26	CD	37.7	3057	65	73.8	2256	81
June 5	DE	41.7	4097	87	71.8	2942	106
16	G	42.0	4443	95	64.4	2861	103
26	GH	53.5	4442	95	64.4	2860	103
July 7	H	61.7	5217	111	62.3	3250	117
20	H+	69.2	4686		59.3	2779	

## Empire

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. acre	% of total yield	% D.D.M.	Lbs.DDM acre	% of total DDM/acre
May 19	A	20.0	917	17	78.2	717	22
29	AB	34.7	2200	40	73.8	1623	49
June 8	B	44.2	3673	67	71.7	2633	80
19	D	47.3	4566	84	66.5	3036	92
July 1	E	61.7	4854	89	62.7	3043	92
14	H	73.7	5222	96	57.6	3007	91
20	H+	81.2	5449		60.6	3302	

Kemptville

1964 Harvest

Dupuits

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. acre	% of yield	% D.D.M.	Lbs. DDM acre	% of D.D.M.
May 11	A		1648	31	71.0	1170	42
21	B		2926	56	73.2	2142	77
June 1	CD		4010	76	69.1	2771	99
10	E		4451	85	65.9	2933	105
22	F		5576	106	62.6	3490	125
July 6	G		5222	100	56.7	2901	104
14	H		5238		53.4	2797	

Vernal

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. acre	% of yield	% D.D.M.	Lbs. DDM acre	% of D.D.M.
May 11	A		1830	34	76.2	1394	46
21	AB		3073	57	74.2	2280	76
June 1	B		4293	80	69.8	2996	100
10	DE		4694	87	66.1	3102	103
22	F		5465	102	59.5	3252	108
July 6	G		5162	96	56.2	2901	97
14	H		5371		55.9	3002	

Viking

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. acre	% of yield	% D.D.M.	Lbs. DDM acre	% of D.D.M.
May 11	B		512	12	72.6	372	15
21	C		515	12	73.4	378	15
June 1	DE		3325	79	68.4	2274	92
10	EF		3859	92	66.8	2578	105
22	G		4957	118	64.4	3192	130
July 6	H		4191	100	59.4	2489	101
14	H+		4191		58.7	2460	

Empire

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. acre	% of yield	% D.D.M.	Lbs. DDM acre	% of D.D.M.
May 21	A		1287	27	73.8	949	38
June 1	B		3260	68	73.2	2386	95
10	C		3841	81	68.6	2635	104
22	F		4957	104	64.0	3172	126
July 6	G		4835	102	60.5	2925	116
14	GH		5429	114	57.9	3143	125
24	H		4754		53.1	2524	

Provincial Hay Growth Trial - 1963

K-15

Verner

1964 Data

Dupuits

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. acre	% of yield	% D.D.M	Lbs.DDM acre	% of total D.D.M.
May 20	A	41.8	1788	28	77.0	1377	40
30	A	55.3	3093	50	72.1	2230	65
June 9	B	63.0	4208	68	68.0	2861	84
19	D	74.0	4882	79	66.4	3242	95
29	F	93.0	5848	95	58.6	3427	100
July 9	G	89.0	6383	103	58.2	3715	109
18	H	86.0	6175		55.3	3414	

Vernal

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. acre	% of yield	% D.D.M	Lbs.DDM acre	% of total D.D.M.
May 20	A	39.0	2154	31	78.4	1689	44
30	A	50.0	3597	52	74.7	2687	69
June 9	B	59.0	4658	67	69.7	3247	84
19	D	67.0	5982	86	67.0	4010	103
29	F	81.0	6508	94	59.6	3279	85
July 9	G	85.0	6892	99	58.8	4052	104
18	H	84.0	6951		55.8	3879	

Viking

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. acre	% of yield	% D.D.M	Lbs.DDM acre	% of total D.D.M.
May 20	B	19.0	1066	19	79.6	848	24
30	C	31.0	2301	41	76.9	1769	51
June 9	E	34.0	3283	59	72.2	2390	68
19	F	42.0	4103	74	70.0	2872	83
29	H	52.0	4706	85	63.3	2979	86
July 9	H	55.0	5279	95	62.9	3320	96
18	H	54.0	5559		62.3	3463	

Empire

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. acre	% of yield	% D.D.M	Lbs.DDM acre	% of total D.D.M.
May 30	A	24.0	1259	21	81.6	1027	30
June 9	C	27.0	2208	38	76.8	1696	49
19	D	35.0	3155	54	73.5	2319	68
29	F	51.0	4477	76	64.6	2892	84
July 9	G	55.0	5174	88	61.9	3203	93
18	H	59.0	5764	98	60.5	3487	102
29	H+	55.0	5870		58.4	3428	

PROVINCIAL ALFALFA MIXTURE - MANAGEMENT TRIAL

Seasonal Total Yields of All Locations

Year of Harvest: 1964

Mixture	Stage	Ridgetown	Guelph	Kemptville	Average Seasonal Yield
DuPuits alone	Late bud	11367	10740	8871	9993
+ Saratoga		11880	11033	9711	10874
+ Frode		11796	11235	8725	10585
Mean		11344	11003	9102	10484
DuPuits alone	25% bloom	10421	11242	10720	10794
+ Saratoga		11047	12211	11571	11610
+ Frode		11243	12060	11571	11958
Mean		10904	11504	11267	11454
Vernal alone	Late bud	10353	11367	8126	9949
+ Saratoga		10920	10308	7925	9718
+ Climax		11311	11301	8820	10477
Mean		10861	10992	8290	10081
Vernal alone	25% bloom	10619	10721	9689	10343
+ Saratoga		11024	11408	12033	11488
+ Climax		10745	10976	10385	10702
Mean		10796	11031	10702	10843

PROVINCIAL ALFALFA MIXTURE - MANAGEMENT TRIAL

Location: Ridgetown

Yields of dry matter per acre

Year of harvest: 1964

Mixture	Stage of development at each harvest	Harvests prior to August 31				Harvest after Sept. 1	Season Total	% harvested prior to September
		1	2	3	Total			
DuPuits alone	Late bud	5380 (6/9)	3006 (7/15)	1174 (8/26)	9560	1807 (10/19)	11367	84
+ Saratoga		6075	2723	1211	10009	1871	11880	84
+ Frode		5909	2919	1162	9990	1806	11796	84
DuPuits alone	25% bloom	6087 (6/23)	2338 (7/29)		8425	1996 (10/19)	10421	80
+ Saratoga		6973	2102		9075	1972	11047	82
+ Frode		6405	2670		9075	2168	11243	80
Vernal alone	Late bud	5074 (6/9)	2677 (7/15)	916 (8/26)	8667	1686 (10/19)	10353	84
+ Saratoga		6568	2215	805	9588	1332	10921	88
+ Climax		6064	2642	962	9668	1643	11311	86
Vernal alone	25% bloom	6434 (6/23)	2276 (7/29)		8710	1909 (10/19)	10619	82
+ Saratoga		7334	1962		9296	1728	11024	84
+ Climax		6280	2358		8638	2007	10745	80

PROVINCIAL ALFALFA MIXTURE - MANAGEMENT TRIAL

Location: O. A. C.

Yields of dry matter per acre

Year of harvest: 1964

Mixture	Stage of development at each harvest	Harvests prior to August 31				Harvest after Sept. 1	Season Total	% harvested prior to September
		1	2	3	Total			
DuPuits alone	Late bud	4651 (6/16)	1853 (7/9)	2444 (8/25)	8948	1792 (10/28)	10740	83
+ Saratoga		4875	1941	2550	9366	1667	11033	85
+ Frode		5018	1916	2488	9422	1813	11235	84
DuPuits alone	25% bloom	4938 (6/19)	2953 (7/20)		7891	3351 (9/16)	11242	70
+ Saratoga		5700	3247		8947	3264	12211	73
+ Frode		5518	3193		8711	3349	12060	72
Vernal alone	Late bud	5720 (6/16)	2165 (7/14)	2401 (8/28)	10286	1081 (10/28)	11367	90
+ Saratoga		5464	1711	2109	9284	1024	10308	90
+ Climax		5647	2041	2470	10158	1143	11301	89
Vernal alone	25% bloom	4951 (6/24)	3236 (7/30)		8187	2534 (10/1)	10721	76
+ Saratoga		5975	3018		8993	2415	11408	78
+ Climax		4816	3542		8358	2618	10976	76

PROVINCIAL ALFALFA MIXTURE - MANAGEMENT TRIAL

Location: Kemptville

Yields of dry matter per acre

Year of harvest: 1964

Mixture	Stage of development at each harvest	Harvests prior to August 31				Harvest after Sept. 1	Season Total	% harvested prior to September
		1	2	3	Total			
DuPuits alone	Late bud	3433 (6/12)	1459 (7/7)	2338 (8/19)	7230	1641(10/15)	8871	81
+ Saratoga		4407	1207	2265	7879	1832	9711	81
+ Frode		3694	1162	2151	7007	1718	8725	80
DuPuits alone	25% bloom	5476 (6/19)	3175 (7/22)		8651	2069(10/15)	10720	80
+ Saratoga		7381	2389		9770	1989	11571	84
+ Frode		6425	2701		9126	2445	11571	78
Vernal alone	Late bud	3748 (6/12)	1145 (7/7)	2192 (8/19)	7085	1041(10/15)	8126	87
+ Saratoga		4357	854	1721	6933	992	7925	87
+ Climax		3512	1043	1920	6475	1345	8820	73
Vernal alone	25% bloom	5571 (6/19)	2485 (7/22)		8056	1633(10/15)	9689	83
+ Saratoga		7817	2258		10075	1958	12033	83
+ Climax		6397	2280		8677	1708	10385	83

121	64
34	63

1963 ALFALFA FARM PLANTINGS  
(DuPuits, Glacier)

1964 Reports

Reports were received from 15 locations.

Generally speaking, these two varieties were rated equal by co-operators. DuPuits seemed to grow a little faster in the spring but in yield, maturity and regrowth, DuPuits and Glacier were very similar. In the first crop year there appears to be little choice between DuPuits and Glacier.

<u>County</u>	<u>Co-Operator</u>	<u>Address</u>
Elgin	Harold Jenkins, Lot 21, Conc. 9	Belmont #3 S. Dorchester
Essex	Milt Farough	Maidstone #1
Kent	Murray Jack	Bearline #1
Middlesex	Donald Black Lot 6, Conc. 7	Glanworth #2 Westminster
Bruce	Herb Waechter Lot 39, Conc. 6	Mildmay #2 Carrick
Brant	Colin Lovering	Alberton
Haldimand	L.B. Mehlenbacher	Kohler
Simcoe N.	Morris Schaer Lot 2, Conc. 13	Minesing #1 Vespra
York	Alex Davidson	Stouffville
Durham	G. Armstrong Lot 15, Conc. 8	Frazerville #1
Peterborough	Stewart Nelson	Keene
Lennox and Addington	Grant Huyck	Bath #1
Northumberland	Arnold Reister Lot 4 & 5, Conc. 7	Brighton #1 Brighton
Renfrew	Barclay Dick Lot 23, Conc. 6	Douglas #1 Bromley
Oxford	Mac Logan	Woodstock

1964 ALFALFA FARM PLANTINGS  
(Vernal, Cayuga, DuPuits, Saranac)

Seeding Year Report (2 locations)

Neil Armstrong - Mono Road, #1.

Lot 22, Conc. V, Chinguacousy Twp. - Peel Co.

Seeded May 8 with oats on fair drained medium soil. DuPuits more vigorous and more plants per square foot than the other three. Saranac stand slightly less than Cayuga and Beaver - but good.

Willard McKay - Embro, #5.

Lot 13, Conc. IX, E. Zorra, Twp. - Oxford Co.

Direct seeded on May 5 on well drained medium soil and sprayed with 2,4-DB (20 oz. per acre). First cut (2 tons per acre) on July 20, and a second cut taken off at the end of August. No noticeable differences between the 4 varieties in stand, growth or yield - all good to excellent.

1963 ALFALFA PLANTINGS, 1964 REPORT

(Vernal, Cayuga, Beaver)

Of 20 received, the 11 usable reports summarized below indicated a stand of more than 6 alfalfa plants per square foot while 4 others indicated lower than 6 plants per foot.

Vernal was reported highest or equal to highest in yield in 7 reports while Cayuga received the same rating in 6. Beaver received high rating in 2 reports only. Beaver was rated second in yield four times and 3rd in yield twice. It appears that Vernal and Cayuga yields were higher than those from beaver in most cases although Beaver was reported equal to one of the varieties in several reports.

While some variation was reported, Vernal and Cayuga were reported to bloom earlier than Beaver in most cases. If there is any other difference it is that Vernal is slightly earlier in maturity than Cayuga.

Rate of growth was reported greatest for Cayuga and least for Beaver. Vernal was intermediate.

Regrowth was reported greatest for Cayuga on most reports while Beaver and Vernal were reported to be similar. If a difference was present it was that Vernal aftermath was better than Beaver.

One report indicated no difference between varieties, while another reported Vernal short in comparison to the plants from the owners own seed. Boron deficiency was noted on 3 reports, 2 of which indicated a more sever deficiency on Beaver than the other varieties. One report said that Cayuga makes the finest textured hay. In only one location was Cayuga reported to have poor growth than the other varieties and this was associated with a thinner stand than the other 2 varieties.

In two additional reports comparing only Vernal and Cayuga, Cayuga was indicated as yielding more than Vernal, maturing before Vernal, and having faster growth and regrowth than Vernal.

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1963 FARM PLANTINGS - ALFALFA

(Vernal, Cayuga, Beaver)

<u>County</u>		
Essex	Milt Farough	Maidstone #1
Lambton	Harry Wellington	Corunna #1
Kent	Lot 20, Conc. 11 Murray Jack	Sarnia Twp. Bearline #1
Middlesex	Donald Black	Glanworth #2
	Lot 6, Conc. 7	Westminster Twp.
Grey	Gordon Kuhl	Desboro #2
	Lot 8, Conc. 10	
Huron	Douglas McNeil	Goderich #6,
	Lot 1, Conc. 10	Colburn Twp.
Welland	John Hagar	Port Robinson #1
	Lot 13-14, Conc. 1	Crowland Twp.
Peel	Aubrey Livingston	Brampton #1
Simcoe S.	Harry Cross	Beeton #1
	Lot 15, Conc. N $\frac{1}{2}$ 7	Tecumseth
York	S. Watson	Markham
Durham	Geo. Armstrong	Frazerville #1
	Lot 15, Conc. 8	
Victoria	Jim Calvert	Reaboro
	Lot 7, Conc. 9	
Hastings	Philo Harris	Madoc #2,
	Lot 13, Conc. 8	Madoc Twp.
Prince Edward	Holmes Mathic	Bloomfield
Leeds	Arthur Modler	Landesdowne #2
	Lot 3, Conc. 2	Landesdown Twp.
Renfrew	Gibbon Bros.	Renfrew #3
	Lot 25-26, Conc. 3	Adamston
Temiskaming	(R.K. Den Tandt)	
	Demonstration Farm	
Perth	Allan Bain	St. Paul Sta.
Wellington	Elwin Whale	Alma #2
(Cayuga, Vernal and Narragansett)	Lot 10, Conc. 9 Art Adie	Peel Elora #2

1964 BROME FARM PLANTINGS  
(Lincoln, Redpatch, Saratoga)

Seeding Year Report - on six of the seven locations

Donald Black, - Glanworth #2

Lot 6, Conc. VII, Westminster Twp. - Middlesex Co.

Redpatch and Saratoga were about equal in establishment and growth. Both were a little better than Lincoln in these respects. Stand and growth good for all varieties.

Bruce Eagleston - Cobourg #4

Lot 22, Conc. II, Hamilton Twp. - Northumberland Co.

Plots established - no further report.

Les Smith - Manchester

Lot 8, Conc. II, Reach Twp. - Ontario Co.

Plots established - no further report.

Dave Armstrong - Inglewood #1

Lot 23, Conc. IV, Chinguacousy Twp. - Peel Co.

Saratoga established much better than Lincoln and Redpatch which were equal in establishment and growth (2 plants per sq. ft.). Plots were direct seeded and hay cut about August 10. Alfalfa stand is good plus.

Jim Mortson - Queensville

Lot 26, Conc. III, E. Gwillimbury Twp. - York Co.

Saratoga (6 plants/ft.) much thicker and stronger than Lincoln and Redpatch (3 plants per sq.ft.). Alfalfa stand good plus.

Maurice Bruce - Grand Valley #2

Lot 28, Conc. XI, E. Luther Twp. - Dufferin Co.

Very good stand (40 brome plants/ft.). No differences seen. Brome seeded with grain in grain box - no pressure on disks.

120  
34 Y64

1960 FARM PLANTINGS  
COMPARING SARATOGA BROME AND ORCHARDGRASS  
1964 REPORT

Thirty farm plantings were made in 1960 to compare DuPuits alfalfa mixed with Saratoga brome to a DuPuits alfalfa orchardgrass mixture. Both mixtures were seeded on adjacent plots at each location. Twenty-six reports were received on these plantings in 1964.

Ten plots were plowed up in 1962, and 6 in 1963. Winterkilling of alfalfa was the reason given in all but two cases. For these two, the "time had come in the rotation", so the plots were plowed up. In each case of the six who will plow the plots in 1964, the reason given was that the alfalfa has thinned to a low level. Plots which will continue next year (4 of them) still have a reasonable stand of alfalfa.

Thus, stands are plowed in Ontario when the legumes kill out, regardless of the grasses left. DuPuits alfalfa in these plantings generally produced for two or three years before thinning to the point where farmers plowed the field. In a few locations DuPuits has continued to produce for four harvest years.

Of the ten co-operators plowing their plots in 1962, four indicated a preference for the brome mixture over the orchard mixture for these reasons.

- 1) more timely maturity for haymaking in this area
- 2) better hay than orchardgrass makes
- 3) orchard too aggressive, too early growth
- 4) more yield from brome; brome liked by cattle.

The one indicating a preference for orchardgrass claimed a palatability problem was encountered with Saratoga - DuPuits. He also prefers the more vigorous regrowth of orchardgrass. All those answering indicated the lowered

regrowth from Saratoga. Two indicated that brome grass was less competitive than DuPuits alfalfa.

Of those who plowed in 1963 only 3 indicated preferences. One preferred the orchard mixture because it was more easily planted, established easier and provided much more aftermath. The one preferring Saratoga claimed it fit into his farm program better. He uses Vernal alfalfa and brome grass mixtures generally. The third indicated a preference for the orchard mixture as silage and the brome mixture as hay. Two indicated that orchard was too competitive for DuPuits alfalfa. Two also indicated that DuPuits alfalfa was more competitive than Saratoga brome grass. The remaining four had no comment. Regrowth on Saratoga was indicated as being too low. Maturity of Saratoga was about the same as DuPuits in the three reports which had comments.

Among the co-operators who will plow up the plots in 1964, preferences for Saratoga and orchard were equal. The Saratoga mixture was preferred because it had a better maturity for hay harvested at the usual time, or gave a finer hay than did orchard. Orchard DuPuits mixtures are preferred for their better establishment, and better compatibility as well as high yield and bigger aftermath. Four out of six indicated that Saratoga was earlier than DuPuits. Three reports claimed that alfalfa was being crowded out quicker in the orchard mixture than in the Saratoga mixture. Only one indicated Saratoga to be too aggressive for DuPuits.

Of the four usable reports indicating the plots will be used next year preferences were split between the orchard mixture and the Saratoga mixture. Highest yield was obtained from the orchard mixture in 3 locations, and highest aftermath in all locations. The orchard grass was too aggressive for the DuPuits in the 3 reports. While alfalfa is thinned in

all locations, it is thinned more in the orchard plots. Saratoga brome appeared compatible with DuPuits in maturity and aggressiveness. It lacks in aftermath regrowth. Frost damage was less on Saratoga than on orchardgrass in the one location where frost was reported.

While Saratoga apparently has equivalent maturity and compatability with DuPuits alfalfa and will produce high yields in first cut. It appears that many farmers want additional aftermath production too. Indeed, several have indicated a still better seed quality is needed to give better stands.

Many farmers indicate that they will accept the aggressiveness of

orchardgrass (and the lowered yield in some cases) to take advantage of the aftermath production given by that species. L-7

The indication given by some that they like both DuPuits - Saratoga and DuPuits orchard suggest that there is a place for both mixtures in the Ontario recommendations. From the results obtained in this series it would seem best to make the recommendation for a two to three year production period after the seeding year - the period being governed by the stand of alfalfa remaining.

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1964 TIMOTHY FARM PLANTINGS  
(Astra, Climax, Drummond)

8 locations (1 not reporting)

Earl Grawburg - St. Thomas, #8.

Lot 14, Conc. XI, Yarmouth Twp. - Elgin Co.

More Climax plants established than Astra or Drummond. 3 to 5 plants per square foot.

Alex McBeath - Kippen.

Lot 6, Conc. 3, Stanley Twp. - Huron Co.

More Astra plants (8) established and grew better than Climax which in turn was better than Drummond (3 plants/sq.ft.). This field was treated with atrazine in 1963 and this affected timothy in 1964.

Dave Armstrong - Inglewood, #1.

Lot 23, Conc. IV, Chinguacousy Twp. - Peel Co.

Direct seeded and sprayed with 2,4-DB. No difference in establishment, growth or yield noted. Few timothy plants.

Allan Bain - St. Pauls

Lot 10, Conc. V., Downie Twp. - Perth Co.

No difference in establishment, yield or growth. 4 plants per sq. ft. on all varieties.

Paul Jopling - Lakefield, #3.

Lot 31, Conc. XIV, Smith Twp. - Peterborough Co.

No report.

Henry Leaven - Bloomfield.

Lot 1, Conc. 2 NT, Hallowell Twp. - Prince Edward Co.

No report.

Eugene Smith - Utopia.

Lot 31, Conc. VI., Essa Twp. - S. Simcoe Co.

Seeded with oat nurse crop. Seedlings not showing enough to show differences on August 21.

1964 BIRDSFOOT TREFOIL FARM PLANTINGS

(Empire, Leo, Viking)

Seeding Year Report - on four out of five locations

Keith Weeden - Paisley

Lot 7, Conc. VI, Elderslie Twp. - Bruce Co.

Direct seeded, no herbicide applied. Practically no timothy established due to very dry conditions. Leo and Viking were slightly better in plant stand and growth than Empire. Growth of all varieties was short but vigorous.

Stan Thomas - Woodville

Lot 2, Conc. IV, Eldon Twp. - Victoria Co.

Seeded with a nurse crop. Leo and Viking were superior in height and number of plants established to Empire.

Frank Townsend - Belwood

Lot 5, Conc. VI, W. Garafraxa Twp. - Wellington Co.

Direct seeded, no herbicide applied, but mowed in mid July. These plots are on a black fine muck soil. Timothy establishment was poor. No difference in trefoil plant stand was noted, all sections were variable. Leo and Viking were taller than Empire. 50 holsteins were pastured on the area for about two weeks. They had access to another field but preferred trefoil.

## 1961 TREFOIL FARM PLANTINGS

Date of Report                   -1964  
Comparisons                    1) Empire alone  
                                  2) Empire + Viking trefoil  
                                  3) Vernal alfalfa + Empire trefoil

In 1961, 38 of the above comparisons were seeded. In 1964, 27 survey reports were returned. Of these plantings 21 will be retained for another year or longer, 6 have been plowed in previous years and one will be plowed in the fall of 1964.

Analysis of the report indicated that approximately one half of the co-operators preferred the alfalfa mixture, the remainder preferred the trefoil. Yield of forage was the major consideration in their choice. In approximately 40 per cent of the seedings alfalfa had been killed due to excess water or grazing. Where drainage is a problem trefoil alone does a better job of production.

SEED SUPPLIES FOR 1966

<u>Species</u>	<u>Variety</u>	<u>Relative Seed Supply</u>	<u>Tentative Retail Price - per lb.</u>
Alfalfa	DuPuits	Good	80-85¢
	Glacier	Short	85-90¢
	Europa	Short	
	F.D. 100	Good	
	Eynsford	Good	
	Mega	Limited	
	Saranac	Short	
	Vernal	Good	65¢
	Narragansett	Short	
	Cayuga	Good	
Progress	Moderate		
Birdsfoot Trefoil	Empire	Moderate	\$1.75
	Viking	Moderate	\$2.00
	Leo	None	
	Common		\$1.10
Red Clover	Lasalle	Moderate	
	Dollard	Good	
	Ottawa	Short	
	Lakeland	Short	
Ladino	Common	Good	
	Merit		
Bromegrass	Saratoga	Short	65¢
	Lincoln	Moderate	55¢
	Fischer	Moderate	55¢
	Redpatch	Short	
	Canadian Common	Good	25-30¢
	U.S. Southern	Moderate	30-35¢
Timothy	Climax	Good	30-35¢
	Astra	Good	
	Drummond	Good	30-35¢
	Common	Moderate	25-30¢
Orchardgrass	Frode	Good	45¢
	Tardus II	Moderate	
	Rideau	Short	
	Common	Good	35¢
Meadow Fescue	Mimer	Moderate	
	Common	Good	40¢