

FORAGE CROP INVESTIGATIONS - ONTARIO

1965 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, University of Guelph, Guelph

Western Ontario Agricultural School, Ridgetown

Demonstration Farm, New Liskeard

FOREWORD

This report has been prepared by the members of the Ontario Forage Crops Committee. It is intended for the use of members of that committee as well as for others interested in the forage program in Ontario.

Included in this report are the data from trials established to evaluate varieties and mixtures. These data cannot be considered in most cases as a complete evaluation of a particular variety or mixture, as only those data summarized to November 1, 1965, are included. Field trials are being conducted continuously and data from several years and several trials are necessary to assess the potential value of any variety or mixture in Ontario agriculture.

The Ontario Forage Crops Committee is made up of personnel from the Canada Department of Agriculture, Ontario Department of Agriculture, and the Ontario Agricultural College, University of Guelph. The committee assumes the responsibility for the evaluation and subsequent recommendation of varieties and mixtures in Ontario. The chairman of the Ontario Forage Crops Committee is Dr. W.E. Tossell, Head of the Crop Science Department, Ontario Agricultural College, University of Guelph, Guelph, Ontario.

CONTENTS

	Page
Alfalfa	A-1
- New Varieties	A-2
- Summary of seedings	A-3
- Summary of yields	A-7
- Individual trials	A-15
- Farm trials	A-27
Birdsfoot Trefoil	B-1
- Summary	B-2
- Individual trials	
Red Clover	C-1
White Clover	D-1
- Summary	D-2
- Individual trials	
Bromegrass	F-1
- Farm trials	F-14
Meadow Fescue	G-1
- Varieties under test	G-2
- Individual trials	G-3
Orchardgrass	H-1
- Summary	H-3
- Varieties under test	H-4
- New Varieties	H-5
- Individual trials	
Timothy	I-1
- Summary	I-2
- Individual trials	I-11
- Comparison of Climax, Astra, Drummond	I-12
- Varieties seeded, 1965	I-14
- Farm trials	
Other Grasses	J-1
- Ryegrass trials	J-2
- Reed Canarygrass trials	J-3
Production and Management	
Summary	K-1
Hay growth curves	
Project outline	K-2
Individual trials	K-3
Mixture - Management	
Project outline	K-13
Individual trials	K-15
Stages of Development	
Legumes	L-1
Grasses	L-2

A number of varieties have been evaluated extensively in Ontario and sufficient data are now available to estimate their future potential. Of such varieties, requests have been received to consider the following for licensing and recommendation:

- A. Flemish Types — Europa, Eynsford, FD 100, Haymor, Mega, Orchies, Saranac
- B. Intermediate Types — Tuna, Warrior
- C. Standard Types — Cayuga, Progress

Of the Flemish Types only Saranac and Apex (R.P. 33) are reported to have wilt resistance. These are expected to replace eventually the Flemish varieties now in use.

W. E. Tossell,
Co-ordinator.

NEW VARIETIES

R P 33 is now named Apex

C L 35 is now named Stride

H.S. Narragansett is now named Narragansett Mk II. This is not the same strain that was seeded at Guelph and Kemptville in 1960 and at Ottawa and Ridgetown in 1961. Presumably, however, it is the same strain as was sown in Ontario tests in later years.

C L 30 - Caladino Farms. At least equal to Buffalo in hardiness, superior to Vernal but superior in yield. (sponsor's report) Wilt resistant.

Pioneer 522 - Pioneer Hi-bred Corn Company and Arnold - Thomas Seed Service. Finer, later, and hardier than Pioneer 525. (sponsor's report)

Omega - Vilmorin, France and Ontario Seed Cleaners and Dealers. Flamande type. Not wilt resistant.

Flandria - sponsored by Abel Seeds. Flamande type, not wilt resistant.

Multifoliate (Multileaf) - A Cornell entry. Intermediate in maturity. Some leaves on some plants have 4 - 5 leaflets.

Norseman - Barzen, Minneapolis. Wilt resistant and quite late in maturity (sponsor's report)

Location¹⁾, Year of Seeding and Present Status of Provincial Screening Trials

	A. Flemish Types																			
Seeding Year	1959		1960		1961		1962					1963		1964		1965				
Last Data Year 19__	61	65	63	63	61	64	64	65	64	63	65	65	64	65	65	—	—	—	—	—
Variety																				
DuPuits	G	G	K	O	R	G	K	C	R	O	V	R	D ²⁾	G	K	G	R	O	C	W
Alfa	G							C				R	D	G		G	R	O	C	W
Tuna ³⁾	G			O	R	G	K	C	R	O	V	R								
Glacier	G					G	K	C	R	O	V	R	D							W
Saranac		G	K											G	K	G	R	O	C	W
Cardinal (NK 501)	G	G	K	O	R				R											
Haymor (NK 502)		G	K	O	R															
Orchies		G	K	O	R				R											
Warrior (NK 507) ³⁾						G	K	C				R								
NK 508 ³⁾						G	K	C												
Eynsford						G	K	C												
Mega						G	K	C		O		R								
A 9 H (Hy.de C) ³⁾						G	K	C				R								
FD 100		G					K					R								
Europa						G	K			O						G	R	O		
Omega																G	R	O	C	
Stride (CL 35)														G	K	G	R	O	C	
Apex (RP 33)																G	R	O	C	W
NK 510																G	R	O	C	
Flandria																G				

- 1) G = Guelph C = Kapuskasing
 K = Kemptville V = Verner
 O = Ottawa D = Douglas
 R = Ridgetown W = Fort William

2) This test was managed as Pasture. All others were managed as hay plus aftermath pasture.

3) These varieties are considered to be intermediate between Flemish and Standard Types.

Location¹⁾, Year of Seeding and Present Status of Provincial Performance Trials

A. Flemish Types

Seeding Year	1962		1963						1964
Last Data Year, 19—	64.	64.	65	65	65	65	65	65	65
Management ²⁾	H	P	H	P	H	P	H	P	H
Variety	—	—	—	—	—	—	—	—	—
DuPuits	C	C	G	G	K	K	V	V	R
Alfa	C	C	G	G	K	K	V	V	R
Tuna			G	G					
Glacier	C	C	G	G	K	K	V	V	R
Saranac									

- 1) G = Kapuskasing V = Verner
 G = Guelph R = Ridgetown
 K = Kemptville W = Fort William

- 2) H = Hay + aftermath pasture
 P = Pasture

Location¹⁾, Year of Seeding and Present Status of Provincial Screening Trials

	B. Standard Types																		
Seeding Year	1959	1960		1961	1962						1963		1964	1965					
Last Data Year 19__	61	65	63	61	64	64	65	64	64	64	65	65	64	65	—	—	—	—	—
Variety	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vernal	G	G	K	R	G	K	C	R	O	O	V	R	D2)	G	G	R	O	C	W
Cayuga	G	G	K	R				R	O				D	G	G				W
Narragansett	G	G	K	R					O				D						W
H.S. Narr. 3		G	K	R					O										
W.R. Narr. 4		G	K																
Narr. Mark II															G	R	O	C	
N.K. 503	G		K	R					O										
N.K. 504	G		K	R					O										
Phisoma	G						C												
Beaver ³⁾	G				G	K	C	R	O	O	V								
Progress (CL 10)					G	K	C					R							
Pioneer 525												R			G		O		
Pioneer 522 ³⁾																		C	
Arnim ⁴⁾												R			G		O	C	
W. L. 202															G	R	O	C	
Multileaf ⁴⁾															G	R	O	C	
Lakak ³⁾	G								O										
Rambler ³⁾	G								O										
CL 30															G	R	O		
Norseman ³⁾																		C	

- 1) G = Guelph O = Ottawa
 K = Kemptville V = Verner
 R = Ridgetown D = Douglas
 C = Kapuskasing W = Fort William

- 2) This trial managed as pasture, all others managed as hay + aftermath pasture.
 3) These varieties are late in maturity compared to Vernal.
 4) An intermediate type rather than a standard type.

Location¹⁾, Year of Seeding and Present Status of Provincial Performance Trials

B. Standard Types

Seeding Year	1961		1962		1963					1964
Last Data Year 19__	63	63	64	64	65	65	65	65	65	65
Management ²⁾	H	P	H	P	H	P	H	H	P	H
Variety	—	—	—	—	—	—	—	—	—	—
Vernal	G	G	C	C	K	K	R	V	V	W
Cayuga	G	G			K	K	R	V	V	W
Narragansett					K	K	R	V	V	W
H.S. Narr. 3	G	G								
Rhizoma			C	C						
Beaver	G	G	C	C						

- 1) G = Guelph R = Ridgetown
 C = Kapuskasing V = Verner
 K = Kemptville W = Fort William

- 2) H = Hay + aftermath pasture
 P = Pasture

Mean Yields (lbs. of Dry Matter per Acre) of Certain Flemish Varieties in Provincial Screening Trials

	<u>Guelph (160-161)</u>		<u>Guelph (161-165)</u>		<u>Kemptville (161-163)</u>		<u>Ottawa (162-163)</u>	<u>Guelph (163-164)</u>		<u>Kemptville (163-164)</u>		<u>Kapuskasing (163-165)</u>	
	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>
Alfa	4360	7340											
DuPuits	4100	7240	3940	7620	4030	7390	11,060	4600	11,060	4190	8190	3510	5210
Glacier	4550	7790						4940	11,220	4640	8590	3530	5440
Cardinal	4180	7160	3900	7480	4440	7830	10,260						
Europa								4940	11,000	4500	8400		
Eynsford								4800	11,260	4330	8350	3530	5400
FD 100	4110	7070								4310	8380		
Haymor			3880	7340	4420	8020	10,500						
Mega								4950	11,420	4630	8880	3860	5930
Orchies			3710	7240	4100	7420	10,160						
Saranac			4170	7820	4490	8070							
	<u>Ridgetown (163-164)</u>		<u>Ottawa 1963</u>		<u>Verner (163-165)</u>		<u>Ridgetown (164-165)</u>	<u>Guelph 1965</u>		<u>Kemptville 1965</u>			
	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	
Alfa							6290	10,030	3770	7770	4530	9670	
DuPuits	4800	7280	4590	9640	3370	6440	6380	10,780	3760	8000	4450	10080	
Glacier	4910	7560	5050	9730	3890	6940	6240	10,520					
Cardinal	4920	7230											
Europa			4650	9620									
Eynsford													
FD 100													
Haymor													
Mega			5240	9900			6430	10,341					
Orchies	4400	6620							3820	8120	4570	9660	
Saranac													

Mean Yields (lbs. of Dry Matter per Acre) of Alfa, DuPuits and Glacier in Provincial Performance Trials

A. Hay + Aftermath Pasture

	<u>Kapuskasing (1963-1964)</u>		<u>Guelph (1964-1965)</u>		<u>Kemptville (1964-1965)</u>		<u>Ridgetown (1964-1965)</u>		<u>Verner 1965</u>	
	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>
Alfa	3440	5430	4240	7630	6050	10,400	6710	10,240	3920	6580
DuPuits	2710	4580	4450	7980	6120	10,640	6770	10,520	3830	6360
Glacier	3260	5500	4400	8130	6140	10,470	6670	10,200	4080	6600

B. Pasture Management

	<u>Kapuskasing (1963-1964)</u>		<u>Guelph (1964-1965)</u>		<u>Kemptville (1964-1965)</u>		<u>Douglas 1964</u>		<u>Verner 1965</u>	
	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>
Alfa	2780	4320	3080	5900	2120	7210	3160	5500	1160	3890
DuPuits	2270	3460	3350	6320	2210	7450	3160	6000	1080	3540
Glacier	3050	4810	3290	6180	2510	7810	2910	5210	1420	4940

ALFALFA: SUMMARY OF ALL YIELD DATA ON CERTAIN VARIETIES

A-8

<u>Comparisons</u>	<u>Management - Hay</u>					<u>Management - Pasture</u>				
	<u>No. of Locations</u>	<u>No. of Test Years</u>	<u>Cut 1</u>	<u>Yield A'math</u>	<u>Total</u>	<u>No. of Locations</u>	<u>No. of Test Years</u>	<u>Cut 1</u>	<u>Yield A'math</u>	<u>Total</u>
<u>A. Flamande Types</u>										
DuPuits Glacier	7	21	4460 4700	3430 3470	7890 8170	4	7	2820 3000	3280 3310	6100 6310
DuPuits Cardinal	4	12	4030 4110	4280 4230	8310 8340					
DuPuits Mega	4	10	4750 4880	3780 4020	8530 8900					
DuPuits Orchies	4	10	3880 3800	3970 3770	7850 7570					
DuPuits Haymer	3	8	3580 3770	4400 4340	7980 8110					
DuPuits Eynsford	3	7	4020 4120	3710 3800	7730 7920					
DuPuits F.D. 100	3	6	4890 4930	3840 3710	8730 8640					
DuPuits Europa	3	5	4430 4710	5200 4870	9630 9680					
DuPuits Saranac	2	9	3710 3950	3770 3950	7490 7900					
<u>B. Intermediate Types</u>										
DuPuits	4	9	4540	3870	8410					
Vernal			4530	3440	7970					
A 9 H			4560	3580	8140					
Tuna			4570	3740	8310					
Warrior			4690	3720	8410					

HARDINESS OF FLEMISH TYPES

A-9

Variety	Guelph, 1962 Seeding 1964 ratings				Kapuskasing, 1962 Seeding 1965 ratings and yields				Kemptonville, 1962 Seeding May, 1965 ratings	
	Winter injury May Assessment	Decrease* in yield	October Rep. 1-4	Stands Rep. 5-6	3 best rep.	3 worst rep.	Mean	2-cut total yield	Per cent winterkill	Stand
DuPuits	heavy	3684	3-4	5	7.7	9.3	8.5	2380	69	3.6
Eynsford	moderate	1847	3-4	4-5	7.7	8.7	8.2	2620	65	4.3
Mega	moderate	2654	3-4	5	3.0	8.7	5.8	3360	70	4.8
Europe	moderate	1699	2-4	5					69	4.0
Glacier	trace	807	3-4	4	5.0	8.0	6.5	2960	64	4.2
Warrior	trace	128	2	2	6.0	9.3	7.8	2810	67	3.7
Tuna	traces	702	2-3	3-4	2.7	6.0	4.3	3940	40	3.3
Vernal	trace	97	1	1	3.7	5.7	4.7	3800	36	4.8

*These values represent the difference in yield between the 1-4 group and the 5-6 group of replicates.

- 1) Rating = 1 (good) to 5 (poor)
- 2) Rating = 1 (good) to 10 (poor)
- 3) Rating = 1 (poor) to 5 (good)

Mean Yields (lbs. of Dry Matter per Acre) of Some Intermediate Type Varieties in Provincial Trials

A. Screening Trials

	<u>Guelph</u> <u>(1960-1961)</u>		<u>Guelph</u> <u>(1963-1964)</u>		<u>Kemptville</u> <u>(1963-1964)</u>		<u>Kapuskasing</u> <u>(1963-1965)</u>		<u>Ridgetown</u> <u>(1963-1965)</u>		<u>Ottawa</u> <u>(1963)</u>		<u>Verner</u> <u>(1963-1965)</u>		<u>Ridgetown</u> <u>(1963-1965)</u>	
	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>
DuPuits	4100	7240	4600	11,060	4190	8190	3510	5310	4800	7280	4590	9640	3370	6440	6380	10,780
Vernal	4610	7630	4860	10,820	4140	7200	3590	5420	5430	7500	4590	9480	4000	6540	5980	9,700
A 9 H			4480	10,820	4040	7800	3950	5071							6070	10,380
Tuna	4280	7320	4830	11,020	4180	7870	3820	5840	4190	6320	4640	9200	3920	6680	5840	9,760
Warrior			4860	11,300	4410	8310	3540	5220							6520	10,400

B. Performance Trials

	<u>Guelph 1)</u> <u>(1964-1965)</u>		<u>Guelph 2)</u> <u>(1964-1965)</u>	
	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>
DuPuits	4450	7970	3350	6320
Vernal				
A 9 H				
Tuna	4470	7700	3160	6050
Warrior				

1) Management = hay + aftermath pasture

2) Management = pasture

Mean Yields (lbs. of Dry Matter per Acre) of Certain Standard Type Varieties in Provincial Screening Trials

	<u>Guelph</u> <u>('60-'61)</u>		<u>Guelph</u> <u>('61-'65)</u>		<u>Kemptville</u> <u>('61-'63)</u>		<u>Guelph</u> <u>('63-'64)</u>		<u>Kemptville</u> <u>('63-'64)</u>		<u>Kapuskasing</u> <u>('63-'65)</u>	
	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>
Narragansett	4610	7510	3410	6670	4730	8200						
Rhizoma											3570	5220
Vernal	4610	7630	3920	7370	4520	7650	4860	10820	4140	7200	3590	5420
Cayuga	4420	7360	3670	7310	4600	8030						
Progress							4640	10690	4360	7780	3370	5150
	<u>Ridgetown</u> <u>('63-'64)</u>		<u>Ottawa</u> <u>('62-'63)</u>		<u>Ridgetown</u> <u>('64-'65)</u>		<u>Guelph</u> <u>1965</u>					
	<u>Cut 1</u>	<u>Total</u>	<u>Total</u>		<u>Cut 1</u>	<u>Total</u>	<u>Cut 1</u>	<u>Total</u>				
Narragansett			9910									
Rhizoma												
Vernal	5430	7500	9660		5980	9700	3840	7680				
Cayuga	5070	7280	10250		6000	9580	3610	7440				

MEAN YIELDS (Lbs. of Dry Matter Per Acre) OF CERTAIN STANDARD TYPE VARIETIES IN
PROVINCIAL PERFORMANCE TRIALS

A. Hay + Aftermath Pasture:

	Guelph ('62-'63)		Kapuskasing ('63-'64)		Kemptonville ('64-'65)		Ridgetown ('64-'65)		Verner 1965	
	Cut 1	Total	Cut 1	Total	Cut 1	Total	Cut 1	Total	Cut 1	Total
Narragansett					6250	9990	6540	11560	4660	7300
Rhizoma			2440	3680						
Vernal	4710	9470	2450	3800	6400	9750	6540	11710	4640	7160
Cayuga	4370	9190			6280	10140	6540	12020	4100	6590
Progress										

B. Pasture:

	Guelph ('62-'63)		Kapuskasing ('62-'64)		Kemptonville ('64-'65)		Douglas 1964		Verner 1965	
	Cut 1	Total	Cut 1	Total	Cut 1	Total	Cut 1	Total	Cut 1	Total
Narragansett					2590	7540	2840	4920	1810	5680
Rhizoma			2790	4300						
Vernal	3470	8720	2550	3830	2580	7340	3190	5450	1640	4950
Cayuga	3290	8920			2460	7320	2900	5050	1450	4620
Progress										

ALFALFA: SUMMARY OF ALL YIELD DATA ON CERTAIN VARIETIES

43

Management - Hay						Management - Pasture				
No. of Locations	No. of Test Years	Yield				No. of Locations	No. of Test Years	Yield		
		Cut 1	A'math	Total				Cut 1	A'math	Total

Comparisons

C. Standard Types

Vernal	4	21	4860	3950	8810	3	5	3060	4450	7510
Cayuga			4690	4230	8920			2880	4630	7510
Vernal	4	9	4640	3640	8280	-	-			
Progress (CL10)			4590	3710	8300					

PROVINCIAL ALFALFA STRAIN TRIAL, GUELPH, 1960 SEEDING

Yield in lb. D.M. per acre

	1961-3 Average			1964			1965			1961-5 Average		
	Hay	A'math	Total	Hay	A'math	Total	Hay	A'math	Total	Hay	A'math	Total
H.S. Narragansett	4227	3436	7663	4484	4013	8497	2324	3947	6271	3898	3653	7551
W.R. Flemish	4167	3649	7816	4027	4336	8363	1254	3562	4816	3556	3769	7325
Vernal	4252	3248	7500	4224	3820	8044	2535	3671	6206	3923	3447	7370
W.R. Narragansett	4277	3337	7614	4271	3744	8015	2127	3490	5617	3846	3449	7294
DuPuits	3936	3687	7623	3802	3972	7774	1158	1970	3128	3354	3401	6755
Cardinal	3895	3588	7483	3983	4058	8041	1830	2748	4578	3500	3514	7014
Narragansett	4071	3313	7377	3992	3432	7424	855	2925	3780	3412	3259	6671
Orchies	3706	3538	7244	4118	3887	8005	1631	2772	4403	3373	3455	6827
Haymor	3878	3459	7337	3696	4225	7923	1877	3009	4886	3442	3523	6965
Cayuga	3872	3379	7251	4046	3960	8006	2675	4108	6783	3667	3641	7308
N.K. 503	3950	3170	7127	4048	3561	7609	2343	3525	5868	3648	3319	6967
N.Y. Syn. A	3978	3300	7278	3956	3841	7797	2437	3627	6064	3665	3473	7138
N.K. 504	3840	3365		4066	3721	7787	2470	3590	6060	3611	3481	7093
Mean	4004	3421	7425	4042	3890	7932	1963	3303	5266	3607	3491	7098

Comments: For the first three years the leading varieties were W.R. Flemish, H.S. Narragansett, DuPuits, W.R. Narragansett, Vernal, in that order.

In the fourth year the three leading varieties were H.S. Narragansett, W.R. Flemish, and Vernal. DuPuits was dropping behind.

In the fifth year the leading varieties were Cayuga, H.S. Narragansett, and Vernal. DuPuits was in last place, about 1700 lb. behind W.R. Flemish which in turn was 1400 lb. behind Vernal.

PROVINCIAL STRAIN TRIAL (PRELIMINARY) KAPUSKASING, 1962 SEEDING

A-15

1963-5 Yields in lb. D.M. per acre

	1963			1964			1965			1963-5 means			1964-5 Winter injury
	Cut 1	Cut 2	Total	Cut 1	Cut 2	Total	Cut 1	Cut 2	Total	Cut 1	Cut 2	Total	
Vernal	3964	2776	6696	4506	1253	5759	2325	1474	3799	3598	1834	5432	4.7
Progress	3688	2766	6454	4412	1249	5661	2003	1361	3364	3368	1792	5160	6.0
Rhizoma	4346	2648	6994	4269	1182	5451	2090	1130	3220	3568	1653	5221	5.3
Beaver	3838	2444	6282	3707	964	4671	2435	1370	3805	3327	1592	4919	5.2
Tuna	3890	2862	6752	5138	1625	6763	2427	1514	3941	3818	2000	5818	4.3
Warrior	3884	2774	6571	4962	1321	6283	1770	1037	2807	3538	1711	5249	7.8
NK 508	3698	2896	6590	5008	1667	6675	2363	1390	3753	3690	1984	5674	4.0
H 9 H	3257	2836	6103	4746	1389	6135	1869	1065	2934	3294	1763	5057	8.3
DuPuits	3804	2935	6739	5070	1442	6512	1661	718	2379	3512	1698	5210	8.5
Glacier	3724	2992	6716	4929	1708	6637	1938	1024	2962	3530	1908	5438	6.5
Mega	3738	3017	6721	5662	2030	7692	2172	1189	3361	3857	2079	5936	5.8
Eynsford	3497	3050		5286	1787	7073	1804	814	2618	3529	1884	5413	8.3

Comments: (disregarding NK 508)

In 1963 the leading varieties in order were Rhizoma, Tuna, DuPuits, Mega, Glacier and Vernal.

In 1964 the order was Mega, Eynsford, Tuna, Glacier. Rhizoma was second last.

In 1965, following a severe winter, the top varieties were Tuna, Beaver, Vernal, Mega.

For the 3-year average Mega and Tuna were the leaders, followed by Vernal, Glacier, Eynsford.

ALFALFA PROVINCIAL SCREENING TRIAL - RIDGETOWN, 1963 SEEDING

1964-5 Yields in lb. D.M. per acre

	1964					1965					1964-65 Mean		
	Cut 1 June 23	Cut 2 July 29	Cut 3 Aug. 31	Total A'math	Total	Cut 1 June 16	Cut 2 July 19	Cut 3 Aug. 26	Total A'math	Total	Cut 1 Hay	Cut 2-3 A'math	Total
Warrior	6062	2062	1773	3835	9897	6969	2783	1161	3944	10913	13031	7779	10405
A - 9 - H	5505	2138	2036	4174	9679	6636	3114	1356	4470	11106	12141	8644	10382
Vernal	5315	1890	1861	3751	9066	6642	2480	1222	3702	10344	11957	7453	9705
Alfa	5878	1990	1705	3695	9573	6711	2673	1095	3768	10479	12589	7463	10026
Glacier	5653	2206	1940	4146	9799	6831	3084	1319	4403	11234	12484	8549	10516
Mega	5396	1993	1657	3650	9546	6967	2962	1207	4169	11136	12863	7819	10341
Progress	5625	1819	1719	3538	9163	6383	2507	1106	3613	9996	12008	7151	9579
Tuna	5310	2108	1606	3714	9024	6379	2876	1247	4123	10502	11689	7837	9763
DuPuits	5762	2246	1936	4182	9944	7000	3225	1382	4607	11607	12762	8789	10775
Mean for test	5677	2029	1807	3836	9514	6739	2845	1237	4082	10821	12417	7918	10168

ALFALFA SCREENING TRIAL FOR HAY, VERNER, 1962 SEEDING

1963-5 Yields in lb. D.M. per acre

	1963			1964			1965			1963-5 means		
	Cut 1	A'math	Total	Cut 1	A'math	Total	Cut 1	A'math	Total	Cut 1	A'math	Total
Vernal	3649	1451	5500	4394	3275	7669	3947	2510	6457	3997	2545	6542
Beaver	3459	1339	4798	4397	2801	7198	4045	2490	6535	3967	2210	6177
Narragansett	3839	2088	5926	4929	3608	8537	4353	2781	7134	4374	2826	7199
Tuna	3360	2258	5619	4245	3559	7804	4162	2450	6612	3922	2756	6677
DuPuits	3252	2848	6104	4343	4124	8467	2511	2249	4760	3369	3074	6444
Glacier	3718	2800	6519	4604	3915	8519	3360	2412	5772	3894	3042	6937
Chartrain-villiers	3298	2802	6100	4432	3989	8421	2912	2318	5230	3547	3036	6584

Comments: In 1963 all three early varieties outyielded the three standard types.

Glacier and Narragansett led their respective classes. Tuna was intermediate.

In 1964 the same pattern prevailed except that Narragansett was in first place.

In 1965, following a severe winter, the standard types all outyielded the early types. Narragansett and Glacier again led their respective groups.

Over the 3-year average Narragansett provided the highest yields, followed by Glacier.

STANDARD TYPE (VERNAL SERIES) STRAIN TRIALS, KEMPTVILLE, GUELPH, RIDGETOWN, 1962-3 SEEDING

Hay Management

1963-5 Yields of Forage Mixture in lb. D.M. per acre

A. Kemptville	1964			1965					1964-5 means			
	Cut 1	A'math	Total	Cut 1 June 16	Cut 2 July 20	Cut 3 Sept. 3	A'math	Total	Cut 1	A'math	Total	
Vernal	6775	1704	8479	6032	2557	2429	4986	11018	6404	3345	9748	
Cayuga	6563	2060	8623	6001	2912	2748	5660	11661	6282	3860	10142	
Narragansett	6523	1962	8485	5976	2937	2591	5528	11504	6250	3745	9994	
B. Ridgetown				June 17	July 19	Aug. 26						
Vernal	6886	5261	12147	6205	3294	1774	5068	11273	6545	5165	11710	
Cayuga	6624	5365	11989	6469	3683	1906	5589	12058	6547	5476	12023	
Narragansett	6726	4906	11632	6360	3409	1708	5117	11477	6543	5012	11555	
Pasture Management A. Kemptville				May 28	July 2	July 30	Sept 3	A'math				
Vernal	2725	4337	7062	2431	1584	1378	2216	5178	7609	2578	4758	7336
Cayuga	2637	4416	7053	2282	1669	1412	2220	5301	7583	2460	4858	7318
Narragansett	2699	4442	7141	2472	1723	1460	2288	5471	7943	2586	4956	7542
Hay, Pasture B. Guelph				1962-3 means, Hay					1962-3 means, Pasture			
				Cut 1	A'math	Total						
Vernal					4707	4766	9473	3466	5258	8724		
Cayuga					4370	4817	9187	3287	5630	8917		
Narragansett					4612	4964	9576	3280	5546	8826		

FLAMANDE-TYPE PERFORMANCE TRIALS, 1963 SEEDING, KEMPTVILLE, GUELPH, RIDGETOWN

Pasture Management

1964-5 Yields of Mixed Forage in lb. D.M. per acre

Kemptonville	1964			1965						1964-5 means		
	Cut 1	A'math	Total	May 28	July 2	July 30	Sept 3	A'math	Total	Cut 1	A'math	Total
DuPuits	2569	5144	7713	1854	1849	1306	2180	5335	7189	2212	5240	7452
Alfa	2411	5059	7470	1835	1643	1304	2165	5112	6947	2123	5086	7209
Glacier	2694	4904	7598	2329	1921	1442	2327	5690	8019	2512	5297	7809
Guelph				May 26	July 6	Aug. 20						
DuPuits	3807	1693	5500	2896	2160	2092		4252	7148	3351	2973	6324
Alfa	3591	1601	5192	2574	1927	2098		4025	6599	3082	2813	5895
Glacier	3704	1649	5353	2868	2057	2086		4143	7011	3286	2896	6182
Tuna	3580	1610	5190	2735	2092	2079		4171	6906	3157	2891	6048
Ontario means												
DuPuits H										5780	3933	9713
P										2781	4107	6888
Alfa H										5663	3761	9424
P										2552	3950	6502
Glacier H										5737	3861	9598
P										2899	4096	6995

FIAMANDE-TYPE PERFORMANCE TRIALS, 1963 SEEDING, KEMPTVILLE, GUELPH, RIDGETOWN

Hay Management

1964-5 Yields of Mixed Forage in lb. D.M. per acre

Kemptonville	1964			1965					1964-5 means		
	Cut 1	A'math	Total	Cut 1 June 16	Cut 2 July 20	Cut 3 Sept.3	A'math	Total	Cut 1	A'math	Total
DuPuits	6386	2735	9121	5854	3436	2869	6305	12159	6120	4520	10640
Alfa	6307	2426	8733	5784	3251	3040	6291	12075	6046	4358	10404
Glacier	6276	2399	8675	6002	3309	2950	6259	12261	6139	4329	10468
Guelph				June 15	July 15	Aug.27					
DuPuits	4573	2680	7353	4222	1786	2583	4369	8591	4447	3525	7972
Alfa	4648	2789	7437	3824	1545	2457	4002	7826	4236	3395	7631
Glacier	4696	2823	7519	4114	1921	2706	4627	8741	4405	3725	8130
Tuna	4762	2578	7340	4173	1659	2233	3892	8065	4468	3235	7703
Ridgetown				June 17	July 19	Aug.26					
DuPuits	6553	3667	10220	6991	2717	1123	3840	10831	6772	3753	10525
Alfa	6583	3487	10070	6834	2535	1037	3572	10406	6708	3530	10238
Glacier	6490	3450	9940	6844	2553	1054	3607	10451	6667	3528	10195

Yields of Mixed Forage in lb. D.M. per acre

Standard-Type Hay	1964			1965			1964-5 Means		
	Cut 1	A ¹ math*	Total	Cut 1	A ¹ math	Total	Cut 1	A ¹ math	Total
Vernal	6705	3055	9760	4639	2526	7165	5672	2790	8462
Cayuga	5997	2952	8949	4098	2491	6590	5047	2722	7769
Narragansett	6374	2961	9335	4655	2642	7297	5514	2802	8316
Pasture									
Vernal	5245	4668	9913	1645	3303	4948	3445	3985	7430
Cayuga	4850	4471	9321	1451	3174	4625	3150	3823	6973
Narragansett	5211	4559	9770	1812	3865	5677	3511	4212	7723
Flamande-Type Hay									
DuPuits	5816	4202	10018	3831	2527	6358	4823	3365	8188
Alfa	5682	4127	9809	3925	2654	6579	4803	3391	8194
Glacier	6028	3866	9894	4077	2527	6604	5052	3197	8249
Pasture									
DuPuits	5054	6033	11087	1079	2457	3536	3066	4245	7311
Alfa	5006	5617	10623	1159	2729	3888	3082	4173	7255
Glacier	5204	5624	10828	1420	3516	4936	3312	4570	7882

* All aftermath harvests consisted of 2 cuts except for the pasture section of the Flamande type. It consisted of 3 cuts for a total of 4 cuts for the season.
 Note low 1965 yields following the 4-cut regime of 1964 in this group.

PRELIMINARY STRAIN TRIALS, KEMPTVILLE AND GUELPH, 1964 SEEDING

1965 Yield in lb. D.M. per acre

Kemptville	June 15	July 19	Sept. 7	A'math	Total
DuPuits	4450	2486	3139	5625	10075
Alfa	4531	2132	3010	5142	9673
Stride	4113	2268	2953	5221	9334
Saranac	4569	2257	2834	5091	9660
Apex	4502	2092	2862	4954	9456
Pioneer 525	4503	2228	3040	5268	9771
Arnim	4511	2519	3110	5629	10140
Vernal	4348	2006	3002	5008	9356
Guelph	June 10	July 13	Aug. 27	A'math	Total
DuPuits	3762	1892	2348	4240	8002
Alfa	3772	1790	2206	3996	7768
Stride	3778	1828	2340	4068	7846
Saranac	3825	1942	2349	4291	8116
Apex	3961	1913	2322	4235	8196
Vernal	3844	1718	2118	3836	7680
Cayuga	3615	1694	2128	3822	7437

ALFALFA VARIETY PERFORMANCE TRIAL, KAPUSKASING, 1962 SEEDING
YIELD OF MIXED FORAGE IN LB. D. M. PER ACRE (seeded with brome grass)

Hay management	1963			1964			1965
	Cut 1	Cut 2	Total	Cut 1	Cut 2	Total	
Vernal	2084	1714	3798	2804	996	3800	1121
Rhizoma	2084	1516	3600	2792	985	3777	847
Beaver	2719	1786	4505	2732	855	3587	1325
Glacier	2784	2097	4881	3308	1423	4731	1052
Alfa	2547	2108	4655	3007	984	3991	1102
Du Puits	1796	2538	4334	2735	857	3592	908
	Jul.10	Aug.19		Jul.9	Aug.21		
Pasture management							
Vernal	2088	1481	3569	3015	1084	4099	588
Rhizoma	2356	1694	4050	3224	1322	4546	785
Beaver	2334	1348	3682	2453	786	3239	728
Glacier	2566	2044	4610	3964	2017	5981	842
Alfa	2442	2019	4461	4448	1959	6407	842
Du Puits	2078	2174	4252	3348	1558	4906	797
	Jun.27	Aug.7		Jul.6	Aug.10		

Comments

On the basis of these results, all three standard varieties provide similar yields while among the earlier types, Glacier and Alfa are superior to Du Puits. See also A-8.

ONTARIO VARIEGATED AND PEDIGREED ALFALFA TRIAL
HALDIMAND COUNTY

A-24

Date Seeded: May 14, 1962
Seed Mixture: 16 pounds alfalfa per acre

Seed Lot No.	Pounds of Dry Matter per Acre			3-Year Average 1963-65	Per Cent Alfalfa May 17/65
	1963 3-Cut Total	1964 3-Cut Total	1965 2-Cut Total		
Ontario Variegated					
1	6207	7688	5611	6502	77
2	6302	7713	5100	6372	68
3	6932	7834	5319	6695	63
4	6467	8056	4480	6334	57
5	6097	7719	5197	6338	67
6	6579	7828	5461	6623	70
7	6205	7917	5395	6506	78
Vernal	6871	7788	6207	6955	85
Ranger	6795	6859	2617	5424	10
Beaver	6074	7285	5282	6214	78
Cayuga	6478	7751	5905	6711	82

SUMMARY

Variety	Pounds Dry Matter Per Acre		Per Cent Alfalfa May 17/65
	3-Year Average 1963-65	1965	
Average of 7 Ontario Variegated Lots	6481	5223	69
Vernal	6955	6207	85
Cayuga	6711	5905	82
Beaver	6214	5282	78
Ranger	5424	2617	10

In the spring of 1962, thirteen Ontario Variegated alfalfa seed sources from Haldimand County were seeded along with pedigreed Vernal,

Ranger, Beaver and Cayuga at the Regional Research Station, Cayuga. Plots 15 by 5 feet, replicated three times, were direct seeded (no companion crop) with 16 pounds of pure alfalfa per acre on May 14, 1962. The seeding was irrigated because dry weather delayed emergence, and sprayed with 20 ounces acid equivalent 2,4-DB in 20 gallons of water per acre to control weeds. Fertilizer was applied according to soil test at seeding time and in the fall of 1963 and 1964. The plots are on imperfectly drained Haldimand clay. Three cuts of hay were harvested in 1963 and 1964 and two in 1965.

The results from six Ontario Variegated sources had to be discarded because one replication of each suffered much more severe winter conditions than the general plot area.

In the first two years of the test, a few Ontario Variegated sources yielded very close to, or even slightly higher than Vernal. However, in the spring of 1965 it was obvious that Vernal, Cayuga and Beaver had come through the winter with much thicker plant stands than Ranger and most Ontario Variegated lots. This difference in stand showed up in the yields for 1965 and the three-year average for 1963 to 1965. Vernal yielded 984 pounds more dry matter per acre than the average of seven Ontario Variegated lots in 1965, and 474 pounds more on the three-year average. Vernal yielded 302 pounds more dry matter per acre than Cayuga in 1965, and 244 pounds more on the three-year average. Beaver yielded well below Vernal and Cayuga and most Ontario Variegated sources both in 1965 and on the three-year average. Ranger started to kill out in the winter of 1963 to 1964 (after the first hay year) and was almost completely gone in 1965.

It appears that Vernal alfalfa seed is a very worthwhile investment. Even though it may cost 20¢ more per pound or \$2.40 more per acre to sow Vernal, the increased hay yields pay for it many times over. For example, in this test Vernal produced an average of 545 pounds more 15% moisture hay per acre per year over a three-year period than the average of 7 Ontario Variegated lots. If hay is valued at 1¢ per pound, this amounts to a return of \$5.45 more per acre per year for three years --- a total return of \$16.35 for a \$2.40 per acre investment.

Reported by:

Howard Henry,
Soils and Crops Branch,
Ontario Dept. of Agriculture.

FORAGE FARM TRIAL 1965

DuPuits, Glacier Alfalfa Seeding 1963

A-26

Of the 14 reports received, 8 harvested the crop as hay, 4 as pasture, 1 as silage and the 14th was winterkilled. No differences in yield, regrowth or winterhardiness were reported from the farms pasturing these two alfalfas. Five of the eight farms cutting for hay noticed no differences, the other three preferred DuPuits because of its superior regrowth on second and subsequent cuttings. One farm, using these strains for silage noticed no difference in yield or regrowth, but did report Glacier slightly more winterhardy. Two farms commented on the finer type of growth of Glacier.

Conclusion:

DuPuits would appear somewhat superior in regrowth (3 locations). Differences in texture (coarseness) and winterhardiness may exist but do not appear to be of great magnitude.

FORAGE FARM TRIAL 1965

Beaver, Cayuga, Vernal Alfalfa Seeding 1963

A-27

Of the 14 reports received, 12 locations harvested plots as hay or hay aftermath and 2 as pasture. As regards yield, 5 locations rated Vernal, Cayuga and Beaver equal in yield, (2 of these plots were used as pasture only). 5 locations rated Cayuga and Vernal equal, with Beaver poorer. 2 preferred Cayuga, then Vernal, and then Beaver on a yield basis. 1 location rated Cayuga best with Vernal and Beaver equal, and the last farm preferred Vernal with Cayuga and Beaver equal.

Persistence was the same at 9 locations. On the remaining 5 locations the comparison was:

<u>% Legume In Mixture (1965)</u>			
<u>County</u>	<u>Vernal</u>	<u>Cayuga</u>	<u>Beaver</u>
Durham	90	90	75
Grey	70	70	50
Huron	60	90	65
Welland	60	65	55
York	70	70	60

Six locations singled out Beaver as being definitely inferior on regrowth.

Conclusions:

Little practical differences appear between Cayuga and Vernal. Beaver seems less persistent (4 locations), slower in regrowth (6 locations) and lowest in yield (9 locations).

FORAGE FARM TRIAL 1965

Saranac, DuPuits Alfalfa 1965 Seeding

A-28

One acre plots of Saranac alfalfa (10 lbs. per acre) in comparison with DuPuits alfalfa were seeded at six locations in 1965. Plots were pure stands or sown with one grass as a companion.

1) Temiskaming District - New Liskeard Station

No report.

2) Frontenac County - Hilliard Watson, Harrowsmith, Ont.
Lot 12, Conc. 6-7, Portland Twp.

Pure stand direct seeded and clipped for weed control. DuPuits plants more vigorous but Saranac catch thicker.

3) Haldimand County - Glen Overend, #1, Canfield
Lot 6, Conc. 2 S.H., Seneca Twp.

Direct seeded with timothy and clipped for weed control. Prolonged drought affected catch. DuPuits 2 per sq. ft. compared with Saranac 1 per 3 sq. ft.

4) Bruce County - Andy McTavish, Paisley
Lot 1, Conc. 18, Greenock Township.

Pure stand sown with 14" rows nursecrop of oats, then sprayed with 2,4-DB. No differences in stand or vigour were observed.

5) Essex County - Gord Collin, #1, Maidstone
Lot 4, Conc. 10, Sandwich Township.

Pure stand seeded with nurse crop. (90 bu. crop of oats). Alfa and Vernal plots were also compared at this location. Plants per sq. ft. = Alfa 8, Saranac 6, Vernal 6, DuPuits 4.

6) Peterborough County - Earl Petrie, Peterborough
Lot 23, Conc. 10, Otonabee Twp.

Stand seeded with timothy, with barley nurse crop and sprayed with 2,4-DB. DuPuits may be a shade taller, coarser and larger leafed.

The Ranking of Three Trefoil Varieties at Six Locations in Ontario

Ottawa 1962-4		Kemptonville 1964-5		Kapuskasing 1963-5		Kapuskasing 1963-5		Verner 1962-4		Ridgetown 1964		Guelph 1965	
Mixed Stand		Mixed Stand		Pure Stand		Mixed Stand		Mixed Stand		Mixed Stand		Mixed Stand	
H	P	H	P	H	P	H	P	H	P	H	P	H	P
V	L	V	V	L	V	V	V	V	V	L	L	L	L
L	E	E	E	V	L	L	L	L	L	V	V	E	V
E	V	L	L	E	E	E	E	E	E	E	E	V	E

Comments:

In this group of tests Viking usually was the highest yielding variety in northern and eastern Ontario. It occupied first place in eight tests, second place in four and last in two. Leo gave its best performance in western Ontario where it consistently outyielded the other two varieties. It came first in six tests, second in six tests, and last in two. A noteworthy characteristic of this variety is its pronounced tendency to stop growing in late summer. Empire was second in four tests, last in the other ten.

The interactions between varieties and stations and/or management regimes continue to demonstrate the very real difficulty in properly evaluating birdsfoot trefoil varieties. They also point out the necessity for studies designed to provide additional guidance in trefoil testing techniques.

H = Hay Management
P = Pasture Management
V = Viking
L = Leo
E = Empire

BIRDSFOOT TREFOIL STRAIN TRIAL, GUELPH, 1963 SEEDING

1964-5 Yields in lb. D.M. per acre, and estimated per cent legume in mixture

Series II "Pasture"	Cut 1, 1965			Cut 2, 1965			Cut 3, 1965			Total, 1965			1964 Mix. Total	1964 - 5 means Mixture Total
	mixture lb.	trefoil %	lb.	mixture lb.	trefoil %	lb.	mixture lb.	trefoil %	lb.	mixture lb.	trefoil %	lb.		
<u>Early group</u>	June 7			July 12			Sept. 2			Season				
Viking	2070	34	707	1311	85	1115	2550	58	1477	5931	56	3300	7087	6509
Composite	2223	50	1111	1613	87	1411	2786	55	1546	6623	62	4068	7418	7020
Douglas	2146	25	536	1107	70	775	2315	45	1043	5568	43	2354	7155	6362
Mean	2146		785	1344		1100	2550		1355	6040		3240	7220	6630
<u>Late group</u>	June 7			July 19			Sept. 2			Season				
Empire	2328	30	694	1872	68	1276	1552	80	1244	5752	56	3214	6897	6324
Leo	2451	62	1527	2427	71	1753	1480	68	1014	6357	67	4294	6905	6631
Fargo	2222	32	711	1776	70	1243	1475	80	1180	5473	57	3134	6434	5954
Barr	2169	32	694	2097	60	1258	1444	75	1083	5710	53	3035	7123	6416
Mean	2292		906	2043		1383	1488		1130	5823		3419	6840	6331

BIRDSFOOT TREFOIL STRAIN TRIAL, GUELPH, 1963 SEEDING

1965 Yields in lb. D.M. per acre, and per cent legume in mixture

Series I "Hay"	Cut 1			Cut 2			Cut 3			Total		
	mixture lb.	trefoil %	lb.	mixture lb.	trefoil lb.		mixture lb.	trefoil %	lb.	mixture lb.	trefoil %	lb.
<u>Early group</u>	June 9			July 19			Sept. 2			Season		
Viking	2264	41	936	1781	73	1303	1475	80	1183	5520	62	3422
Composite	2270	77	1759	2064	82	1709	1408	84	1188	5742	81	4656
Douglas	2204	25	551	1720	65	1120	1434	70	1000	5358	51	2671
Mean	2246		1062	1855		1377	1439		1124	5540		3563
<u>Late group</u>	June 21			July 30			October 14			Season		
Empire	3603	68	2454	1902	77	1467	862	84	720	6367	72	4641
Leo	3953	74	2942	2360	83	1958	850	50	425	7163	74	5325
Fargo	3609	65	2340	1867	73	1365	942	80	754	6418	69	4459
Barr	3004	35	1051	2477	46	1140	852	50	426	6333	41	2617
Mean	3542		2197	2151		1482	877		581	6570		4260

BIRDSFOOT TREFOIL PERFORMANCE TRIAL, KEMPTVILLE, 1963 SEEDING

1964-5 yields in lb. D.M. per acre (trefoil + timothy)

Hay Management	1964			1965						1964-5 means		
	Cut 1 June 24	Cut 2 Aug. 5	Total	Cut 1 June 21	Cut 2 July 26	Aug. 11	Cut 3 Oct. 6	A'math	Total	Cut 1	A'math	Total
Empire	4893	1113	6006	5423		1645	1553	3198	8621	5158	2156	7314
Leo	4493	1942	6435	4723		1802	1148	2950	7673	4608	2446	7054
Viking	4700	2234	6934	4785	1493		2432	3925	8710	4742	3080	7822
Douglas	3843	2194	6037	4141	1662		2066	3728	7869	3992	2961	6953
Pasture Management	June 12	July 23	Total	May 25	July 2	Aug. 12	Oct. 6	A'math	Total	Cut 1	A'math	Total
Empire	4737	1468	6205	1836	1744	1313	1792	4849	6685	3286	3158	6445
Leo	4426	1817	6243	1830	1430	1066	1631	4127	5957	3128	2972	6100
Viking	4507	2115	6622	1916	1853	1386	2133	5372	7288	3212	3744	6955
Douglas	4030	2132	6162	1790	1674	1582	1930	4986	6776	2910	3559	6469

Birdsfoot Trefoil Performance Trial, Ridgetown (Lambton) 1963 Seeding

Forage yield in lb. per acre and some survival data

Varieties	1964 Total		Pasture		1965 Total ⁺⁺		May estimate ⁺⁺ of 1964-5 winter survival
	Hay lb.	% legume			Hay lb.	Pasture lb. % legume	
Viking	5319	72	4232	71	3738	2848 89	1
Composite	5667	78	5512	78	3278	2543 81	8
Douglas	4389		3882		2801	2191 69	10
Barr	4797		4181		2754	1693 50	5
Empire	5226	76	4143	66	4557	2817 89	94
Leo	6372	83	5167	77	3969	3259 96	94
Fargo	4892		4198		4299	3126 89	98

⁺⁺ Four worst replicates; ⁺Yield taken on less severely damaged replicates.

Comments: A severe winter followed by an above-average amount of spring flooding played havoc with the trefoil, and especially with the European type. Leo and Empire were equal in survival.

The prolonged summer drought experienced in Lambton County together with the encroachment of weeds in spaces left empty by winter-killed plants made the securing of good aftermath data impossible in 1965.

Birdsfoot Trefoil Variety Trial, Kapuskasing (C), 1962 Seeding

Yields in lb. D.M. per acre

Pure Stands	1963		1964		1965*	
	Hay 2 Cuts	Pasture 2 Cuts	Hay 2 Cuts	Pasture 2 Cuts	Hay 1 Cut	Pasture 1 Cut
Empire	4464	2953	4432	5490	1870	575
Leo	5619	4454	4882	4285	1794	641
Viking	5700	4198	4660	5530	1288	430
Roskilde	3666	1902	4445	4505	1446	638
Mean	4862	3376	4607	4952	1599	571
Trefoil + Timothy						
Empire	5122	3033	5024	5657	2200	1115
Leo	5618	4009	5117	5384	2247	973
Viking	5830	3678	5650	6072	1740	900
Roskilde	4332	2448	4778	5411	2030	1041
Mean	5226	3292	5142	5631	2054	1007

* 1965 growth was poor because of abnormally low temperatures and perhaps also because of low fertility levels.

RED CLOVER

The most recent data from uniform tests of double-cut red clover were summarized in the 1964 Report. No new tests were established this year.

The varieties recommended in 1965 were Dollard, Lakeland and Lasalle. It was noted in the 1964 Report that Ottawa, which is about equal to Lakeland in yield, will be recommended as soon as seed supplies become available and as Lasalle supplies diminish. The seed of Ottawa is being increased but there is not sufficient available yet to recommend this variety.

Altaswede is the recommended single-cut variety for northern Ontario. Ulva, a tetraploid, performed much better in the second crop year (1964) at Kapuskasing than the other single-cut varieties and was the only variety to show any survival in the third year. A test was established in 1965 at Kapuskasing to compare two tetraploids, Ulva and a Finnish strain, with Alteswede.

WHITE CLOVER VARIETIES

Eight variety trials were seeded in 1964; all but two (Fort William and Kemptville) were discarded by the spring of 1965 due to poor establishment or to winterkilling. Trials established prior to 1964 also were discontinued this year.

White dutch clover was superior to the other varieties at Fort William in 1965 (page D-4). Merit was the highest yielding variety in the second cut at Kemptville (page D-5). There were no differences in the first cut or total yield.

The yield data from 1965 and previous years are summarized on page D-2. Merit, which was placed on the recommended list in 1965, has consistently yielded well. Ottawa Syn. A is somewhat lower in yield than Merit but is approximately equal to California Certified.

High seed yields are a feature of the Ottawa synthetics (page D-3). Trials to further evaluate seed production, including 1964 seedings at Verner and Williamstown and a 1965 seeding at Ottawa, were discarded due to poor stands.

No change in variety recommendations is suggested for 1966.

SUMMARY OF WHITE CLOVER VARIETY YIELDS (D.M. IN LB./A.)

Variety	1961 Seeding		1962 Seeding				1964 Seeding	
	Ottawa 1962-64 Mean	Verner 1962-63 Mean	Guelph 1963-64 Mean	Kapus- kasing 1963-64 Mean	Ottawa 1963 Mean	Verner 1963 Mean	Ft. Will. 1965	Kempt- ville 1965
Ott.Syn.A	6515	2893	5867	3251	4231	994	1310	3056
Ott.Syn.B	6142	2866	5775	3141	4475	1114	1274	3048
Merit	-	-	6473	3735	4554	1168	1457	3301
Calif.Cert.	6334	3201	6350	3378	4249	1127	1323	2890
White Dutch	-	-	5815	3180	3880	1006	1586	2846
Pilgrim	6302	3112	6379	3450	5055	1117	-	-
Kersey	6430	3114	6652	3228	3730	1142	-	-
Nordic	6333	3006	5708	3438	4004	1149	-	-
S-100	6295	2966	6585	3362	4260	1178	-	-
N.Z. Cert.	-	-	6008	3249	3552	1131	-	-
G-2385	-	-	-	-	4323	-	-	-
G-2386	-	-	-	-	3896	-	-	-
Kivi	-	-	-	-	3899	1242	-	-
Granladino	-	-	6293	-	-	-	-	-

WHITE CLOVER SEED YIELDS (LB./A.)

Variety	<u>1961 Seeding</u>		<u>1962 Seeding</u>		
	<u>Ottawa</u>		<u>Ottawa</u>	<u>Williamstown</u>	
	1963	1964	1963	1963(1)	1963(2)
Ott.Syn.A	36a	47a	81	81 b	120a
Ott.Syn.B	46a	51a	73	80 b	137a
Merit	-	-	49	34 de	49 c
Calif. Cert.	50a	45a	63	45 cde	68 bc
White Dutch	-	-	37	55 bcde	66 bc
Pilgrim	33a	48a	67	69 bc	71 bc
Kersey	38a	34a	51	78 b	79 b
Nordic	41a	46a	77	116a	131a
S-100	38a	31a	59	66 bc	80 b
N.Z. Cert.	-	-	37	32 e	47 c

(1) Test 1

(2) Test 2

WHITE CLOVER VARIETIES

Fort William, Ontario - 1965

General Information:

Seeding Date: - May 28, 1964
Seeding Method: - Broadcast
Previous Crop: - Fallow
Soil Type: - Sandy Loam
Experimental Design: - Randomized block - 6 replicates
Plot Size: - 5' x 20'
Fertilizers: - 300 lb. 0-20-20 in spring and fall
in 1964 and 1965.
Herbicides: - 16-oz 2,4-DB/acre in July, 1964.
Harvest Date: - June 9 and July 12, 1965
Size of Sample Harvested: - 39" x 18"
D.M. Sample Size: - 500 grams

YIELD OF DRY MATTER IN POUNDS PER ACRE, 1965

Variety	First cut June 9		Second cut July 12	Total Yield		Percent Plant Stand
Merit	827	b	631	1457	b	87
Ott. Syn. A	717	b	593	1310	c	78
Ott. Syn. B	731	b	542	1274	d	77
White Dutch	982	a	604	1586	a	81
California - Cert.	736	b	570	1323	c	70
C.V.	12.8%		N.S.	C.V. 5.2%		

Remarks: While plant stands for all varieties indicated a satisfactory survival from the severe winter of 1964-65, cool summer temperatures and below average amounts of sunshine hampered the growth of white clover at Fort William in 1965. Further, while substantial amounts of chemical fertilizer was applied to this test, plants indicated nutrient deficiencies not noted in previous years.

As indicated in Table 1, only two clippings were harvested in 1965, the results of which indicated yields were low for all varieties under test. Results of the first clipping data and total yields have shown White Dutch was superior in productivity, followed closely by the variety Merit. Syn. A and Syn. B did not show up well in the Fort William test this year, although in total yield the former demonstrated the greater potential. California certified ranked equal to Syn A in total production on this one year old stand.

WHITE CLOVER VARIETIES

Kemptville Agricultural School - 1965

Yield of Dry Matter in Pounds per Acre, 1965

Variety	1st cut June 11	Rel. Yield	2nd cut Sep. 2	Rel. Yield	Total Production	Rel. Yield
Merit	1103a	86	2198a	100.0	3301a	100.0
Ott. Syn. A.	1209a	94	1847 bc	84.0	3056a	92.6
Ott. Syn. B.	1178a	92	1870 b	85.1	3048a	92.3
Calif. Cert.	1109a	86	1781 bc	81.0	2890a	87.5
White Dutch	1285a	100	1561 c	71.3	2846a	86.2

Notes taken May 17, 1965:

<u>Variety</u>	<u>% Winter Killing</u>	<u>Stand*</u>
Merit	25.0	2.1
Ottawa Syn. A.	26.6	2.6
Ottawa Syn. B.	45.0	3.5
Calif. Cert.	21.6	3.1
White Dutch	11.6	2.0

*Stand: 1= Excellent
5= Poor

Spring vigor rating was good to excellent in all plots.

BROME GRASS SUMMARY

There seems to be no significant differences in yields when brome grass is seeded in mixture with alfalfa. The total yields vary from 97.9 - 100 per cent relative yields at Kemptville.

Lincoln has appeared at the top at Guelph and Ottawa in 1965.

Differences show up in the pure stand tests at Guelph. S-5824 and S-6324 which were considered for licensing at Saskatoon were less vigorous than other lines.

In Tables on Page 7 and 8 the entries showed significant differences.

FIELD HUSBANDRY DIVISION
KEMPTVILLE AGRICULTURAL SCHOOL, 1965

Brome Variety Performance Trial, 1963

Average D.M. Yields in lbs./acre

Variety	1st cut June 18 1965	Rel. Yield	2nd cut July 26 1965	Rel. Yield	3rd cut Sep. 13 1965	Rel. Yield	Total	Rel. Yield
Sac	5628	96.6	3448	100.0	2791	100.0	11867	100.0
Lincoln	5826	100.0	3343	97.0	2623	94.0	11792	99.4
Ott.Syn.C.	5720	98.2	3204	92.9	2715	97.3	11639	98.1
Saratoga	5703	97.8	3317	96.2	2601	93.2	11621	97.9
R.P. 100	5672	97.4	3432	99.5	2746	98.4	11850	99.9

BROMEGRASS VARIETY PERFORMANCE TRIAL, 1963
KEMPTVILLE
NOTES

Notes taken: May 20, 1965

Variety	Average % Grass	Average Winterkilling Legume	Grass	Average Stand
Saratoga	65.0	4.1	nil	1.3
Lincoln	57.5	1.6	nil	1.0
Ottawa Syn.C.	57.5	2.0	nil	1.1
R.P. 100	57.5	9.1	nil	1.6
Sac	52.5	4.1	nil	1.3

Date of Cutting: June 18th, 1965

Per cent Grass in Stand

	R 1	R 2	R 3	R 4	R 5	R 6	Total	Ave.
Sac	50	50	60	50	40	50	300	50
Lincoln	50	55	55	45	50	50	285	47
Ott.Syn.C.	55	50	55	50	35	40	285	47
Saratoga	60	55	60	60	45	55	335	56
R.P. 100	45	55	65	40	50	45	300	50
	260	265	295	245	210	220		

Date of Cutting: July 26, 1965 - Second Cut

Per cent Grass in Stand

Saratoga	15	15	20	25	25	30	130	21.7
Lincoln	5	5	10	20	15	15	70	11.7
Ott.Syn.C	10	20	10	25	20	30	115	19.2
R.P. 100	5	5	10	10	15	25	70	11.7
Sac	5	10	10	20	10	20	75	12.5

Date of Cutting: September 13, 1965 - Third Cut

Per cent Grass in Stand

Saratoga	5	10	10	7	5	10	47	7.8
Lincoln	3	5	3	5	3	3	22	3.7
Ott.Syn.C	7	5	5	3	3	5	28	4.7
R.P. 100	5	3	5	3	3	3	22	3.7
Sac	5	3	5	3	3	3	22	3.7

OTTAWA RESEARCH STATION DEV. RES.

Performance of Brome Varieties mixed with Vernal Alfalfa for Hay
 (lb./a. dry matter)

Varieties	1965	1965	1965	1965
	Mean	Mean	Mean	Mean
	1st cut	2nd cut	3rd cut	3 cuts
Lincoln	4479	2122	2552	9153
Saratoga	4306	2190	2411	8907
R.P. 100	4374	2034	2455	8863
Sac	4358	1999	2418	8775
Redpatch	4178	2135	2391	8704
S.6324 (Syn.1)	3997	2034	2279	8310
Significance	N.S.	N.S.	N.S.	N.S.
S.E.m	146	84	126	263

Comments:

OTTAWA RESEARCH STATION DEV. RES.

Performance of Brome Varieties for Hay - 1965
(lb./a. dry matter)

Varieties	1965	1965	1965
	Mean 1st cut	Mean 2nd cut	Mean 2 cuts
Brandon 986	3788	3446	7234
Lincoln	3567	3337	6904
S. 6325	3747	3128	6875
Ottawa Syn. D.	3872	2978	6850
S. 5824 Syn. 2	3337	3333	6670
Ottawa Syn. 6	3685	2957	6642
Saratoga	3508	3057	6565
S. 6324 (Syn. 1)	3325	3216	6541
Ottawa Syn. 7	3320	3083	6403
Guelph Syn. 1	2894	3500	6394
Brandon 988	2794	3028	5822
Significance	N.S.	N.S.	N.S.
S.E.m	311	196	385

Comments:

1st cut June 22nd
2nd cut September 7th

OTTAWA RESEARCH STATION DEV. RES.

Performance of Brome Varieties for Pasture - 1965
(lb./a. dry matter)

Varieties	1965	1965	1965
	Mean 1st cut	Mean 2nd cut	Mean 2 cuts
Lincoln	5158	1459	6618
Brandon 986	4485	1913	6398
Ottawa Syn. 6	4576	1762	6338
Ottawa Syn. 7	4432	1883	6315
Guelph Syn. 1	4395	1785	6180
S. 6325	4599	1505	6104
Ottawa Syn. D.	4372	1498	5870
Saratoga	3969	1845	5814
S.5824 (Syn. 2)	3835	1974	5809
S.6324 (Syn. 1)	3971	1535	5506
Brandon 988	3910	1581	5491
Significance	N.S.	N.S.	N.S.
S.E.m	422	161	439

Comments:

1st cut on June 7th
2nd cut on August 20th

BROME PERFORMANCE TRIAL, 1963 - GUELPH

Variety	Cut 1 (June 15, 1965)	
	Yield	% Alfalfa ^{1/}
	(lbs./acre)	
Lincoln	5600 ^{2/}	50
Redpatch	5580	50
Blair	5510	65
Saratoga	5310	45
Sac	4980	50
C.V.	8.3%	

^{1/} % alfalfa determined by visual estimation

^{2/} Differences among varieties were non-significant

The stands in this trial were variable. Regrowth was very uneven so no second cut was taken. This trial has been terminated.

BROME SYNTHETIC TEST, 1962

GUELPH

Yields (lbs. of Dry Matter per Acre) - 1965

<u>Variety</u>	<u>Cut 1</u> <u>(June 15)</u>
Baylor	6020 ¹ /a
Saratoga	5930 a
Ottawa Syn. B	5900 a
Redpatch	5870 a
Ottawa Syn. D	5820 ab
Blair	5730 ab
Lincoln	5440 bc
S-5824 (Syn.2)	5160 c
<hr/>	
C.V. (%)	7.9
<hr/>	

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

These varieties were grown in pure stand. Regrowth was very variable so no aftermath yields were taken.

Visual Observations on Varieties (June 14, 1965)

Baylor - looks no better than Lincoln

Saratoga - has a leafier appearance than Redpatch

Ottawa Syn. B - similar to Redpatch, but appears to be more vigorous than Blair or Baylor

Ottawa Syn. D - lighter in colour than Redpatch, but appears less leafy.

Blair - appears to be more dense than Lincoln

S-5824 - less vigorous than any other variety

BROME SCREENING TRIAL, 1963 - GUELPH

Results - 1965

Variety	Yield		% Alfalfa ^{1/}
	Cut 1 - Pure Stand	(June 15)	
Saratoga	5700	a ^{2/}	35
Guelph Syn. 1	5540	ab	30
Lincoln	5500	ab	50
S-6325	5240	abc	45
Ottawa Syn. 6	5130	abc	15
S-5824	5060	abc	10
Brandon 986	5050	abc	40
Ottawa Syn. D.	5020	bc	25
Ottawa Syn. 7	4800	c	25
S-6324	4730	c	20
Brandon 988	4600	c	35
C.V.	8.1%		

^{1/} % alfalfa in 5' strip overseeded with Vernal. Alfalfa stands were quite variable

^{2/} Any two means followed by the same letter are not significantly different at the 5% level (Duncan's Multiple Range Test)

Comments:

On May 20 a strip 3' wide was cut out of each plot. Regrowth was very slow and there were no visible differences among varieties on June 14 or June 30.

Regrowth from the cut on June 15 was quite variable, so no aftermath yields were taken.

On June 15, Guelph Syn. 1 was the tallest variety and it is also 2-3 days earlier in maturity than the bulk of the others. The stand of this variety was thinner than the others.

This trial has been terminated.

W.O.A.S.
 BROMEGRASS PERFORMANCE TRIAL
 1965 Results*
 Ridgetown

Variety	<u>June 17</u>		<u>July 19</u>		<u>August 26</u>	
	%	Legume Yield	%	Legume Yield	%	Legume Yield
Saratoga	81	6522	82	1824	78	593
Lincoln	83	6710	93	1932	78	651
Redpatch (Ottawa Syn C)	78	6469	82	1929	80	602
Blair (R.P. 100)	80	6549	88	1924	78	621
Sac	78	6378	85	1757	78	590
		N.S.		N.S.		N.S.
C.V.		6.1%		10.4%		12.4%

*Seeded - 1963

A.D.McLaren

BROME VARIETIES SEEDED 1965GUELPH

Ottawa Syn. A - Syn. 1, 2, 3

Ottawa Syn. B - Syn. 1, 2, 3

Ottawa Syn. C - Syn. 1, 2, 3

Lincoln

Saratoga

S-5824, Syn. 2

S-6325, Syn. 2

These were seeded in pure stands. Establishment was good.

- - - - -

BROME VARIETIES SEEDED 1965OTTAWA

Ottawa Syn. A - Syn. 1, 2, 3

Ottawa Syn. B - Syn. 1, 2, 3

Ottawa Syn. C - Syn. 1, 2, 3

Lincoln

Saratoga

S-5824, Syn. 2

S-6325, Syn. 2

These were seeded in pure stands. Establishment was poor.

BROMEGRASS VARIETY TESTS
Kapuskasing
1965

Year seeded: 1962

General conditions: The abnormally cold growing season may have been partly responsible for the low yields and the lack of regrowth.

Pure stand-brome.

Hay management

1st cut: June 29

Fertilization: 100 lb. Amm. Nitrate in the spring
: 100 lb. Amm. Nitrate after the 1st cut.

Yield of D.M. per acre (lb.) - 1965

Variety	1965	Total Yield	
		1964	1963
Saratoga	1991	4273	4639
Lincoln	2074	4084	4796
Carlton	2449	3773	4593
Syn. C	2371	4237	5024
Fischer	2296	4224	4777
Wis. 55	2069	3743	4442
Wis. 81	2306	4155	4958
Average	2222	4070	4748

Yields were obviously well below those obtained in the first two crop years. Bromegrass was fully headed about June 22-23. Carlton showed the best growth performance, retaining a denser growth and also showing more heads than the others. Ottawa Syn. C performed less well than in previous years while Saratoga was disappointingly low. At the time of cutting average height of the grass in all plots was about 12 inches. Regrowth was never sufficient for a second cut.

PASTURE MANAGEMENT
Kapuskasing

1st cut: June 21
2nd cut: August 18

Yield of D.M. (lb.) per acre

Variety	1st cut	2nd cut	Total 1965	Total 1964	Total 1963
Saratoga	1527	981	2508	2946	3749
Carlton	1621	1127	2748	2780	3297
Fischer	1629	1089	2718	2859	3470
Lincoln	1426	1015	2441	3170	3030
Ott. Syn. C.	1596	1114	2710	2990	3536
Average	1560	1065	2625	2949	3416

Carlton, Fischer and Syn. C performed well although slightly less than in 1964. Saratoga and Lincoln were consistently poorer. While Lincoln has always performed poorly at Kapuskasing, Saratoga has generally yielded much better.

Mixed stand.

1. With alfalfa: for hay
Date cut : June 29

No aftermath was cut. What regrowth there was was mainly alfalfa.

Yield of D.M. per acre (lb.)

Variety	1965	1964	1963
Saratoga	2301	7509	5366
Carlton	2161	7434	5244
Fischer	2241	7295	4898
Lincoln	2158	7399	5244
Syn. C	1968	7122	5278
Average	2166	7352	5200

The very sharp decrease in yield is mainly due to the sharp reduction in alfalfa stand in the plots. Carlton and Syn. C plots had 24 and 20 percent alfalfa (hand separation). The other three varieties had about 50% alfalfa.

2. With trefoil; for pasture
Date cut : June 21

The regrowth was mainly trefoil and could not have served to appraise the aftermath of brome varieties.

Yield of D.M. per acre (lb.)

Variety	1965	1964	1963
Saratoga	1932	5378	2474
Carlton	1928	5322	2314
Fischer	1813	5870	2404
Lincoln	1676	5141	2361
Syn. C	1785	6114	2432
Average	1817	5565	2397

Again this test was considerably down in performance, particularly when compared to last year. If one compares only this year's data with the first cut yields in 1964, the average ratio is 5060 lb. in 1964 against 1817 in 1965.

FORAGE FARM TRIAL 1965

Saratoga Brome, Frode Orchard 1960 Seedings

2-acre plots of Saratoga brome (10 lbs. per acre) and Frode orchardgrass (8 lbs. per acre) each were seeded with DuPuits alfalfa at 10 lb. per acre at 32 locations in 1960. Four plots were written off the first year because of mistakes in seeding etc. Of the remaining 28 plots, 9 were broken in 1962, 6 in 1963, 6 in 1964, 3 in 1965 and 4 will be left down for one more year.

In 16 cases winterkilling of alfalfa forced breaking of the plots and 3 were ploughed because of crop rotation plans. In 2 cases orchard crowded out the alfalfa and in one case Saratoga provided too much competition. On one farm, orchard winterkilled and on another, overgrazing killed out the alfalfa.

In summing up farmers' preferences, 13 preferred brome, 12 orchardgrass and 3 showed no preference. These preferences had little to do with the species, but rather with the farmers' programme. In an intensive pasture or early hay or silage programme, orchard was preferred because of its yield and regrowth. In a normal hay or extensive grazing programme, Saratoga was preferred because of its softer texture and palatability.

Conclusions:

Saratoga and orchard appeared compatible with DuPuits alfalfa both as regards to maturity and competitiveness.

FORAGE FARM TRIAL 1965

127B 65
34 64
F-15

Brome 1964 Seeding (Lincoln, Redpatch, Saratoga)

One acre plots of Lincoln, Redpatch and Saratoga, each at 8 lb. per acre with 10 lb. Vernal alfalfa were seeded at six locations in 1964.

- 1) York County - Jim Mortson, Queensville
Lot 26, Conc. 3, East Gwillimbury Township.

Saratoga catch much thicker and plants more aggressive in 1964 under a nurse crop. No differences in yield or growth in 1965.

- 2) Northumberland County - Bruce Eagleson, #1, Cobourg
Lot 22, Conc. 2, Hamilton Township.

No differences in stand yield or growth in 1964 or 1965.

- 3) Dufferin County - Maurice Bruce, #2, Grand Valley
Lot 28, Conc. 11, East Luther Township.

Under a nurse crop no differences in stand 1964 or yield 1965 (3½ tons per acre) although Lincoln appeared leafier, and Redpatch was slower in regrowth.

- 4) Peel County - Dave Armstrong, #1, Inglewood
Lot 23, Conc. 4, Chingacousy Township.

Direct seeded Saratoga catch was much thicker in 1964 and this difference was still apparent in 1965. Plots were not harvested separately.

- 5) Middlesex County - Donald Black, #2, Glanworth
Lot 6, Conc. 7, Westminster Township.

Under a nurse crop Saratoga catch was thicker in 1964 but no growth or yield (2-3/4 tons per acre) differences were noted in 1965.

- 6) Ontario County - Les Smith, Manchester
Lot 8, Conc. 2, Reach Township.

No differences noted in 1964 or 1965.

Conclusion:

Observations from 6 farms indicated Saratoga established more thickly in 1964 in 3 locations. In 3 locations no differences were noticed. One farmer reported Lincoln leafiest and Redpatch slowest in recovery.

MEADOW FESCUE

G-1

Data were reported from Guelph only in 1965. In those trials, only one cut was taken, and so these data were not added to the summary found in last year's report.

Differences among varieties at Guelph were non-significant. No change in present recommendations is suggested for 1966.

B. R. Christie,
Co-ordinator.

G-2

Variety	Location and Year of Seeding	
	Guelph 1963	Guelph 1965
A. Meadow Fescue		
Mimer	X	
Trader	X	
C.B.	X	
Ensign	X	
0280	X	
Ottawa Syn.B	X	
Ottawa Syn.C	X	
S - 215	X	
Skrzeszowicka	X	
Sv. 01217	X	
WAS 9	X	
WAS 11	X	
WAS 22	X	
WAS 23	X	
WAS 24	X	
B. Tall Fescue		
Alta		X
Fawn		X
Kenwell		X
Manade		X
Oregon A		X
Oregon I		X
Oregon L		X
Ottawa Syn.A		X
Steinacher		X

Exp. 636.

MEADOW FESCUE PERFORMANCE TRIAL, 1963

G-3

Yields (lbs. of D.M./acre) - May 21, 1965

<u>Variety</u>	<u>Alone</u>	<u>With Ladino</u>
S - 215	1240	1180
Skrzeszawicka	1100	1100
Ensign	1060	1090
Ottawa Syn. C	1040	1270
Trader	1000	1120
Ottawa Syn. B	940	1250
WAS - 24	940	-----
C. B.	-----	1180
C. V.		11%

Per cent legume in the plots seeded with ladino varied from 70 - 80%. One replication was discarded because of winter killing of ladino.

The differences among varieties were non-significant.

Because of volunteer timothy in the aftermath, this test was discarded after the first cut.

Exp. 637.

MEADOW FESCUE YIELD TRIAL, 1963

G-4

Yield - lbs. of D.M. / acre, 1965

Variety

Cut 1
(May 21)

Mimer
Sv. 01217
C. B.
WAS 23
0280
Skrzeszowicka
WAS 11
WAS 9
WAS 22

1150
1120
1070
1030
1000
1000
980
920
910

C.V.

15.4%

Differences among varieties were non-significant. This trial was terminated after the first cut.

ORCHARDGRASS

H-1

No change in varietal recommendations is anticipated for 1966. The three varieties currently recommended (Frode, Rideau and Tardus II) are among the highest yielding varieties under test.

On the following page will be found a summary of all yield data available on those varieties currently under test for which data are available for more than one year or more than one location.

From these data and other data available, the following comments can be made with regard to the varieties:

1. Coxa - is slightly higher in yield than Frode and slightly earlier in maturity (2 - 3 days). However, the difference between the two varieties is too small to be considered of significance.
2. Dayton (R.P. 200) - only limited data are available on this variety. It is 1 - 2 days earlier than Frode, and of equal yield.
3. Latar - this variety has been tested quite extensively. It is comparable to Frode in yield, is later (6 - 8 days) and is leafier.
4. Masshardy - definitely lower in yield.
5. Motycka - In pure stands is slightly lower in yield than Frode. At Guelph, has appeared to be very susceptible to frost damage in the early spring.
6. Napier (R.P. 300) - appears similar in performance to Dayton.
7. Pennlate - has been tested extensively. In yield it is equal to Frode, but is later (5 - 6 days) in maturity and more leafy.

No requests have been received to licence any of these varieties. At the termination of existing trials, sufficient data will be available on all the above varieties with the exception of Dayton and Napier.

B. R. Christie,
Co-ordinator.

O R C H A R D G R A S S

H-2

Summary of all Yield Data on Varieties under Test, 1965¹⁾

	Pasture			Hay & Aftermath Pasture (Alone)				Hay & Aftermath Pasture (+Legume)			
	No. Locations	No. Test Years	Total Yield	No. Locations	No. Test Years	Cut 1	Total	No. Locations	No. Test Years	Cut 1	Total
Frode Tardus II	4	13	5520 5330	2	15	4140 4060	6740 6600	3	15	4430 4550	7570 7590
Frode Rideau	4	10	5810 5540	2	9	4330 4220	7570 7190	3	13	4400 4450	7240 7370
Frode Coxa	1	1	3790 4180	1	1	4800 4620	8580 8620	2	3	6260 6360	10190 10510
Frode Dayton (R.F. 200)	-	--		1	2	3940 4170	5640 5540	-	--		
Frode Latar	4	9	6040 5860	2	9	3880 4330	7760 7460	3	10	3840 3800	6510 6510
Frode Masshardy Rideau	1	3	----- 3920 4190	1	5	4140 3700 -----	6120 5250 -----	-	--		
Frode Motycka	-	--		1	6	4250 3930	6530 6390	2	3	6260 6330	10190 10320
Frode Napier (R.F. 300)	-	--		1	2	3940 4180	5640 5460	-	--		
Frode Pennlate	2	7	6710 6610	1	2	4100 4310	7110 7160	3	17	4370 4400	7530 7460

1) Includes only those varieties currently under test for which data are available from more than one year or more than one location.

Orchardgrass Varieties -- Under Test, 1965

H-3

Management: Hay and Aftermath Pasture
Location and Year of Seeding

Variety	Ridgetown 1)	Guelph				Fort William 2)
	1963	1963 2)	1964 3)	1964 4)	1965 2)	1964
Frode	X	X	X	X	X	X
Rideau	X	X	X	X	X	X
Tardus II	X	X	X	X	X	X
Aries					X	
Boone					X	
Coxa	X		X			X
Dayton(R.P.200)		X				
Dorise				X		
Heidemij				X		
Iatar		X	X			X
Masshardy		X				
Motycka	X	X	X			X
Napier(R.P.300)		X				
O.S.G. - 5				X		
Ottawa 100						X
Ottawa Strain K						X
Pajberg III				X		
Pajberg Milka				X		
Pennlate	X	X	X			X
Pennmead				X		
Re-Selected Frode		X				
61.23				X		
S-345				X		
Sceempter				X		
Sv 01009				X		
Taurus					X	
Trifolium Early				X		
Va.58-V-1				X		
Vertas				X		
Wisc. 52					X	

- 1) Seeded with DuPuits alfalfa
- 2) Seeded alone
- 3) Provincial Performance Trial
- 4) Provincial Screening Trial

Dayton (R.P. 200)

(S) Breeder - R. R. Kalton, Rudy-Patrick Research Centre, Ames, Iowa.

Submitted by - Breeder

Breeding Method - A six-clone synthetic.

Clones were selected from adapted varieties and old stands in Iowa. Clones and progenies evaluated for forage and seed attributes, yield, rust and leaf blight resistance and winter hardiness.

Description - Similar to Sterling but with improved disease resistance.

At Guelph, has been 2 - 3 days earlier than Frode, and of equal yield.

Napier (R.P. 300)

Breeder - R. R. Kalton, Rudy-Patrick Research Centre, Ames, Iowa.

Submitted by - Breeder

Breeding Method - An eight-clone synthetic.

Method similar to that used for Dayton.

Description - Equal to Sterling in winter hardiness but with improved disease resistance. In maturity, 2 - 4 days later than Potomac and Common.

At Guelph, has been similar to Dayton in performance.

W.O.A.S. Ridgetown
H-5

Yield (lbs. of D.M. per acre) and Composition - 1965

Variety	Cut 1		Cut 2		Cut 3		Total
	% Legume (June 17)	Yield	% Legume	Yield (July 19)	% Legume	Yield (Aug. 26)	Yield
Coxa	80	6830	92	2720	86	1140	10,690
Rideau	81	6690	93	2720	89	1110	10,520
Pennlate	79	6590	91	2700	88	1090	10,380
Motylska	78	6720	90	2470	83	1050	10,240
Tardus II	80	6500	91	2610	87	1040	10,150
Frode	78	6550	90	2490	86	1030	10,070
Differences		NS		NS		NS	
C.V.		4.6%		8.0		9.3	

- Yield - (lbs. of D.M. per acre) - 1965

<u>Variety</u>	<u>Cut 1</u> (June 11)	<u>Cut 2</u> (July 27)	<u>Cut 3</u> (Sept. 2)	<u>Total</u>
Latar	5430 a	2430 d	840 a	8700 a
Coxa	4620 bcd	2890 a	1110 a	8620 a
Pennlate	5150 ab	2610 bcd	860 a	8620 a
Frode	4800 abc	2690 abc	1090 a	8580 a
Rideau	5140 ab	2550 cd	830 a	8520 a
Tardus II	4480 cd	2660 abcd	1080 a	8220 a
Motycka	4140 d	2810 ab	960 a	7910 a
C.V.	12.0	7.2	23.0	8.8

Miscellaneous Notes - 1965

<u>Variety</u>	<u>Spring</u> <u>Vigour 1)</u> (May 13)	<u>% Ground</u> <u>Cover</u> (May 13)	<u>Relative</u> <u>Maturity</u> (June 11)
Latar	1.0	100	3.1 (Heads emerging)
Coxa	3.0	100	4.1 (Early anthesis)
Pennlate	2.0	80	3.2 (Heads emerged; stems
Frode	3.0	90	3.2 elongating)
Rideau	3.0	100	3.1
Tardus II	2.5	80	3.2
Motycka	3.5	90	4.1
DuPuits (alfalfa)			2.3 (1% Bloom)

1) Vigour rating - 1 (good) to 5 (poor)

Notes: Only the pure stand portion of this test was harvested. DuPuits alfalfa suffered some winter damage which varied from replication to replication.

The variety Motycka was severely frosted on two occasions in May.

Exp. 638-1

ORCHARDGRASS SCREENING TRIAL, 1964

Guelph
H-7

Yield - (lbs. of D.M. per acre) - 1965

Variety	Cut 1		Cut 2		Cut 3		Total
	Date	Yield	(July 27)		(Sept. 7)		
Va 58-V-1	9	3280 ¹⁾	bcd	2060	cde	910 ab	6250 abc
Tardus II	9	3220	bcd	2020	de	820 abc	6060 abc
Frode	9	3340	bc	2000	de	670 cd	6010 abc
Trifolium Early	9	3110	bcdef	1900	e	690 abcd	5700 bcd
Pajberg III	9	2970	cdef	2030	cde	680 bcd	5680 cd
Pajberg Milka	9	2750	fg	2080	cde	730 abcd	5560 cd
S - 345	9	2170	h	1970	de	670 bcd	4810 e
Rideau	11	3900	a	1990	de	560 de	6450 ab
Dorise	11	3420	b	2120	bcd	710 abcd	6250 abc
Sceempter	11	3130	bcdef	2230	abc	700 abcd	6060 abc
Pennmead	11	2780	efg	2300	ab	920 a	6000 abc
Heidemij	11	3160	bcde	1960	de	560 de	5680 cd
Sv. 01009	14	3380	b	2160	bcd	720 abcd	6260 abc
Vertas	14	2920	def	2380	a	570 de	5870 bcd
61.23	14	2420	gh	2150	bcd	650 cde	5220 de
O.S.G. - 5	17	3880	a	2370	a	430 e	6680 a
C.V. (%)		6.0		4.2		20.7	8.7

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

Comments:

The following varieties were low in spring vigour and suffered some winter damage (see next table): S - 345, Dorise, Sceempter, Pennmead, Heidemij, Sv. 01009, Vertas, 61.23. In the hay cut, S - 345, Pennmead, Vertas and 61.23 were significantly lower in yield than Frode. In total seasonal yield only S - 345 and 61.23 yielded significantly less than Frode.

The following varieties yielded significantly more than Frode.

Cut 1 = Rideau, O.S.G. - 5
 Cut 2 = Sceempter, Pennmead, Vertas, O.S.G. - 5
 Cut 3 = Va. 58 - V - 1, Pennmead
 Total = none

The following varieties yielded significantly less than Frode.

Cut 1 = Pajberg Milka, S - 345, Pennmead, Vertas, 61.23
 Cut 2 = none
 Cut 3 = O.S.G. - 5
 Total = S - 345, 61.23

Miscellaneous Data - 1965

Variety	Pasture Vigour ¹⁾				%Ground Cover (May13)	Date Headed (June)	Date 1% Anthesis (June)	%Grass ²⁾ in Alfalfa	No. Leaves per stem
	May 13	June 9	July 27	Sept. 2					
Va. 58 - V - 1	3.5		2.0	2.0	60	7	9	40	
Tardus II	3.0	NO	2.0	2.5	70	8	9	35	4.1
Frode	2.5		2.0	3.0	80	8	9	40	4.2
Trifolium Early	3.0	DIFFER-	3.0	3.0	75	7	9	45	
Pajberg III	3.0		2.5	3.0	75	7	9	40	
Pajberg Milka	3.0	ENCE	2.0	2.0	80	7	9	60	
S - 345	4.5		2.0	3.0	55	5	8	80	
Rideau	3.0		3.0	3.0	85	9	13	65	4.4
Dorise	4.0		3.0	3.0	60	10	11	55	
Sceempter	4.0		2.5	2.5	60	11	13	65	
Pennmead	4.0		2.0	1.5	50	10	14	40	
Heidemij	4.0		2.0	3.0	70	9	12	80	
Sv. 01009	4.5		2.0	3.0	60	11	14	60	
Vertas	4.0		2.5	3.0	75	11	15	65	
61.23	5.0		3.0	3.0	50	8	13	80	
O.S.G. - 5	1.0		2.0	4.0	100	13	18	40	4.8

1) Vigour rating 1 (good) to 5 (poor)

2) % Grass in portion of plot overseeded with DuPuits

Note: DuPuits alfalfa = 1st flower on June 9

Pasture section of plots was cut on the following dates: May 14, June 9, July 27, September 7.

Yields - lbs. per acre - 1965

<u>Variety</u>	<u>Cut 1</u> <u>(June 15)</u>	<u>Cut 2</u> <u>(July 28)</u>	<u>Total</u>	<u>Date of</u> <u>Anthesis</u> <u>(June, 1965)</u>
Pennlate	3470 ab ¹⁾	2240 a	5710 a	June 20
Frode	3400 abc	2240 a	5640 a	June 15
Re-selected Frode	3230 bcd	2380 a	5610 a	June 15
Dayton (R.P.200)	3600 a	1940 a	5540 a	June 13
Napier (R.P.300)	3360 abc	2100 a	5460 a	June 13
Tardus II	3290 bcd	2150 a	5440 a	June 16
Masshardy	3260 bcd	2160 a	5420 a	June 22
Iatar	3130 cd	2140 a	5270 a	June 21
Rideau	3030 de	2120 a	5150 a	June 18
Motycka	2760 e	2370 a	5130 a	June 13
C.V.	5.8%	14.3%	6.8%	

- 1) Any two means followed by the same letter are not significantly different at the 5% level (Duncan's Multiple Range Test).

Growth in this test was not very uniform within a variety. Consequently, the test must be considered as only "fair". Because of a land shortage, the test was terminated following the second cut.

Motycka showed severe frost damage following a frost on May 29th.

REMARKS-

Pure stands of Orchardgrass varieties established in 1964 were severely set back by below normal temperatures throughout the winter of 1964-65, and poor growing weather throughout this past growing season. The lack of plant development in 1965 prompted the application of additional nitrogen on the plots in late June, and then again in the early fall, however, for the most part growth did not materialize sufficiently to warrant clipping. Inability to attain production was hampered by the presence of such weeds as Hemp Nettle, Ox-Eye Daisy, Sheep Sorrell and Field Horsetail, which could not be controlled adequately using 2,4-DB at rates as high as 20 ounces per acre. An early growth of weeds in May was clipped to eliminate plant competition, however, all grasses failed to respond. The very fact all plot stands did not respond to soil fertility amendments and partial elimination of annual weeds is of concern. All plots have been left for observations in the second crop year.

Varieties sown down in 1964 were Coxa, Latar, Motycka, Pennlate, Frode, Rideau, Tardus II, Ottawa - 100 and Ottawa Strain K.

TIMOTHY SUMMARY

The past season in the testing areas of Ontario was extremely different from the average. In the Ottawa-Kemptville areas, dry, hot June-July weather was followed by a wet fall with low night temperatures. At Fort William, July was the coolest since 1891, with the mean temperature some 4.0 degrees below normal. At Kapuskasing, the early part of the season was unfavourable, leading to a small first cut with high precipitation late in the season.

On the basis of the 1965 results, there appears to be no basis for a change in recommendation. Of special interest are the high yields of King and Heidemij in the pasture test (page 14) at Kapuskasing, whereas the Ottawa Pl (Thruster) came first in the Hay test (page 13). At Ottawa, the Pl (Thruster) was significantly higher than all other varieties but one in the second cut, and had the highest total yield, however, there were no significant differences for totals (page 5). Ottawa data for the evaluation of the pasture timothy (pages 7-8 and 9) show the aftermath superiority of the pasture timothy lines to hay-type Climax.

The screening trial at Guelph indicated that the new strains from Cornell appeared to be the most promising. They are in the same maturity class as Climax.

FORT WILLIAM EXPERIMENTAL FARM

I-1

ANNUAL PROJECT SUMMATION

GENERAL INFORMATION - Uniform Timothy Trial - Pure Stand

1. Location - Fort William, Ontario
2. Year - 1965
3. Soil Type - Sandy Loam
4. Experimental design - Randomized block, six replicates
5. Plot Size - 5' x 20'
6. Size Sample Harvested - 39" x 18' D.M. Sample Size - 500 grams
7. Variety - As per attached table
8. Fertilizers - S-1964 300# 10-10-10 S-1965 540# 33-0-0
F-1964 120# 33-0-0 1965 360# 33-0-0
(Aug. 10) (July 15)
F-1965 540# 33-0-0
9. Pesticides - dates and rates
 - a. Herbicides - Nil
 - b. Insecticides - Nil
 - c. Fungicides - Nil
10. Seeding Date - May 28th, 1964
11. Harvest Date - July 12, 1965
12. Previous Crop - Fallow
13. Seeding Method - Broadcast without nurse crop
14. Harvest Method - Gravelly mower with basket attachment.

REMARKS - In 1965, unfavorable climatic conditions and the possibility of a local soil fertility problem restricted the growth of all Timothy varieties with the result total production for the season was confined to one clipping taken somewhat later than normal on July 12th. The lack of plant growth can be largely attributed to the failure of plants to commence growth in May, following a winter of severe low temperatures, particularly throughout January, February and March. Some yellowing of the upper leaves indicated a nutritional deficiency, even though chemical fertilizers were applied liberally.

Yields obtained for some ten varieties or lines of Timothy in this first year hay stand ranged from a low of 1455 pounds for 0296 from Hogg and Lytle Seeds, up to 1752 pounds dry matter per acre for Wisconsin's T-1. 0296 Timothy, noted for earliness and aftermath recovery, was not impressive in this initial test year. While yield differences as between varieties was for the most part small, analysis did show such were significant with T-1; Climax and Labelle rated superior to all other grasses under test. Astra's performance was similar to Drummond, both of which yielded better than Upstart and Essex, which were later developing leaf. Yields of P-1 and P-3, both pasture types were low when managed as hay.

While replicated yields for Climax Timothy representing a check for this variety were not statistically analyzed, the average dry matter yield over six replicates was 1582 pounds per acre this year.

FORT WILLIAM EXPERIMENTAL FARM

TIMOTHY VARIETY TRIAL - 1965

HAY

VARIETIES	D.M.LBS./AC. 1st Cut	D.M.LBS./AC. AFTERMATH	D.M.LBS./AC. TOTAL	AV. % PLANT STAND
T-1	1752 A	Aftermath is Nil due to lack of growth	1752	89
*Climax	1714 AB		1714	89
Ottawa-1 Labelle	1661 ABC		1661	81
T-41 (Astra)	1629 ABCD		1629	82
Drummond	1580 ABCD		1580	82
Ottawa-7 (Upstart)	1546 BCD		1546	84
Essex	1498 CD		1498	80
Ottawa-P1 Thruster	1489 CD		1489	83
Ottawa-P3	1468 CD		1468	85
O 296 Hogg & Lytle	1455 C		1455	87
	July 12			
	Highly Significant	C.V.* 29.27%		

*Climax Breeders seed - Average yield 1582

FORT WILLIAM EXPERIMENTAL FARM

WEATHER - 1965

The local weather picture for the 1965 growing season may be described as generally favourable throughout the months of May and June, with a gradual deterioration throughout July, August and September, as featured by below normal temperatures and above normal amounts of precipitation. While the cool, moist climate did not appear to hinder plant growth nor seed germination, it has hindered a normal harvest, thus some loss on seed quality was encountered.

It is of interest to note that at Fort William, July was the coolest since 1891, with the mean temperature some 4.0 degrees below normal. The maximum temperature for this same month was 70.9 degrees, just .9 degrees higher than the average maximum for the month of June. Throughout the early part of August, temperatures and hours of sunshine approached normal. The last 15 days of the month were much cooler with a new record low maximum of 52 degrees set on the 30th. In all, only 3 days in August topped 70 degrees and there were 9 days with measurable rainfall. Total monthly precipitation of 3.97 inches was slightly higher than average. September was cool, dull and very wet. In fact, with a mean monthly temperature of 47.2 degrees, it was the coolest September since 1887. A record 6.54 inches of precipitation was recorded at the Fort William Meteorological Station, the heaviest since 1941. On the farm site proper, precipitation unofficial records indicated a total of 7.11 inches for September over a period of 17 days.

As to the occurrence of frost, the first killing frost at Fort William was recorded on September 25th. The total frost-free period was 105 days at the local weather station, however, on the local test site records show a frost-free period of only 87 days with the last spring frost recorded June 11th, and first fall frost on September 6th.

.....

FORT WILLIAM EXPERIMENTAL FARM

1965 WEATHER RECORDS

Temperature	Apr.	May	June	July	Aug.	Sept.
Maximum	46.0	60.0	70.0	70.9	70.2	57.1
Normal	45.7	58.6	68.5	75.2	73.1	63.0
Departures from normal	+0.3	+1.4	+1.5	-4.3	-2.9	-5.9
Minimum	23.8	36.5	44.0	47.8	47.2	37.3
Normal	25.9	36.3	46.1	51.8	50.9	42.6
Departure from normal	-2.1	+0.2	-2.1	-4.0	-3.7	-5.3

Precipitation	Apr.	May	June	July	Aug.	Sept.
1965	1.71	3.01	2.40	2.38	3.97	6.54
Normal	2.00	2.88	3.44	2.78	3.53	3.32
Departures from normal	-2.9	+1.3	-1.04	-.40	+.44	+3.22

Last Spring Frost - 32 degrees or lower - May 29
 Last Spring Killing Frost - 28 degrees or lower - May 1
 First Fall Frost - 32 degrees or lower - September 11
 First Killing Frost - 28 degrees or lower - September 25

Frost Free Days - 105. 4 days over average.

*TIMOTHY UNIFORM VARIETY TEST 1965

OTTAWA RESEARCH STATION

Variety	1st cut June 24	2nd cut Sept. 20	Total
Ottawa 1	3626 a	2920 ab	6571 a
Ottawa 7	3522 a	2891 b	6246 a
Ottawa P-1	3807 a	3654 a	7460 a
Wis. 7-1	3652 a	2724 b	6377 a
Astra	3698 a	2735 b	6433 a
Essex	3453 a	2222 b	5674 a
Drummond	3494 a	2487 b	5814 a
Climax	4050 a	2606 b	6656 a
C.V.	11.35	22.48	15.00

*Plots 5'x 20' seeded without a nurse crop, harvested
3'4" swath.

DRY MATTER YIELDS OF PASTURE TIMOTHY LINES
OTTAWA RESEARCH STATION

(Seeded 1962 in rows spaced one foot apart: five 10-foot rows per plot)

1963

<u>Line No.</u>	<u>Cut 1 (May 30)</u>	<u>Cut 2 (July 23)</u>	<u>Cut 3 (Sep.20)</u>	<u>Seasonal Total</u>
1*	3081 c	1255a	1644 c	5980 c
2	3161 c	1351a	2009ab	6521abc
5	3283 bc	1092a	2088ab	6463abc
6	3506a	1280a	2173a	6959a
7	3222 bc	928a	1933 b	6082 bc
9	3435ab	1036a	2123ab	6593ab

1964

	<u>Cut 1 (May 26)</u>	<u>Cut 2 (July 23)</u>	<u>Cut 3 (Sep.28)</u>	<u>Seasonal Total</u>
1*	3255a	850a	1357 c	5462a
2	3404a	825a	1479 bc	5709a
5	3258a	732a	1558ab	5548a
6	3347a	716a	1603ab	5667a
7	3083a	751a	1552ab	5385a
9	3428a	635a	1667a	5730a

1965

	<u>Cut 1 (June 1)</u>	<u>Cut 2 (Sep.20)</u>	<u>Seasonal Total</u>
1*	1608 b	2971a	4578 b
2	2113a	3160a	5273a
5	1898ab	3577a	5475a
6	2099a	3367a	5466a
7	1852ab	3367a	5220a
9	2009a	3414a	5423a

1963-65 Average

	<u>Cut 1</u>	<u>Aftermath</u>	<u>Seasonal</u>
1*	2648	2692a	5340 c
2	2893	2941a	5834ab
5	2813	3016a	5829ab
6	2984	3047a	6031a
7	2719	2843a	5562 bc
9	2957	2958a	5915ab

* Line No.1 is Climax check.

L.P.Folkins

DRY MATTER YIELDS AND CUTTING DATES OF PASTURE TIMOTHY LINES, OTTAWA

(Established from cuttings spaced 1'x1'; plots 10'x5' in size)

Treat.	Line	First	Aftermath		Total	Seasonal
		Cut	Summer	Fall		Total
1962		(June 28)		(Aug. 23)		
A	9	3746a	-	2578	2578a	6324a
	5	3368a	-	2547	2547a	5915 b
	11	3483a	-	1883	1883 b	5366 c
B		(June 6)	(Jul. 31)	(Aug. 23)		
	9	2294 bc	1079	504	1583 c	3877 de
	5	1773 d	973	349	1322 d	3095 f
	11	2398 b	755	150	905 e	3303 f
C		(June 6)	(Jul. 12)	(Aug. 23)		
	9	2516 b	455	1233	1688 bc	4204 d
	5	1911 cd	399	1180	1579 c	3490 ef
	11	2303 bc	160	819	979 c	3282 f
1963		(June 27)		(Sep. 23)		
A	9	6284a	-	2169	2169a	8453a
	5	5260 bc	-	2050	2050a	7310 b
	11	5816ab	-	1289	1289 b	7105 bc
B		(June 10)	(Aug. 8)	(Sep. 23)		
	9	4933 cd	650	400	1050 bc	5983 de
	5	4108 d	604	436	1040 bc	5148 ef
	11	4489 cd	253	243	496 d	4985 f
C		(June 10)	(Jul. 25)	(Sep. 23)		
	9	5286 bc	624	482	1106 bc	6392 cd
	5	4410 cd	412	478	890 c	5300 ef
	11	4646 cd	133	264	397 d	5043 f
1964		(June 24)		(Sep. 28)		
A	9	4969*	-	2453	2453a	-
	5	4167*	-	1927	1927 bc	-
	11	4704*	-	1191	1191 c	-
B		(May 26)	(Jul. 23)	(Sep. 28)		
	9	2231a	820	992	1812 cd	4043ab
	5	1998ab	733	984	1717 cd	3719 b
	11	1894 bc	1246	437	1683 cd	3577 b
C		(May 26)	(Jul. 8)	(Sep. 28)		
	9	2134ab	780	1431	2211ab	4345a
	5	2002ab	585	1200	1785 ccd	3787 b
	11	1609 c	747	710	1457 de	3066 c

cont'd

cont'd

Treat.	Line	First Cut	Aftermath		Total	Seasonal Total
			Summer	Fall		
1965				(Sep.20)		
A	9	-	-	1438	1438a	-
	5	-	-	1017	1017 bcd	-
	11	-	-	430	430 e	-
B		(June 1)		(Sep.20)		
	9	1411ab	-	1269	1269ab	2680ab
	5	1121 c	-	1207	1207abc	2328 bc
	11	1204 bc	-	801	801 d	2005 cd
C		(June 1)	-	(Sep.20)		
	9	1497a	-	1326	1326ab	2823a
	5	1165 bc	-	917	917 cd	2082 cd
	11	1099 c	-	720 de	720 de	1819 d

* Only four replicates harvested.

Lines:

- No. 9 - Pasture-type timothy
- No. 5 - Pasture-type timothy
- No.11 - From one plant of standard hay type timothy.

Treatments:

- A - Hay cut plus one aftermath cut.
- B - Three pasture cuts; second cut late.(approx. 8 weeks after first cut)
- C - Three pasture cuts; second cut early (approx. 6 weeks after first cut).

Comments:

The first-cut stands in 1965 on Treatment A dried up and were discarded.
There was insufficient regrowth in 1965 for a summer aftermath cut on Treatments B and C.

L.P. Folkins

TIMOTHY SCREENING TRIAL, 1964

GUELPH

Yield - (lbs. of D.M. per acre) - 1965

Variety	Date	Cut 11/		Cut 22/		Total
		Yield		Yield		Yield
	(July)					
Barenza	2	4050	ef	1400abcd		5450 efg
S-352	2	3710	efg	1310 bcde		5020 fg
0296	2	3480	g	1560a		5040 fg
Heidemij	2	3590	fg	1370abcd		4960 fg
Kampe II	2	3500	g	1420abc		4920 g
Vanadis	2	3540	g	1350abcd		4890 g
Omnia	2	3670	fg	1210 cdefg		4880 g
Erecta	2	3510	g	1340abcd		4850 g
TM-60-101	6	5230ab		1270 bcdef		6500ab
Climax	6	4970 _a bc		1380abcd		6350abc
TM-60-102	6	5020abc		1180 cdefg		6200abcd
Astra	6	4700 bc		1500ab		6200abcd
TM-60-104	6	4860abc		1300 bcde		6160abcd
TM-59-50	6	4750abc		1170 defgh		5920abcde
WT-59	6	4570 cd		1100 efgh		5670 cdef
TM-60-100	13	5260a		1290 bcde		6550a
TM-60-103	13	5180ab		1050 fghj		6230abcd
Lofar (C.B.)	13	4200 de		1030 ghj		5230 efg
Combi	27	4930abc		870 j		5800 bcde
Sceempter	27	4860abc		940 hj		5800 bcde
King	27	5100abc		470 k		5570 defg
C.V. (%)		7.5		11.4		7.7

1/ Varieties were cut as close as possible to date of initiation of anthesis.

2/ Cut 2 taken on September 14.

In this test, stands were excellent in 1965. Climax continues to be among the top varieties. There are several varieties as good as Climax, but none superior.

The Cornell synthetics (TM-) all produce abundant heads in the aftermath.

The percent grass in the strip overseeded with alfalfa was low for all varieties. Considering the maturity of Vernal and the maturity of the various timothy varieties, it is possible that all tested here may be too late for growing with Vernal.

TIMOTHY SCREENING TRIAL, 1964

GUELPH

Miscellaneous Data - 1965

Variety	Pasture Vigour ^{1/}			Heading in Aftermath	Date Headed	Date of ^{2/} 50% Anthesis		% Grass ^{3/} In Alfalfa
	May 13	June 21	Sep. 2					
Barenza	2.0	4.0	2.5		June 28	July 4	20	
S-352	2.0	5.0	3.0		" 23	June 30	5	
O296	3.0	4.5	2.0		" 21	" 28	15	
Heidemij	2.0	3.0	2.5		" 28	July 5	5	
Kempe II	2.5	4.0	3.0		" 25	" 2	10	
Vanadis	2.0	4.0	2.5		" 28	" 3	10	
Omnia	3.0	3.0	2.5		" 28	" 5	10	
Erecta	3.0	4.0	3.0		" 28	" 4	5	
TM-60-101	3.0	3.0	1.5	X	July 1	July 6	10	
Climax	3.0	3.0	2.0	X	June 29	" 6	10	
TM-60-102	3.0	2.5	2.5	X	" 29	" 6	10	
Astra	3.0	3.0	2.5		" 29	" 6	5	
TM-60-104	3.5	2.5	2.5	X	" 30	" 5	1	
TM-59-40	3.0	2.0	2.5	X	July 3	" 7	1	
WT-59	3.0	3.5	2.5		" 1	" 6	1	
TM-60-100	3.0	2.0	2.0	X	July 5	July 9	5	
TM-60-103	4.0	2.5	2.5	X	" 5	" 10	5	
Lofar (C.B.)	3.0	3.5	2.5		" 5	" 10	5	
Combi	4.0	3.5	3.0		-	July 26	0	
Sceempter	3.0	3.5	2.5		-	" 27	1	
King	4.5	3.5	3.0		-	" 26	1	

1/ Vigour rating 1 (good) to 5 (poor). Pasture section of plots cut May 14, June 23 and September 14.

2/ Vernal alfalfa - June 28 = full bloom
 July 9 = seed pods evident
 Sep. 2 = 10% bloom

3/ % grass in strip overseeded with Vernal. Estimates taken at time of Cut 1.

I-11

Management Variety	Locations									
	Ottawa		Guelph		Kapuskasing		Kemptonville		Mean	
	No.		No.		No.		No.		No.	
	Test Years	Yield	Test Years	Yield	Test Years	Yield	Test Years	Yield	Test Years	Yield
<u>Hay - Cut 1</u>										
Climax	6	4840	5	6070	5	3300	2	4260	18	4690
Astra	6	4510	5	5890	5	3170	2	3710	18	4430
Drummond	6	4520	5	5710	5	3200	2	4080	18	4430
<u>Hay - Season Total</u>										
Climax	5	6540	3	7910	3	4960			11	6480
Astra	5	6200	3	7490	3	4640			11	6130
Drummond	5	5770	3	7050	3	4460			11	5760
<u>Pasture - Season Total</u>										
Climax	3	3790			2	2700			5	3350
Astra	3	3760			2	2420			5	3220
Drummond	3	3780			2	2490			5	3260

TIMOTHY VARIETIES SEEDED 1965 - GUELPH

Ottawa P-1

Ottawa 1

Ottawa 7 (Bounty)

Wisc. T-1

Climax

Essex

Drummond

Astra

These were seeded in pure stands. Establishment was good.

- - - - -

TIMOTHY VARIETIES SEEDED 1965 - OTTAWA

Ottawa P-1

Ottawa 1

Ottawa 7 (Bounty)

Wisc. T-1

Climax

Essex

Drummond

Astra

These were seeded in pure stands. Establishment medium.

TIMOTHY VARIETY TEST

Kapuskasing - 1965

1. Hay Series
Year seeded 1964

Yield of dm per acre (lb.) 1965

Variety	1st cut	2nd cut	Total
Climax	4387	1016	5403
Climax check*	4139	852	4991
Ott. 1	4601	1094	5695
Ott. 7	4256	809	5065
Ott. P.1	4558	1450	6008
Clair	3085	1422	4507
Milton	4784	1185	5969
Essex	4505	1008	5513
Astra	4655	1086	5741
T-1	4640	1163	5803
Drummond	4303	901	5204
Average	4356	1090	5446

* Seed supplied by R.M. MacVicar

Date of 1st cut July 12
Date of 2nd cut Aug. 25

The first cut was taken when all varieties had reached the early bloom stage except Drummond which, although headed, was not yet in bloom. The first heads appeared on June 21 on Ott. P1, Clair and Milton. Heading was complete on June 29, on all varieties except Drummond which only started to head around July 5. Clair and Ott. P.1 began to bloom on July 5. Ott. 7 was noteworthy for its particularly broad leaves.

At the time of the second cut, a second heading was noted on Clair, Milton, Ott. 1 and Ott. P.1.

2. Pasture series
Seeded 1964

I-14

YIELD OF DM PER ACRE (LB.) 1965

Kapuskasing

Variety	1st cut	2nd cut	Total
Drummond	1541	1992	3533
Climax	1927	1866	3793
Climax check*	1824	1854	3678
Ottawa P1	1700	1848	3548
Ottawa P2	1720	1877	3597
Ottawa P3	1542	1885	3427
Heidemij	889	3189	4078
King	830	3020	3850
Average	1497	1866	3373

*Seed supplied by R.M. MacVicar

Date of 1st cut June 17
Date of 2nd cut July 26

At the time of the first cut, none of the varieties had reached the heading stage. Drummond and Climax were about 13-14" tall, Ottawa P1, P2 and P3 about 12", Heidemij 8" and King 6-7". Ottawa P1, P2 and P3 had upright leaves. Regrowth was quick in plots of Heidemij, King and Drummond. All these varieties reached heading stage on July 12. It appeared that Ott. P1, P2 and P3 did not show any superior or faster regrowth than Climax. The excellent aftermath of King and Heidemij is striking, and despite a low 1st cut yield, they outyielded the other varieties for total seasonal production.

Regrowth after the 2nd cut was very slow and never did warrant a third cut. It should be noted that temperature in July was 6.9°F. below average and August 4.8 below. This undoubtedly must have slowed growing processes.

Notes taken in late August showed that the best regrowth after the 2nd cut was that of Climax, Ott. P3 and P1.

The test received 100 lb. of ammonium nitrate in the spring and again after the 2nd cut.

Timothy Variety ComparisonsW.T.-41 & T-48 with Climax, Essex & DrummondSummary - Cut 1

Variety	No. Tests	Mean	No. Tests	Mean	No. Tests	Mean	No. Tests	Mean
Climax	15	4520	11	4340	5	5150	2	5040
Drummond		--	11	4110		--	2	4240
Essex		--	11	4090		--	2	4390
W.T.-41	15	4430	11	4220	5	5130	2	4740
W.T.-48		--		--	5	5030	2	4830

Summary - Total Yield

Variety	No. Tests	Mean	No. Tests	Mean	No. Tests	Mean
Climax	9	6900	8	7130	3	7900
Drummond	9	5970	8	6270	3	6760
Essex		--	8	6610	3	7250
WT-41	9	6510	8	6740	3	7210
WT-48		--		--	3	7320

TIMOTHY VARIETY TEST
Kapuskasing

Seeded: 1962
Hay Series

Yield of DM per acre (lb.) - 1965

Variety	One cut	Total 1964	Total 1963
Climax	2324	2875	5144
Drummond	2044	2807	4513
Astra	2135	2559	4644
Bottnia	2716	2765	4348
Climax-Rhizoma	1598	5081	7369
Drummond-Rhizoma	1444	5374	7379
Astra-Rhizoma	1586	5276	7371
Date Cut: July 5			

Pasture series

Yield of DM per acre (lb.)

Variety	1st cut	2nd cut	Total 1965	1964	1963
Drummond	1304	1130	2434	2566	2412
Climax	1294	1006	2300	2790	2597
Astra	1153	1123	2276	2809	2031
Clair	1074	1056	2130	2677	2437
Bottnia II	1386	747	2133	2620	2119
Milton	1331	954	2233	2670	2330
Drummond-Empire	1641	1878	3519	4427	3645
Climax-Empire	1631	1553	3184	4967	3902
Astra-Empire	1388	1580	2968	4847	3551
Clair-Empire	1973	1175	2148	4454	2911
1st cut: June 21					
2nd cut: August 17					

These two tests showed a marked decrease in yield as compared to previous years.

The hay test yielded very little and did not show a sufficient regrowth to warrant a second cut.

The pasture test yielded slightly more than the hay test. When grown in association with Empire trefoil, yields of the second cut were masked by those of Empire.

Where timothy was associated with alfalfa, yields were surprisingly lower than in pure stand, it seems that the weaker stand of alfalfa did not provide enough Nitrogen to the grass which remained shorter than in pure stand plots. It should be noted that pure-seeded plots received 100 lb. Ammonium Nitrate in the spring while timothy-alfalfa plots did not receive any. Pure-seeded timothy was also at a more advanced stage of development than in mixtures at the time of cutting.

FORAGE FARM TRIAL 1965

127T 65
34 64

I-14

Timothy 1964 Seeding (Astra, Drummond, Climax)

One acre plots of Astra, Drummond and Climax, each at 6 lb. per acre with 10 lb. Vernal alfalfa were seeded at eight locations.

- 1) Prescott County - Yvon Levac, St. Isidore
Lot 17, Conc. 10, Caledonia Township.

Direct seeded in 1964, no differences were noticed in 1964 or 1965. Yield from all strains were 2½ tons of hay plus pasture, and alfalfa was responsible for 90% of yield.

- 2) Perth County - Allan Bain, St. Paul

Sown with a nurse crop in 1964 the plots were rotationally grazed in 1965. Climax was preferred because of 1/3 more leaf growth and fast recovery from grazing. Drummond regrowth was first after first grazing and last after second grazing. Legume and grass balance was fairly even.

- 3) Huron County - Alex McBeath, Kippen
Lot 6, Conc. 3, Stanley Township.

Sown with a nurse crop in 1964, Astra seemed most vigorous and Drummond least. This difference persisted in 1965. Astra accounted for 10% of yield, compared with 5% for Climax and Drummond.

- 4) S. Simcoe County - Eugene Smith, Utopia
Lot 31, Conc. 6, Essa Township.

Sown with a nurse crop in 1964 and suffered from drought. No differences were noted, and timothy accounted for 80% of the hay yield which was only 1 ton per acre in 1965.

- 5) Prince Edward County - Henry Leven, Bloomfield
Lot 1, Conc. 2 NT, Hallowell Twp.

No differences in yield were noticeable (1 ton per acre in 1965) and timothy only made up 10-15% of the total yield. Climax appeared a little thicker than the other two.

- 6) Peel County - David Armstrong, #1, Inglewood
Lot 23, Conc. 4, Chinguacousy Township.

Direct seeded in 1964, no differences were noted. Plots were not harvested separately in 1965, but Climax catch appeared thicker than Drummond or Astra.

Timothy 1964 Seeding (Astra, Drummond, Climax)

- 7) Elgin County - Earl Grawburg, #8, St. Thomas
Lot 14, Conc. 11, Yarmouth Township.

Sown with nurse crop in 1964, Climax catch was thicker than the other two. Alfalfa took over in 1965 and timothy only accounted for about 5% of yield. No differences were observed.

- 8) Peterborough County - Paul Jopling, #3, Lakefield
Lot 31, Conc. 14, Smith Township.

Severe drought in 1964 affected timothy catch and resulted in 8% yield contribution for Drummond 15% for Astra and 25% of hay yield attributed to Climax. In addition to stand survival, Climax was preferred for leafiness and plant height.

Conclusion:

Observations from 8 farms indicate yield differences not large. 4 farmers preferred Climax, largely because of better seedling establishment under adverse conditions of drought and alfalfa competition. One farmer preferred Astra because of vigour. Two farmers reported no differences.

FORAGE FARM TRIAL 1965

127T 65
34 65

I-16

Timothy - 1965 Seeding (Climax and Upstart)

One acre plots of Climax and Upstart (Ottawa Syn. 7) each at 6 lb. per acre with 10 lb. Vernal alfalfa were seeded at five locations.

- 1) Temiskaming District - New Liskeard - no report.
- 2) Frontenac County - H. Watson, Harrowsmith, Ontario.
Lot 12, Conc. 6&7, Portland Township.

Direct seeded with grain drill and mowed for weed control. Climax established in larger numbers but Upstart plants were taller (15" compared with 10" for Climax) had more stems per plant and a coarser, more leafy growth.

- 3) Haldimand County - L. B. Mehlenbacher, Kohler, Ontario.
Lot 35, Conc. 2, N. Cayuga Township.

Direct seeded with grain drill and mowed for weed control. 8 weeks drought after seeding. Timothy stand very weak and patchy.

- 4) Bruce County - A. A. McTavish, #1, Paisley, Ontario.
Lot 1, Conc. 18, Greenoch Township.

Seeded down with oats in 14" rows as nurse crop. Sprayed with 2,4-DB for weed control. Climax was more vigorous in early growth.

- 5) Victoria County - Doug McEachern, #3, Woodville, Ontario.
Lot 3, Conc. 6, Eldon Township.

Sown with barley as nurse crop. No differences noted.

Conclusion:

Observations from 4 farms indicated better catches of Climax in 2 locations. (In one of these, individual Upstart plants were leafier and coarser). In 2 locations no differences were observed.

J - 1

ANNUAL GRASSES

Data from one trial seeded at Guelph are reported.

B. R. Christie,
Co-ordinator.

Exp. 633-3.

RYEGRASS VARIETY TRIAL, 1965

Guelph

J-2

Yield - lbs. of D.M. per Acre - 1965

<u>Variety</u>	<u>Cut 1</u> (July 28)	<u>Cut 2</u> (Aug.30)	<u>Cut 3</u> (Oct.14)	<u>Total</u>
<u>Westerwolth</u>				
Twewra	4640 ab	1960 ab	1680 abc	8280 a
Woldi	4790 a	2020 a	1410 c	8220 a
Vertas Hybrid	3910 d	910 d	1600 bc	6420 c
<u>Italian</u>				
Fat	4370 abc	1840 ab	1980 a	8190 a
Tetrone	4250 bcd	1550 bc	1690 abc	7490 b
Tetila	4200 cd	1350 c	1780 ab	7330 b
Vertas Poly	4000 cd	1580 bc	1710 abc	7290 b
C.V.	8.0%	20.0%	15.3%	9.6%

- 1) The varieties Tewera and Woldi were headed by July 28.
The varieties Tewera and Fat were consistently high in yield at each cut.

Mean Total Yield - Guelph

<u>Variety</u>	<u>1964</u>	<u>Year</u>	<u>1965</u>	<u>Mean</u>
<u>Westerwolth</u>				
Tewera	5320 a		8280 a	6800
C. B.	4990 ab			
Billion	4820 abc			
Woldi	4810 abc		8220 a	6520
Vertas Hybrid	4680 abc		6420 c	5550
<u>Italian</u>				
Fat			8190 a	
Tetila	4560 abc		7330 b	5940
Tetrone	4070 bc		7490 b	5780
Tiara	4080 bc			
Vertas Poly	3910 c		7290 b	5600
C. B.	3820 c			

- 1) Only 2 cuts taken in 1964.

Year Seeded - 1962

Fertilization - 100 lb. Ammonium nitrate in spring
100 lb. Ammonium nitrate after 1st cut.

1) Hay Management

1st cut July 8
2nd cut September 2

No heading was noted in any of the varieties as of June 29. Heads however appeared soon after and were in bloom about July 5. Few heads were seen and the height of the leave-canopy was not higher than 16-18 inches.

Yield of DM per acre (lb.)

Variety	1st cut	2nd cut	Total 1965	Total 1964	Total 1963
Syn. 1	2863	1057	3920	4773	6065
Syn. 2	2953	1076	4029	5091	5559
Syn. 3	2539	1194	3733	4187	4485
Common	2959	1016	3975	4537	5996
Frontier	2838	1099	3937	4941	6173
Syn. 1 + Empire	2966	934	3900	6331	6584
Syn. 2 + Empire	2806	1034	3840	6036	6344
Syn. 3 + Empire	2923	1018	3941	5804	5757
Common + Empire	3116	1468	4584	6290	6298
Frontier + Empire	3054	1251	4305	6173	6554

Varietal differences were generally narrow.

2) Pasture Management

1st cut June 21
2nd cut August 17

Yield of DM per acre (lb.)

Variety	1st cut	2nd cut	Total	Total 1964	Total 1963
Syn. 1	1882	1484	3366	3112	3590
Syn. 2	1748	1076	2824	2898	3663
Syn. 3	1746	979	2725	2902	3336
Common	2156	1190	3346	3081	4282
Frontier	1740	1293	3033	2938	3409
Syn. 1 - Empire	2012	1682	3694	5366	4767
Syn. 2 - Empire	1988	1437	3425	5095	4363
Syn. 3 - Empire	1858	1466	3324	5121	4264
Common-Empire	2160	1545	3705	5504	4626
Frontier-Empire	2136	1815	3951	5176	4925

Pure stand

Yields were lower than in the first crop years, but were practically as good as in 1964.

When reed canary was associated with trefoil, yields were lower than in 1964, for both cuts.

PRODUCTION MANAGEMENT

SUMMARY

Two series of trials were introduced in 1963. The purpose of Series I was to determine the effect of location on the growth and development of two varieties of alfalfa and also trefoil. The purpose of Series II was to evaluate cutting schedules on DuPuits and Vernal alfalfa alone and in mixtures with a single grass.

Growth Curves of Alfalfa and Trefoil

As in 1964, growth began earlier in the spring of 1965 at Ridgetown than other locations. The stages of development of DuPuits and Vernal were similar but growth was shorter and yields were lower at corresponding stages of plant development at Ottawa than at Ridgetown. Similarly at Fort William and Alfred, yields were lower than those at the southern stations.

At all stations in 1964 and in 1965 the maximum amount of leaf per acre occurred when the alfalfa had reached a stage of development between medium bud to early flower. Any further increase in yield beyond this stage of development was a result of the increase in the proportion of low quality stem. In general, the pounds of digestible dry matter per acre reflects the pounds of leaf produced.

The rate of development of the trefoil varieties was more rapid than that of the alfalfa varieties at Ottawa and Fort William. Trefoil yields were higher than alfalfa at corresponding stages of development and also harvest dates at Fort William but lower than alfalfa at Ottawa. Both varieties of trefoil were higher in digestible dry matter than alfalfa at similar stages of maturity. At both Fort William and Alfred, Viking was slightly earlier than Empire but Empire produced more dry matter than Viking at similar stages of maturity.

Mixture Management

Yields from the second crop year of the mixture management trials were harvested at Ridgetown and Kemptville. The 1963 seedings at Guelph and Verner winterkilled during 1964-65. New trials were established at Guelph, Kemptville, Alfred and Fort William.

Three harvests were obtained prior to August 31 at Ridgetown, Guelph and Kemptville using the late bud system and two using the 25% bloom system. At Verner, Alfred and Fort William, two harvests were made using either system prior to August 31.

Mixtures - DuPuits-orchardgrass mixtures are lower in yield at Verner, Alfred and Fort William than the pure stands of DuPuits or the DuPuits + Saratoga mixture. These differences were not evident at the southern stations.

Management - At Ridgetown, Guelph and Verner, there was a higher yield obtained using the late bud system than the 25% bloom system. At Kemptville, Alfred and Fort William, higher yields were obtained using the 25% bloom system. The largest yield difference occurred between these two systems at Kemptville and were in the order of 15-2500 pounds in favor of the 25% bloom system.

Title: Hay-growth curves of alfalfa and trefoil, 1964. (Revised Feb. 1965)

Purpose: To determine the effect of locations on the growth, development, and digestibility of alfalfa and trefoil and to ascertain the role played by leafiness on the digestibility and protein levels of varieties of these species.

Procedure: 1. Species and Varieties

1. DuPuits alfalfa 10 lb./acre
2. Vernal alfalfa 10 lb./acre
3. Viking trefoil 8 lb./acre
4. Empire trefoil 8 lb./acre

2. Cutting Heights and Schedule

Cutter bars of the mowers used should be set so as to clip the forage not less than 2-2½ inches above ground.

Depending on location, harvesting should begin in the spring on one of the calendar dates shown below and continue for the next six consecutive dates. The criterion for determining the exact date in spring to begin the harvest will be that date when the vegetation is the closest to 3-4 inches high.

May 7	June 4	July 5
May 17	June 14	July 15
May 26	June 24	July 26

3. Plot Size and Design

Each replication is to consist of 7 individual plots (one for each cutting date) and be of a size of 5' x 20'. A split plot design will be used with species forming the main split and varieties receiving the most precision. Four replications shall be used.

4. Seedings, Stand and Duration

Trials are to be conducted on the first crop year of excellent stands only. New seedings are required for each of 3 years. Seed will be supplied by the Crop Science Department, O.A.C. Establishment should be made without a companion crop and sprayed with a mixture of 2,4-DB (18 oz./acre) + dowapon (5 lb./acre) in 30 gallons of water when the legumes are in the first true leaf stage. If the stand is low in vigor or plant stand, the test should not be conducted.

5. Soils and Fertility

Trials should be seeded on well drained "top producing alfalfa soils". Use 500 pounds of 0-20-20 fertilizer on establishment and an additional 500 pounds in the fall of the seedling year.

6. Samples for Digestion and Protein Analysis

Two samples are required from each plot at each harvest, each weighing approximately 250 grams of dry matter. One sample can be the per cent dry matter sample that is normally taken during the harvest and this one can be either chopped or long material. The second sample must be unchopped material as leaf will be separated from the stem. Both samples can be dried. When all samples have been collected they can be shipped to the coordinator by express.

7. Data and Data Processing

All yield will be calculated and analysis will be made by I.B.M. at the University of Guelph computer centre. Uniform field record sheets will be provided to facilitate this process. Columns are provided on the sheets for plot identification, green plot and green and dry sample weight. Space is allotted for the estimated botanical composition, stage of development and height of the legume. One copy of the data should be retained at each station and the second sent to the coordinator. Each trial must be identified by number and they are listed below:

<u>Location</u>	<u>Year of Seeding</u>			
	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>
Ridgetown	4911	4912	4913	
Guelph	4901	4902	4903	4904
Kemptville	4921	4922	4923	
Ottawa		4931	4932	4933
Verner	4941	4942	4943	
Fort William		4951	4952	4953
Kapuskasing		4961	4962	4963

8. Notes to be Taken

1. Height. The height of the legumes should be taken prior to each harvest.
 2. Botanical composition. The per cent legume, grass, and weeds should be recorded prior to each harvest.
 3. Date of spring growth. The date when growth begins should be recorded.
 4. Weather records. The maximum and minimum temperatures and rainfall should be obtained for the whole year.
 5. Stage of development. The stage of development of the legume should be recorded prior to each harvest. Use the numbered classification. Record the date of occurrence of early, medium, and late bud for each variety of each species.
9. All data and all dried samples should be shipped to the coordinator as soon as possible after the last date of harvest.

PROVINCIAL HAY GROWTH TRIAL - 1964

Ridgetown

1965 Harvest

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. per acre	% Leaf	Lbs. Leaf per acre	% D.D.M.	Lbs. D.D.M. per acre
<u>DUPUITS</u>							
May 7	11	21	1192	71.5	852	----	----
17	21	52	2787	57.3	1597	73.4	2046
27	22	79	4177	43.8	1830	69.2	2891
June 4	22	85	4681	46.2	2163	69.0	3230
14	31	99	6101	43.1	2630	67.0	4088
24	51	115	7263	37.7	2738	63.2	4590
July 5	51	115	6509	37.6	2447	61.3	3990
<u>VERNAL</u>							
May 7	11	17	829	79.7	661	----	----
17	21	44	2901	61.6	1787	72.4	2100
27	21	67	4283	46.4	1987	66.0	2827
June 4	22	75	4396	47.6	2093	68.8	3024
14	23	88	6100	41.3	2519	66.8	4075
24	42	110	6627	33.7	2233	63.8	4228
July 5	51	121	6165	36.1	2226	61.6	3798

PROVINCIAL HAY GROWTH TRIAL - 1963

Ridgetown

1964 Harvest

Date of harvest	Stage of harvest	Height cms.	Lbs. D.M. per acre	% Leaf	Lbs. leaf per acre	% D.D.M.	Lbs. D.D.M. per acre	% C.P.	Lbs. C.P. per acre
<u>DUPUITS</u>									
May 11	12	45	2147	59.3	1273	76.3	1690	26.6	571
21	21	62	3517	47.3	1664	72.7	2557	22.2	781
29	22	73	4168	45.8	1909	68.4	2851	18.6	775
June 9	23	84	5076	40.2	2041	63.2	3208	17.0	863
19	34	92	5555	38.3	2128	61.0	3388	15.6	867
29	51	113	6437	34.7	2234	56.6	3643	14.5	933
July 10	52	110	6296	33.9	2134	53.0	3337	13.7	863
<u>VERNAL</u>									
May 11	12	40	2154	62.3	1342	74.6	1607	26.8	577
21	21	58	3312	48.3	1600	70.8	2345	21.9	725
29	22	71	4641	43.2	2005	68.0	3156	18.9	877
June 9	23	82	5427	41.2	2236	62.0	3364	17.2	933
19	33	94	5624	36.7	2064	59.6	3351	16.2	911
29	51	117	6239	32.6	2044	56.8	3544	14.6	911
July 10	52	108	6132	30.7	1883	54.0	3311	13.7	840

PROVINCIAL HAY GROWTH TRIAL - 1963

O.A.C.

1964 Harvest

Date of harvest	Stage of harvest	Height cms.	Lbs. D.M. per acre	% Leaf	Lbs. Leaf per acre	% D.D.M.	Lbs. D.D.M. per acre	% C.P.	Lbs. C.P. per acre
<u>DUPUITS</u>									
May 5	12	17	808	79.5	642	72.7	587	32.6	263
19	12	51	2654	56.5	1500	74.9	1988	26.2	695
29	13	62	3512	47.8	1679	70.4	2472	21.2	745
June 8	22	70	4397	42.8	1882	67.2	2955	17.7	778
19	33	76	4860	38.7	1881	63.2	3071	16.3	792
July 1	41	85	4736	36.5	1729	58.2	2756	14.5	687
14	51	71	4711	34.3	1616	54.3	2558	15.3	721
<u>VERNAL</u>									
May 11	12	27	1716	74.6	1280	79.4	1362	31.0	532
22	13	47	2927	56.5	1654	74.9	2192	27.7	811
June 2	21	61	3964	49.6	1966	72.0	2854	20.1	797
16	23	68	4256	39.6	1685	64.9	2762	17.5	745
26	41	77	4880	38.1	1859	61.0	2977	15.8	771
July 7	42	88	5315	34.4	1828	57.9	3077	14.9	792
20	51	119	5009	29.2	1463	53.5	2678	14.6	731
<u>VIKING</u>									
May 12	11	16	634	91.6	581	78.7	499	30.6	194
26	22	38	3057	59.6	1822	73.8	2256	22.9	700
June 5	23	42	4097	56.6	2319	71.8	2942	18.0	737
16	42	42	4443	47.2	2097	64.4	2861	16.0	711
26	42	54	4442	43.2	1919	64.4	2860	15.6	693
July 7	51	62	5217	42.3	2207	62.3	3250	15.1	788
20	52	69	4686	43.5	2038	59.3	2779	13.3	623
<u>EMPIRE</u>									
May 19	12	20	917	70.7	648	78.2	717	26.8	246
29	13	35	2200	59.6	1311	73.8	1623	22.7	499
June 8	21	44	3673	46.7	1715	71.7	2633	18.7	687
19	23	47	4566	41.8	1909	66.5	3036	16.7	763
July 1	31	62	4854	41.4	2010	62.7	3043	15.8	767
14	51	74	5222	38.1	1990	57.6	3007	14.9	778
20	52	81	5449	37.1	2022	60.6	3302	15.6	850

PROVINCIAL HAY GROWTH TRIAL - 1963

Kemptville

1964 Harvest

Date of harvest	Stage of harvest	Height cms.	Lbs. D.M. per acre	% Leaf	Lbs. Leaf per acre	% D.D.M.	Lbs. D.D.M. per acre	% C.P.	Lbs. C.P. per acre
<u>DUPUITS</u>									
May 11	12	41	1648	70.1	1155	71.0	1170	26.6	438
21	21	56	2926	51.7	1513	73.2	2142	24.7	723
June 1	22	74	4010	45.2	1813	69.1	2771	20.8	834
10	31	89	4451	46.3	2061	65.9	2933	17.4	775
22	41	91	5576	36.3	2024	62.6	3490	15.6	870
July 6	42	97	5222	38.0	1984	56.7	2901	12.7	663
14	51	--	5238	38.2	2001	53.4	2797	14.3	749
<u>VERNAL</u>									
May 11	12	38	1830	72.5	1327	76.2	1394	30.2	553
21	13	53	3073	54.4	1672	74.2	2280	26.0	799
June 1	21	66	4293	49.2	2112	69.8	2996	20.9	897
10	23	81	4694	42.9	2014	66.1	3102	18.0	845
22	41	89	5465	38.9	2126	59.5	3252	14.5	792
July 6	42	97	5162	32.5	1678	56.2	2901	13.1	676
14	51	--	5371	37.7	2025	55.9	3002	13.0	698
<u>VIKING</u>									
May 11	21	20	512	85.6	438	72.6	372	29.8	153
21	22	33	515	71.5	368	73.4	378	24.2	125
June 1	23	43	3325	58.1	1932	68.4	2274	19.0	632
10	33	53	3859	54.2	2092	66.8	2578	18.6	718
22	42	64	4957	41.6	2062	64.4	3192	15.9	788
July 6	51	58	4191	40.3	1689	59.4	2489	13.1	549
14	52	--	4191	39.1	1639	58.7	2460	12.7	532
<u>EMPIRE</u>									
May 21	12	25	1287	78.6	1012	73.8	949	25.5	328
June 1	21	38	3260	62.8	2047	73.2	2386	24.8	808
10	22	53	3841	54.9	2109	68.6	2635	19.9	764
22	34	64	4957	39.8	1973	64.0	3172	17.8	882
July 6	42	74	4835	36.1	1745	60.5	2925	16.0	774
14	42	--	5429	34.2	1857	57.9	3143	15.5	842
24	51	--	4754	32.2	1531	53.1	2524	12.3	585

PROVINCIAL HAY GROWTH TRIAL - 1964

Ottawa

1965 Harvest

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. per acre	% Leaf	Lbs. Leaf per acre	% D.D.M.	Lbs. D.D.M. per acre
<u>DUPUITS</u>							
May 6	11	14	162	83.1	135	80.3	130
18	21	52	2424	58.7	1423	76.2	1847
28	22	80	3881	41.6	1615	69.8	2709
June 4	23	84	4243	39.9	1693	71.1	3017
15	32	88	4276	38.2	1633	67.9	2903
24	42	93	4197	31.6	1326	64.5	2707
July 5	52	90	3950	44.2	1746	65.5	2587
<u>VERNAL</u>							
May 6	11	13	158	84.1	133	81.1	128
18	21	42	2367	64.3	1522	77.9	1844
28	21	64	3879	44.7	1734	72.7	2820
June 4	22	71	5180	38.3	1984	72.4	3750
15	31	76	4788	37.2	1781	69.6	3332
24	42	77	4409	34.0	1499	64.3	2835
July 5	51	77	4285	24.6	1054	64.8	2777
<u>VIKING</u>							
May 18	22	21	729	83.8	611	77.1	562
28	31	39	1744	61.4	1071	72.4	1263
June 4	32	41	3116	55.2	1720	70.7	2203
15	42	46	2623	56.8	1490	69.7	1828
24	52	48	3075	48.5	1491	69.5	2137
July 5	53	46	3306	47.4	1567	71.8	2374
14	53	46	3320	48.9	1623	68.8	2284
<u>EMPIRE</u>							
May 18	13	18	273	90.4	247	81.6	223
28	21	36	1737	63.5	1103	76.8	1334
June 4	22	42	2771	54.3	1505	76.7	2125
15	32	50	3570	46.9	1674	73.6	2628
24	42	55	3904	48.1	1878	72.3	2823
July 5	52	48	3912	44.0	1721	69.1	2703
14	53	49	4978	43.2	2151	67.8	3375

PROVINCIAL HAY GROWTH TRIAL - 1964

Verner

1965 Harvest

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. per acre	% Leaf	Lbs. Leaf per acre	% D.D.M.	Lbs. D.D.M. per acre
<u>DUPUITS</u>							
May 26	13	26	859	60.8	522	79.9	686
June 4	22	40	1566	57.2	896	76.3	1195
14	23	57	2556	44.8	1145	69.1	1766
24	31	66	3095	34.5	1068	64.2	1987
July 5	34	65	3527	32.5	1146	62.5	2204
14	42	66	3992	30.8	1230	61.6	2459
24	51	66	3750	33.1	1241	57.6	2160
<u>VERNAL</u>							
May 26	13	24	1546	63.0	974	80.0	1237
June 4	21	39	2275	48.8	1110	77.4	1761
14	23	59	3325	38.8	1290	68.5	2278
24	32	70	4104	35.5	1457	63.7	2614
July 5	34	68	4271	30.4	1298	63.1	2695
14	42	67	4503	27.4	1234	60.6	2729
24	51	64	3981	21.6	860	57.7	2297
<u>VIKING</u>							
May 26	22	15	1290	70.4	908	75.3	971
June 4	23	27	953	68.2	650	75.1	716
14	31	34	1747	59.9	1046	71.4	1247
24	42	47	2769	41.7	1155	66.6	1844
July 5	51	46	3196	34.2	1093	65.3	2087
14	52	43	3277	33.9	1111	60.8	1992
24	52	41	3583	41.9	1501	62.2	2229
<u>EMPIRE</u>							
May 26	12	11	495	71.5	354	81.9	405
June 4	21	18	656	63.2	415	80.9	531
14	23	28	1335	54.6	729	77.4	1033
24	32	44	2473	47.1	1165	69.7	1724
July 5	41	46	3201	42.3	1354	64.3	2058
24	51	50	4699	31.4	1475	60.7	2852

PROVINCIAL HAY GROWTH TRIAL - 1963

Verner

1964 Harvest

Date of harvest	Stage of harvest	Height cms.	Lbs. D.M. per acre	% Leaf	Lbs. Leaf per acre	% D.D.M.	Lbs. D.D.M. per acre	% C.P.	Lbs. C.P. per acre
<u>DUPUITS</u>									
May 20	12	41.8	1788	65.4	1169	77.0	1377	26.7	477
30	13	55.3	3093	54.3	1680	72.1	2230	21.4	662
June 9	21	63.0	4208	47.6	2003	68.0	2861	18.2	766
19	23	74.0	4882	46.3	2260	66.4	3242	17.6	859
29	41	93.0	5848	43.9	2567	58.6	3427	15.1	883
July 9	42	89.0	6383	41.6	2655	58.2	3715	14.2	906
18	51	86.0	6175	37.1	2291	55.3	3414	14.1	871
<u>VERNAL</u>									
May 20	12	39.0	2154	67.7	1458	78.4	1689	27.9	601
30	13	50.0	3597	58.0	2086	74.7	2687	21.8	784
June 9	21	59.0	4658	49.5	2306	69.7	3247	18.5	862
19	23	67.0	5982	46.0	2751	67.0	4010	17.6	1053
29	41	81.0	6508	41.8	2720	59.6	3279	16.0	1041
July 9	42	85.0	6892	39.1	2695	58.8	4052	14.4	992
18	51	84.0	6951	35.7	2482	55.8	3879	14.1	980
<u>VIKING</u>									
May 20	21	19.0	1066	87.5	933	79.6	848	25.3	270
30	22	31.0	2301	72.9	1677	76.9	1869	20.2	465
June 9	23	34.0	3283	61.6	2022	72.2	2390	16.5	542
19	41	42.0	4103	56.0	2298	70.0	2872	14.9	611
29	51	52.0	4706	50.4	2372	63.3	2979	13.4	631
July 9	52	55.0	5279	42.1	2223	62.9	3320	12.1	639
18	53	54.0	5559	40.6	2257	62.3	3463	11.6	645
<u>EMPIRE</u>									
May 30	21	24.0	1259	76.1	958	81.6	1027	24.1	303
June 9	22	27.0	2208	65.6	1448	76.8	1696	19.5	431
19	23	35.0	3155	56.5	1783	73.5	2319	16.6	524
29	41	51.0	4477	51.4	2301	64.6	2892	15.2	681
July 9	42	55.0	5174	44.0	2277	61.9	3203	12.3	636
18	51	59.0	5764	37.3	2150	60.5	3487	12.0	692
29	52	55.0	5870	36.8	2160	58.4	3428	11.1	652

PROVINCIAL HAY GROWTH TRIAL - 1964

Alfred

1965 Harvest

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. per acre	% Leaf	Lbs. Leaf per acre	% D.D.M.	Lbs. D.D.M. per acre
--------------------	---------------------	----------------	-----------------------	-----------	-----------------------	-------------	-------------------------

DUPUITS

May 20	12	19	310	66.7	207	76.8	238
31	22	36	911	61.3	558	72.8	663
June 9	31	49	1679	55.2	927	70.9	1190
18	32	59	2365	----	----	----	----
28	34	73	2973	45.3	1347	62.7	1864
July 8	51	76	3743	37.6	1407	60.5	2265
19	52	81	4053	38.6	1564	60.2	2440

VERNAL

May 20	12	20	567	70.0	397	77.6	440
31	22	33	1241	62.8	779	75.1	932
June 9	31	46	1828	56.8	1038	71.5	1307
18	32	57	2438	----	----	----	----
28	41	67	3318	48.5	1609	63.5	2107
July 8	42	72	4077	40.2	1639	63.2	2577
19	51	75	3994	39.1	1562	61.3	2448

PROVINCIAL HAY GROWTH TRIAL - 1964

Fort William

1965 Harvest

Date of harvest	Stage at harvest	Height cms.	Lbs. D.M. per acre	% Leaf	Lbs. Leaf per acre	% D.D.M.	Lbs. D.D.M. per acre
--------------------	---------------------	----------------	-----------------------	-----------	-----------------------	-------------	-------------------------

DUPUITS

June 4	12	NO DATA	657	61.3	403	74.3	488
14	21		1368	53.3	729	73.2	1001
24	23		1768	46.0	813	67.1	1186
July 5	31		2326	45.6	1061	62.7	1458
15	31		2311	39.4	911	57.1	1320
26	32		2541	34.4	874	54.4	1382
Aug. 6	33		2099	35.7	749	52.4	1100

VERNAL

June 4	12	734	59.8	439	75.4	553
14	13	1369	52.0	712	72.6	994
24	23	1936	45.9	889	67.1	1299
July 5	31	2606	37.3	972	62.0	1616
15	31	3075	38.7	1190	59.9	1842
26	32	2972	34.1	1014	57.3	1703
Aug. 6	33	2369	35.3	836	54.2	1284

VIKING

June 14	23	1443	60.4	872	74.3	1072
24	34	2370	55.5	1315	69.0	1635
July 5	41	3716	48.6	1806	66.3	2464
15	52	4461	41.9	1869	62.7	2797
26	52	4551	38.3	1743	63.6	2894
Aug. 6	52	4539	38.0	1725	60.9	2764
16	53	5115	43.8	2240	62.0	3171

EMPIRE

June 14	21	1221	61.0	745	74.3	907
24	23	2182	53.6	1170	69.4	1514
July 5	32	3603	46.3	1668	65.1	2346
15	51	4484	41.3	1852	62.5	2803
26	51	4863	35.8	1741	62.7	3049
Aug. 6	51	5361	30.6	1640	59.6	3195
16	52	6126	38.5	2359	59.6	3651

Title: Cutting management systems for alfalfa mixtures.

Purpose: To determine the effect of location on the total season yield, the distribution of production throughout the year, the yield, digestibility and persistence of pure stands of alfalfa and alfalfa-grass mixtures when harvested under two different harvesting schedules.

Procedure: 1. Design and Plot Size

A split-split plot design will be used. Cutting schedules will form the major split and alfalfa varieties the second. Four replications with plots of 5' x 20' will be used.

2. Cutting Height Schedules

Mowers should be set so as to cut the vegetation at 2-2½ inches above ground level. Two maturity groups of mixtures are used: 1) DuPuits and 2) Vernal. The mixtures within any one group should be harvested when the pure stand of alfalfa in each maturity group reaches the designated stage of development for cutting.

1. Late bud stage (appearance of the first flower on alfalfa plots. Two or three harvests can be obtained prior to the first fall frost depending upon location.

2. 25% bloom (when 25% of the stems in the plot have at least one flower). Two harvests can be obtained prior to the first fall frost

Regrowth of forage after the last harvest from each of the above cutting schedules should be left until growth has ceased and fall dormancy has set in. The residue on all plots should be harvested leaving a 3 inch stubble. This will occur in October in Southern Ontario and earlier (late September or early October) in Northern Ontario.

3. Mixtures

1. DuPuits 10 lbs.
2. DuPuits 10 lbs. + Saratoga 10 lbs.
3. DuPuits 10 lbs. + Frode 8 lbs.
4. Vernal 10 lbs.
5. Vernal 10 lbs. + Saratoga 10 lbs.
6. Vernal 10 lbs. + Climax 6 lbs.

4. Seed and Duration of Trials

Seed will be supplied by the Crop Science Department for plots 5' x 20'. Each station should complete three consecutive years of harvest on each stand. The four replicated trials should be used.

5. Soils and Fertility

Trials should be seeded only in well drained "top producing alfalfa soils" under levels of high fertility. A composite soil sample should be removed from the test area before establishment and in the fall of the seeding year and each fall thereafter. These samples should be sent in to the coordinator for processing.

Establishment

Use 500 pounds of 0-20-20 fertilizer on establishment and a further 500 pounds in the fall of the seeding year.

Maintenance

Maintenance applications of fertilizer will be required each spring. The specific fertilizer requirement for each test will be determined on the basis of soil analysis.

6. Weed Control and Establishment

Establishment

No companion should be used when establishing this test. The test should be sprayed with 18 ounces of 2,4-DB in 30 gallons of water per acre when the alfalfa is $1\frac{1}{2}$ to 2 inches tall.

Maintenance

Little or no weed control should be needed due to the fertility levels used. If a few weeds are visible they should be spuded out of the stand. If the weeds become a major problem, apply 2,4-DB at 18 ounces per acre in September but not during the growing season.

7. Sampling

One sample is required from each plot at each harvest date for the duration of the trial for digestibility and protein analysis. The sample taken for the purpose of the determination of per cent dry matter can be used for this purpose. Make certain that the amount of dry matter is about 500 grams.

8. Data and Data Processing

All yield and per cent composition calculations and analysis will be made by I.B.M. at the University of Guelph computer centre.

Field record sheets will be provided. Columns are provided on these sheets for plot identification, green plot and green and dry sample weight. In addition, space is allocated for the estimated per cent composition of the mixture, stage of development of the grass and legume and height of the legume. These data should be taken from each plot at each harvest date. One copy of these data should be retained by each cooperator. Another copy should be sent to the coordinator.

Experiment numbers are listed below.

Ridgetown	4893	Verner	4897
Guelph	4892	Fort William	4898
Kemptville	4895	Kapuskasing	4899
Ottawa	4896		

9. Notes to be Taken

1. Height. The height of alfalfa in centimeters should be taken prior to harvest. The average height of stems from five locations within each plot is adequate.
 2. Botanical composition. The per cent legume, grass and weed should be estimated for each plot.
 3. Plant stand counts of alfalfa. Alfalfa plant counts should be taken in the spring (May) and October of each crop year. Two counts each of one square foot per plot are adequate. These data can be recorded on the space allowed on the field record sheets.
 4. Stage of development. The stage of development of the legume and the grass in each plot should be recorded prior to each harvest. Use the numbered classification.
10. Data and samples should be sent to the coordinator after the last harvest of each year.

PROVINCIAL ALFALFA MIXTURE MANAGEMENT TRIALS

Yields of dry matter per acre

Mixture	Stage of harvest	Total Season Yield									Average
		Ridgetown		Guelph	Kemptonville			Verner	Alfred	Fort William	
		1964	1965	1964	1964	1965	1965	1964	1965	1965	
DuPuits	Late bud	11367	10197	10740	8871	7132	8757	9878	4866	4287	8366
+ Saratoga		11880	9227	11033	9711	9209	9185	9624	5416	4518	8879
+ Frode		11797	10075	11235	8725	8311	6986	8893	4835	2375	8137
Average		11681	9833	11003	9103	8217	7909	9465	5039	3727	
DuPuits	25%	10421	9071	11242	10720	10112	10271	9298	6164	4716	9112
+ Saratoga		11047	8977	12211	11571	11063	11387	9395	6829	4301	9642
+ Frode		11243	9153	12060	11571	11446	10117	8737	5616	2780	9091
Average		10904	9067	11837	11267	10907	10558	9143	6203	3999	
Vernal	Late bud	10353	8147	11367	8126	9205	9483	9913	5805	4594	8566
+ Saratoga		10921	8622	10308	7925	10265	9550	9761	6264	3837	8606
+ Climax		11311	9028	11301	8820	9846	9048	9589	6035	4203	8766
Average		10862	8599	10992	8290	9772	9360	9754	6034	4151	
Vernal	25%	10619	8126	10721	9689	11995	10543	9511	6857	5352	9712
+ Saratoga		11024	8074	11408	12033	13078	11036	9078	7372	5409	9834
+ Climax		10745	7644	10976	10385	11766	10944	9230	7656	4912	9362
Average		10796	7948	11035	10702	12279	10841	9273	7262	5224	

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 September 1		Season Total	
		1		2		3		Total		1964	1965	1964	1965
		1964	1965	1964	1965	1964	1965	1964	1965				
DuPuits alone	Late bud	5380	5265	3006	3266	1174	1666	9560	10197	1807		11367	10197
+ Saratoga		6075	5265	2723	2693	1211	1269	10009	9227	1871		11880	9227
+ Frode		5909	5545	2919	3005	1162	1525	9990	10075	1806		11796	10075
DuPuits alone	25% bloom	6087	5922	2338	2225			8424	8147	1996	1024	10421	9071
+ Saratoga		6973	6034	2102	1952			9075	7986	1972	991	11047	8977
+ Frode		6405	6034	2670	2101			9075	8135	2168	1018	11243	9153
Vernal alone	Late bud	5075	5265	2677	2121	916	761	8667	8147	1686		10353	8147
+ Saratoga		6568	5062	2215	2368	805	1190	9588	8622	1332		10921	8622
+ Climax		6064	5498	2642	2181	962	1349	9668	9028	1643		11311	9028
Vernal alone	25% bloom	6434	6260	2276	1866			8710	8126	1909		10619	8126
+ Saratoga		7334	6108	1962	1966			9296	8074	1728		11024	8074
+ Climax		6280	6057	2358	1587			8638	7644	2007		10745	7644

Date of harvest

DuPuits	Late bud	6/9	6/4	7/15	7/12	8/26	8/26
"	25% bloom	6/23	6/11	7/29	7/16		
Vernal	Late bud	6/9	6/7	7/15	7/12	8/26	8/26
"	25% bloom	6/23	6/17	7/29	7/20		

10/19 9/9

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, 1963

Location: Kemptville

Yields of dry matter per acre

Years of harvest: 1964
1965

Mixture	Stage	Harvests prior to August 31								Harvest after September 1		Season Total		% harvest prior to September	
		1		2		3		Total		1964	1965	1964	1965	1964	1965
		1964	1965	1964	1965	1964	1965	1964	1965						
DuPuits alone	Late bud	3433	2584	1459	1833	2338	1622	7230	6039	1641	1093	8871	7132	81	85
+ Saratoga		4407	3672	1207	2477	2265	1607	7879	7756	1832	1453	9711	9209	81	84
- Frode		3694	2972	1162	2111	2151	1670	7007	6753	1718	1558	8725	8311	80	81
DuPuits alone	25% bloom	5476	5232	3175	2534			8651	7766	2069	2346	10720	10112	80	77
+ Saratoga		7381	6096	2389	2323			9770	8419	1989	2644	11571	11063	84	76
+ Frode		6425	5922	2701	2791			9126	8713	2445	2733	11571	11446	78	76
Vernal alone	Late bud	3748	3541	1145	2940	2192		7085	6481	1041	2724	8126	9205	87	70
+ Saratoga		4357	4444	854	2981	1721		6933	7425	992	2840	7925	10265	87	72
+ Climax		3512	3805	1043	3137	1920		6475	6942	1345	2904	8820	9846	73	71
Vernal alone	25% bloom	5571	6114	2485	3336			8056	9450	1633	2545	9689	11995	83	79
+ Saratoga		7817	6644	2258	3633			10075	10277	1958	2801	12033	13078	83	79
+ Climax		6397	5556	2280	3456			8677	9012	1708	2745	10385	11766	83	77

Dates of harvest

DuPuits	Late bud	6/12	6/6	7/7	7/13	8/19	8/16	10/15	10/14
"	25% bloom	6/19	6/22	7/22	7/22			10/15	10/17
Vernal	Late bud	6/12	6/6	7/7	7/19	8/19		10/15	8/8
"	25% bloom	6/19	6/22	7/22	8/4			10/15	10/7

PROVINCIAL ALFALFA MIXTURE-MANAGEMENT TRIAL, 1964

Location: Kemptville

Yields of dry matter per acre

Year of harvest: 1965

Mixture	Designated stage of development at each harvest	Harvests prior to August 31				Harvest after Sept. 1	Season Total	% Harvest prior to September
		1	2	3	Total			
DuPuits alone	Late bud	3073 (6/7)	2038 (7/13)	2087 (8/16)	7198	1559 (10/14)	8757	82
+ Saratoga		3922	1724	1944	7590	1605	9195	83
+ Frode		2514	1558	1590	5662	1724	6986	81
DuPuits alone	25% bloom	4982 (6/22)	2881 (7/29)		7863	2408 (10/7)	10271	77
+ Saratoga		6090	2540		8630	2757	11387	76
+ Frode		4595	2444		7039	3079	10117	70
Vernal alone	Late bud	3703 (6/7)	3081 (7/22)		6784	2699 (9/6)	9483	72
+ Saratoga		4175	2599		6774	2776	9550	71
+ Climax		3883	2553		6436	2632	9048	71
Vernal alone	25% bloom	4933 (6/22)	2080 (8/4)		8013	2530 (10/7)	10543	76
+ Saratoga		6308	2441		8749	2287	11036	79
+ Climax		5538	2841		8379	2565	10944	77

PROVINCIAL ALFALFA MIXTURE-MANAGEMENT TRIAL

Location: Verner

Yields of dry matter per acre

Year of harvest: 1964

Mixture	Designated stage of Development for each Harvest	Harvests Prior to Aug. 31			Total	Harvest After Sept. 1	Season Total
		1	2	3			
DuPuits alone	Late bud	5358 (6/23)	2603 (7/29)		7961	1917 (9/30)	9878
DuPuits + Saratoga		6056	1858		7914	1710	9624
DuPuits + Frode		4868	2208		7076	1817	8893
DuPuits alone	25% bloom	5018 (6/26)	2359 (8/5)		7377	1921 (9/30)	9298
DuPuits + Saratoga		5832	1834		7666	1729	9395
DuPuits + Frode		4885	2043		6928	1809	8737
Vernal alone	Late bud	5906 (6/23)	2465 (7/29)		8371	1542 (9/30)	9913
Vernal + Saratoga		7129	1538		8667	1094	9761
Vernal + Climax		5993	2138		8131	1458	9589
Vernal alone	25% bloom	5717 (6/26)	2319 (8/5)		8036	1475 (9/30)	9511
Vernal + Saratoga		6738	1386		8124	954	9078
Vernal + Climax		5780	2052		7832	1398	9230

PROVINCIAL ALFALFA MIXTURE-MANAGEMENT TRIAL

Location: Alfred

Yields of dry matter per acre

Year of harvest: 1965

Mixture	Designated stage of development for each harvest	Harvests prior to August 31				Harvest after September 1	Season Total
		1	2	3	Total		
DuPuits alone	Late bud	2212 (6/14)	2654 (7/22)	----	4866	----	4866
+ Saratoga		3049	2367	----	5416	----	5416
+ Frode		2429	2406	----	4835	----	4835
DuPuits alone	25% bloom	3151 (6/28)	3013	----	6164	----	6164
+ Saratoga		4009	2820	----	6829	----	6829
+ Frode		2948	2668	----	5616	----	5616
Vernal alone	Late bud	2729 (6/16)	3076 (7/30)	----	5805	----	5805
+ Saratoga		3735	2529	----	6264	----	6264
+ Climax		3643	2392	----	6035	----	6035
Vernal alone	25% bloom	3549 (6/28)	3308 (8/16)	----	6857	----	6857
+ Saratoga		4418	2954	----	7372	----	7372
+ Climax		4822	2844	----	7656	----	7656

PROVINCIAL ALFALFA MIXTURE-MANAGEMENT TRIAL, 1964

Location: Fort William

Yields of dry matter per acre

Year of harvest: 1965

Mixture	Designated stage of development for each harvest	Harvests prior to August 31			Season Total
		1	2	3	
DuPuits alone	Late bud	2934 (6/25)	1353 (8/23)		4287
+ Saratoga		3413	1105		4518
+ Frode		1514	861		2375
DuPuits alone	25% bloom	3168 (7/5)	1548 (8/31)		4716
+ Saratoga		3170	1132		4302
+ Frode		1885	897		2782
Vernal alone	Late bud	3048 (6/25)	1546 (8/23)		4594
+ Saratoga		2887	951		3838
+ Climax		2981	1042		4023
Vernal alone	25% bloom	3882 (7/5)	1470 (8/31)		5352
+ Saratoga		4336	1074		5410
+ Climax		3884	1028		4912

Stage of Development of Legumes

L-1

The growth and development of legumes has been divided into five major stages. These stages have been numbered consecutively. Each major stage has been divided into two or more sub stages and is defined. If more refinement is required more sub stages can be added if they are adequately described.

The recording of a stage requires the use of a two digit number; for example, early bud in legumes = 21; 2 = bud, 1 = early.

This system of classification requires that 50 per cent of the stems in each plot must be in the stage so described.

Major Stages

Sub Stages

1. Vegetative

1. Early - 4 - 6" tall
2. Medium - over 6" tall (before any buds are detectable)
3. Late - Pre bud (a few stems may be in early bud stage)

2. Bud

1. Early - buds minute, and may be felt as an enlargement in apex of stem
2. Medium - buds well formed and visible
3. Late - buds visible, swollen, and earliest buds showing some colour at tips

3. Flower

1. 10% Bloom
2. 25% Bloom
3. 50% Bloom
4. 75% Bloom

4. Full Flower

1. 100% Bloom
2. Flowers dying

5. Seed

1. Early - green seed pods
2. Medium - seed in dough stage
3. Mature - seed mature

Stages of Development of Grasses

L-2

The growth and development of grasses have been divided into five major stages. These stages have been numbered consecutively. Each major stage has been divided into two or more sub stages and is defined. If more refinement is required more sub stages can be added if they are adequately described.

The recording of a stage requires the use of a two digit number; for example, early bud in legumes = 21; 2 = bud, 1 = early.

This system of classification requires that 50 per cent of the stems in each plot must be in the stage so designated.

Major Stages

Sub Stages

1. Vegetative

1. Growing point below 2 inches

2. Jointing

1. Early - growing point above 2 inches

2. Medium - Inflorescence midway up stem

3. Late - Inflorescence fully formed and in the boot

3. Heads Emerged

1. Heads emerging from boot

2. Heads completely out of boot and stems elongating

4. Anthesis

1. Early - some anthers visible

2. Medium - anthers visible over entire head

3. Late - a few empty anthers remaining

5. Seed

1. Early - early seed formation

2. Medium - seed fully formed but doughy

3. Mature - dry viable seed.