

NEW YORK FORAGE LEGUME AND GRASS VARIETY YIELD TRIALS

SUMMARY FOR 2006

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Forage yield trials are planted and harvested annually at Cornell University. Funding for these trials is provided by the companies that submit the varieties/cultivars in the trials, from Cornell University College of Agriculture and Life Sciences, and from Northern New York Agricultural Development Program. Trials are managed for four years; seeding year and three production years.

2006 Growing Season. (Figures 1, 2 and 3) For the state, spring 2006 was slightly warmer and drier than normal (+0.9 degrees F, -1.61 inches precipitation). On the heels of a dry season in 2005 (very dry in the Fingerlakes Region), 2006 will be remembered for the record setting precipitation the state had (16.86 inches in June, July and August; 5.19 inches above average). Many areas of South Central New York saw record flooding at the end of June. We did not lose any forage trials from flooding, however the newly seeded trial at Cobleskill was not far from the overflow of the West Creek.

Alfalfa yields for 2006 averaged 4.74 tons per acre dry matter (0.16 tons more than in 2005), red clover yields averaged 4.46 tons per acre dry matter (0.89 tons more than in 2005), and perennial forage grass yields averaged 5.31 tons per acre dry matter (1.67 tons more than in 2005).

Forage plant root systems were stressed this growing season from the wet soil conditions that result in loss of roots from rotting and also increased wheel traffic damage to plants.

Cultivar/Variety Selection

Plant breeders continue to develop new and improved cultivars. Cultivars are continually released and were selected for improved agronomic characteristics such as yield, disease and insect resistance, forage quality, etc. Seed cost of improved cultivars can be greater than for other cultivars, but this cost is generally

offset when there is improved performance at each harvest over the life of the stand.

In each New York trial, there is not one best cultivar, but rather a group of top-yielding cultivars. Cultivar performance should be critically evaluated by comparing yield with other cultivars in two or more trials that are in the second or later year of production.

Alfalfa (Tables 1 and 2) cultivars for New York are recommended to have resistance (R) or high resistance (HR) to four diseases (bacterial wilt, Verticillium wilt, anthracnose, Phytophthora root rot) and fall dormancy rating should be 2, 3, or 4. Cultivars with higher fall dormancy ratings will go dormant later in the fall. Cultivars with fall dormancy ratings higher than 4 may have unacceptable winter-hardiness for New York, particularly in Northern New York. The trials in Perry and Cobleskill were harvested four times during the growing season. The remaining trials were harvested three times. A limited number of potato leafhopper (PLH) resistant alfalfa cultivars are available for producers to plant. These cultivars are tested in trials that are not sprayed with insecticide.

Red Clover (Table 3) is generally a two-production year crop in New York, and is an excellent forage legume for short-rotation fields and for frost-seeding into established stands. For the comparison of varieties, trials of red clover will be harvested in the third production year if the plants in the trial do not severely winterkill after the second production year.

Birdsfoot Trefoil (Table 3) is a legume that tolerates soils that alfalfa will not be productive on. Birdsfoot trefoil should always be planted in combination with other forages like perennial grasses. Also, birdsfoot trefoil does not tolerate low cutting heights, so it is advisable to leave 5+ inches of stubble in the field.

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Grass yield (Table 4) trials were fertilized with 200 lb/A ammonium nitrate in early April and after first, second, and third harvests. Forage grass trials are harvested four times between May 20th and October 10th. Grass yields by species for 2006 are listed in the summary table. Also listed is a visual estimate of percent stand and heading date. Heading date is the calendar date when about 5 heads per plot were visible. Use percent stand, heading date and yield to select grass varieties that fit your management program.

Grass forage quality estimates from 2005 for the trials planted in 2003 are presented in **Table 5**. Grass forage quality estimates from 2005 for trials planted in 2004 are presented in **Table 6**. Forage quality estimates from 2006 for trials planted in 2004 and 2005 will be available on our web site later in the winter.

We express appreciation to all of our cooperators in allowing us to plant field plot trials of forages on their farms, and to our employees for their hard work in harvesting and maintaining field plots.

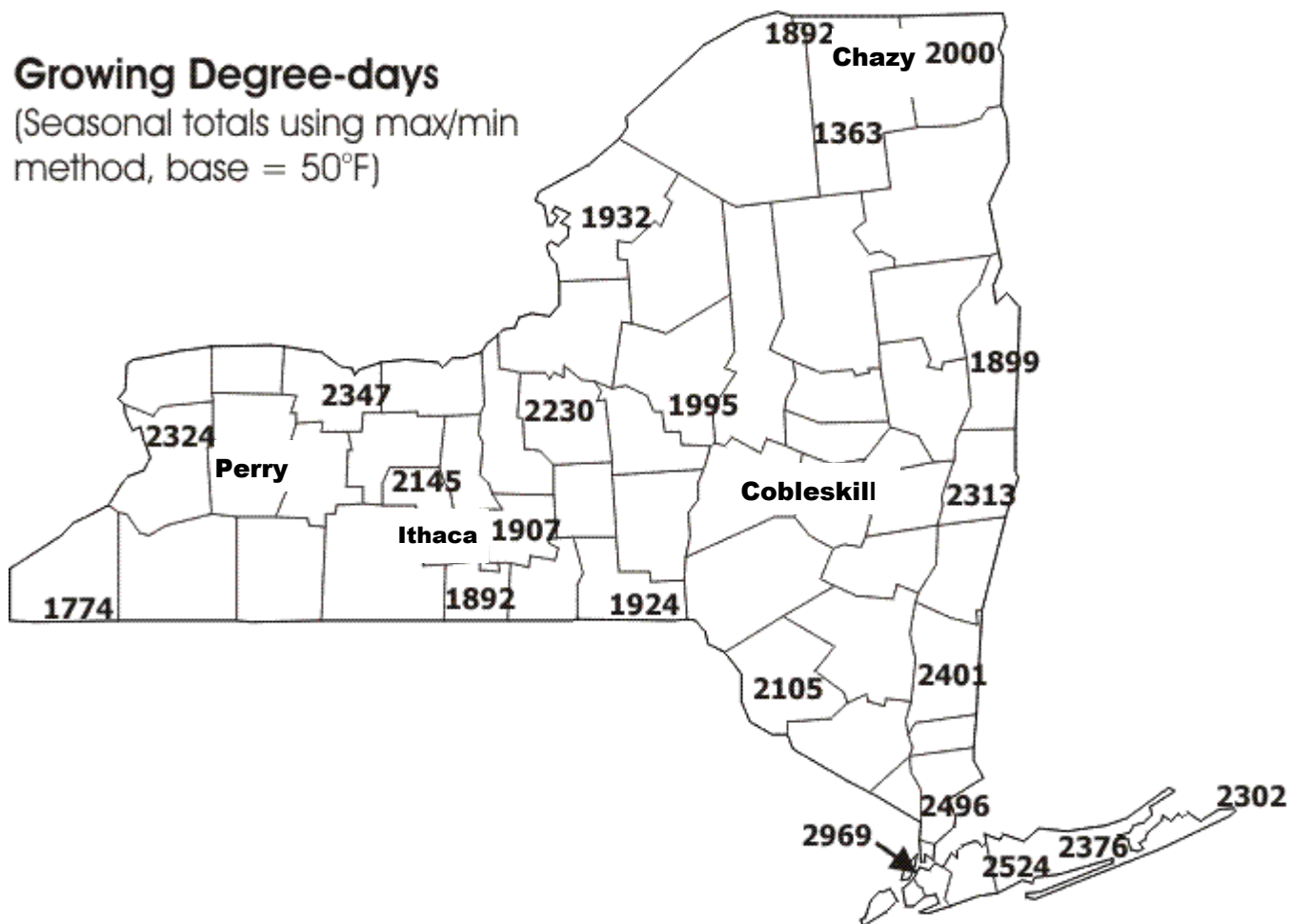


Figure 1: 2006 NYS Growing Degree Day and Trial Location Map.

Map by Dr. Paul Weston, Cornell University

<http://www.entomology.cornell.edu/Extension/Woodys/GDDtracker.htm>

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Table 1: New York Alfalfa Cultivar Yield Trial Results - 2006 Forage Yields

T/A = tons per acre dry matter; 5%LSD = to claim statistically significant yield differences between two cultivars, the yield difference must be equal to or greater than the LSD. CV = A statistical representation of the precision of a trial. Lower is better.

Summary of Alfalfa Cultivar Performance in 2006 Ithaca, Tompkins County, Sown April 29, 2003

Cultivar	Yielded in the		Total No. of Trials Tested	2006 Total Season	3-Yr	
	Avg. % of Cks.	No. of Trials			Total	% of Cks.
361 HY	104	1	2	- tons per acre dry matter -		
420	108	1	2	4A421	4.08	13.19
4A421	108	3	4	54V46	4.14	13.16
4S419	110	2	2	6415	3.92	13.06
54Q25	108	2	2	DKA33-16	3.98	12.99
54V46	112	4	4	FSG 505	3.97	12.90
6415	111	4	4	420	4.04	12.87
Baralfa 32IQ	109	2	2	FSG 351	4.09	12.72
Baralfa53 HR	108	1	1	Evermore	3.97	12.63
BPR 387	106	2	2	54Q25	4.06	12.59
Dakota	107	2	2	HybriForce-420/Wet	3.97	12.52
DKA33-16	109	2	2	Dakota	3.95	12.49
DKA42-15	117	2	2	FSG 406	3.88	12.48
Evermore	106	1	2	4375LH	3.85	12.41
FSG 351	108	2	2	5312 (check)	4.07	12.37
FSG 408DP	112	2	2	Oneida VR (check)	3.94	12.32
FSG 505	108	2	2	Oneida Ultra	3.77	12.09
Genoa	113	4	4	WL 346LH	3.66	12.06
Guardman II	107	2	4	Everlast	3.80	12.02
Hybri-Force 400	107	1	1	6400HT	3.85	12.02
HybriForce-420/Wet	109	3	4	Power 4.2	3.68	11.99
HYTEST 410	108	1	1	54H91	3.63	11.50
LegenDairy 5.0	114	1	2	Vernal (check)	3.71	11.03
Lightning EXTRA	116	2	2			
Milestone	105	1	2	Trial Mean (T/A)	3.92	12.4
NOVA	109	1	2	5% LSD	0.24	0.62
Paramount II	114	1	1	CV(%)	4.9	4.0
Prolific	106	2	2			
Rebound 5.0	114	2	2			
WL 335HQ	111	1	2			
WL 348AP	111	1	3			
WL 357 HQ	115	2	2			

*Data from production year trials only, not from trials sown in 2006. Cks. = Check Cultivars are Oneida VR, Pioneer 5312, Vernal.

Trial	Soil series, elevation, # of harvests
Ithaca, 2003, Page 3	Erie channery silt loam, 960 ft, 3 harvests
Chazy, 2004, Page 3	Raynham variant silt loam, 185 ft., 3 harvests
Ithaca, 2004, Page 4	Madalin silt loam, 990 ft, 3 harvests
Parry, 2004, Page 4	Conesus gravelly silt loam, 1050 ft., 4 har.
Ithaca, 2005, Page 4	Williamson silt loam, 1000 ft., 2 har.
Chazy, 2005, Page 4	Raynham variant silt loam, 185 ft., 3 harvests
Ithaca, 2006, Page 5	Williamson silt loam, 1000 ft., 2 har.
Cobleskill, 2006 Pg.5	Barbour Tioga fine sandy loam, 1170 ft., 2 har.

Many Thanks to our Cooperators:

Dan VanVleet	Cornell University Farm Manager
Tim Dodge	Cornell Univ. Field Technician
Steve Lis	Cornell Univ. Field Technician
John Conklin	Cornell Univ. Mechanic
Dr. Jerry Cherney	Cornell Univ. Forage Agronomist, Professor
Dr. Mike Davis	Cornell Univ. Farm Manager at Chazy
Del Meseck	Cornell Univ. Field Assistant at Chazy
Ev Thomas	Miner Institute at Chazy, NY, Vice President
J. Keith Waldron	NYSES Integrated Pest Management
Ken Wise	Area IPM Educator
Julie Dennis	Area IPM Educator
Dr. Tom Poltynski	SUNY Cobleskill, Farm Coordinator
Kenny Smith	SUNY Cobleskill, Temp. Farm Manager
Bruce Tillapaugh	Wyoming County Cooperative Extension
Mike Dueppengiesser	Dairy Producer in Wyoming Co.

Many Thanks to our Summer and Seasonal Employees:

John Shiffer, Jason Schiller, Robyn Ellerbrock, Will Ewart, Aaron Shiber-Knowles, Gordon Szebenyi, Matt Applegate, Akshay Shekhar, Brian Stafford.

Chazy, Clinton County, Sown May 13, 2004

Replant of winterkilled trials planted in 2002,2003

Cultivar	2006		2-Yr.	
	Total Season	Total	Total	% of Cks.
	- tons per acre dry matter -			
54V46	4.04	7.91	117	
Paramount II	4.02	7.66	114	
6415	3.96	7.46	111	
FSG 351	3.77	7.41	110	
54Q25	3.82	7.40	110	
DKA33-16	4.01	7.33	109	
Baralfa53 HR	3.79	7.31	108	
Dakota	3.81	7.30	108	
FSG 505	3.73	7.30	108	
HYTEST 410	3.80	7.30	108	
4A421	3.79	7.26	108	
Guardman II	3.77	7.19	107	
Hybri-Force 400	3.60	7.19	107	
Power 4.2	3.72	7.16	106	
420	3.71	7.12	106	
HybriForce-420/Wet	3.72	7.11	105	
FSG 406	3.79	7.10	105	
Everlast	3.68	7.09	105	
WL 319 HQ	3.67	6.91	102	
Evermore	3.65	6.90	102	
Oneida VR (check)	3.52	6.88	102	
Vernal (check)	3.48	6.88	102	
54H91	3.52	6.79	101	
6400HT	3.56	6.73	100	
5312 (check)	3.45	6.46	96	
				Ck. Mean
Trial Mean (T/A)	3.72	7.13	6.74	
5% LSD	0.30	0.59		
CV(%)	7.0	7.2		

Ithaca, Tompkins County, Sown May 12, 2004

	2006	2-Yr.	
	Total Season	Total	% of Cks.
- tons per acre dry matter -			
Genoa	6.22	11.73	121
DKA42-15	5.78	11.33	117
Lightning EXTRA	5.84	11.32	117
6415	5.83	11.28	117
WL 357 HQ	5.73	11.18	115
FSG 408DP	5.65	11.12	115
Rebound 5.0	5.69	11.11	115
LegenDairy 5.0	5.68	11.04	114
HybriForce-420/Wet	5.54	10.93	113
WL 348 AP	5.42	10.82	112
Oneida Ultra	5.24	10.53	109
WL 335 HQ	5.25	10.45	108
5312 (check)	5.15	10.44	108
6420	5.05	10.37	107
NOVA	5.05	10.16	105
Oneida VR (check)	4.95	9.92	103
Vernal (check)	4.06	8.67	90
			Ck. Mean
Trial Mean (T/A)	5.25	10.30	9.68
5% LSD	0.42	0.70	
CV(%)	6.4	5.4	

Perry, Wyoming County, Sown April 30, 2004

	2006	2-Yr	
	Total Season	Total	% of Cks.
- tons per acre dry matter -			
DKA42-15	6.94	14.53	116
Genoa	6.87	14.38	115
Lightning EXTRA	6.88	14.28	114
Rebound 5.0	6.85	14.23	114
WL 357HQ	6.84	14.18	114
WL 335HQ	6.76	13.89	111
WL 348AP	6.61	13.83	111
FSG 408DP	6.61	13.72	110
NOVA	6.43	13.59	109
HybriForce-420/Wet	6.54	13.58	109
LegenDairy 5.0	6.56	13.50	108
5312 (check)	6.37	13.33	107
Guardzman II	6.43	13.24	106
Seedway 9558	6.37	13.21	106
Oneida Ultra	6.17	12.97	104
Integrity	6.18	12.86	103
Oneida VR (check)	6.08	12.57	101
FSG 400LH	5.85	12.46	100
Vernal (check)	5.74	11.53	92
			Ck. Mean
Trial Mean (T/A)	6.20	12.86	12.48
5% LSD	0.29	0.46	
CV(%)	4.1	3.2	

Ithaca, Tompkins County, Sown May 5, 2005

	2006	
	Total Season	% of Cks.
T/A		
Baralfa 32IQ	5.26	113
4S419	5.16	110
54V46	5.09	109
6415	5.07	108
5312 (check)	5.03	108
Guardzman II	4.98	107
BPR 387	4.95	106
Genoa	4.93	106
Prolific	4.93	106
361 HY	4.87	104
Guardzman	4.85	104
4A421	4.84	104
Integrity	4.71	101
Oneida VR (check)	4.67	100
Milestone	4.62	99
Oneida Ultra	4.57	98
4R429	4.51	96
53Q30	4.46	96
Vernal (check)	4.31	92
		Ck. Mean
Trial Mean (T/A)	4.75	4.67
5% LSD	0.39	
CV(%)	6.6	

Chazy, Clinton County, Sown May 9, 2005

	2006	
	Total Season	% of Cks.
T/A		
54V46	5.00	111
Genoa	4.92	110
4S419	4.91	109
BPR 387	4.76	106
Prolific	4.75	106
4A421	4.73	105
Baralfa 32IQ	4.72	105
Milestone	4.71	105
361 HY	4.70	105
53Q30	4.69	104
WL 348 AP	4.67	104
4R429	4.67	104
Guardzman II	4.64	103
5312 (check)	4.52	101
Vernal (check)	4.49	100
Oneida VR (check)	4.45	99
		Ck. Mean
Trial Mean (T/A)	4.60	4.49
5% LSD	0.27	
CV(%)	5.8	

Ithaca, Tompkins County Sown April 27, 2006			Cobleskill, Schoharie County Sown May 2, 2006		
2006			2006		
	7-Sep	% of Cks.		Total Season	% of Cks.
ReGen	T/A	106	ReGen	T/A	112
Guardsman II	1.26	103	Starbuck	3.36	104
5312 (check)	1.23	101	Guardsman II	3.13	102
Oneida VR (check)	1.20	100	5312 (check)	3.05	101
Vernal (check)	1.19	100	Mariner III	3.03	101
Kingfisher 30-30 Q	1.19	99	Kingfisher 30-30 Q	3.03	101
Mariner III	1.18	98	Oneida VR (check)	3.02	101
Lightning EXTRA	1.17	98	4A421	2.97	99
4A421	1.15	97	Vernal (check)	2.94	98
54V46	1.15	97	Seedway 9558	2.93	98
Seedway 9558	1.15	96	A4440	2.93	98
A4440	1.13	95	54V46	2.93	98
Radiant-AM	1.08	90	Radiant-AM	2.92	97
Starbuck	1.05	88	Lightning EXTRA	2.88	96
4G418RR	1.01	85	Integrity	2.84	95
WL 355 RR	0.97	81	WL 355 RR	2.71	90
DKA41-18RR	0.96	80	DKA41-18RR	2.64	88
DKA34-17RR	0.93	78	4G418RR	2.57	86
WL 343 HQ	0.88	74	DKA34-17RR	2.48	83
		Ck. Mean	WL 343 HQ	2.40	80
Trial Mean (T/A)	1.09	1.19			Ck. Mean
5% LSD	0.13		Trial Mean (T/A)	2.90	3.00
CV(%)	9.7		5% LSD	0.15	
			CV(%)	4.6	

First harvest in 2006 was on July 19th. Plot weights were not taken.

2006 Alfalfa Trials to Test Insect Resistant Cultivars

*PLH Damage Score - 1=minor to no damage; 5=severe damage

Ithaca, Tompkins County, Sown April 29, 2003					Ithaca, Tompkins County Sown May 1, 2006		
	2006	3-Yr.		4-Yr. Avg.	2006		
	Total Season	Total	% of Checks	PLH* Damage	19-Jul	% of Cks.	
	T/A	T/A			T/A		
WL 346LH	4.82	14.06	105	1.2	WL 345LH	2.17	110
4375LH	4.66	13.83	103	1.5	WL 347LH	2.09	106
5312 (check)	4.94	13.82	103	3.0	53H92	2.03	103
54H91	4.76	13.57	101	1.5	Oneida VR (check)	2.02	102
Oneida VR (check)	4.75	13.54	101	3.4	5312 (check)	1.98	101
Vernal (check)	4.49	12.74	95	3.1	Enforcer	1.92	98
			Ck. Mean		Vernal (check)	1.92	98
Trial Mean (T/A)	4.62	13.27	13.37				Ck. Mean
LSD(.05)	0.32	0.95			Trial Mean (T/A)	2.04	1.97
CV(%)	6.0	6.2			5% LSD	0.17	
					CV(%)	7.3	

Ithaca, Tompkins County, Sown April 29, 2005				PLH* Damage 7/25/06	
	2006	2-Yr Avg.			
	Total Season	% of Cks.	PLH* Damage		
	T/A				
WL 347 LH	4.38	107	2.3	WL 345LH	2.1
5312 (check)	4.30	105	4.2	WL 347LH	2.3
6325	4.29	104	3.0	53H92	1.3
WL 345 LH	4.29	104	2.1	Oneida VR (check)	4.3
54H91	4.26	104	1.6	5312 (check)	3.8
Vernal (check)	4.06	99	4.1	Enforcer	1.8
Oneida VR (check)	3.96	96	4.6	Vernal (check)	4.1
		Ck. Mean		Trial Mean (T/A)	2.3
Trial Mean (T/A)	4.24	4.11		5% LSD	0.6
5% LSD	0.20			CV(%)	23.1
CV(%)	4.1				

Table 3: Red Clover and Birdsfoot Trefoil Cultivar Yield Trials- 2006 Ithaca, Tompkins County Page 7
 See Table 1, page 3 for description of abbreviations used in this table.

Sown April 29, 2003		2006			3-Yr.	
		Total Season	% of Checks	% Stand 29-Jul	Total	% of Checks
Red Clover Cultivar	Marketing Company*					
		T/A			T/A	
Dominion	Land O'Lakes	2.69	124	73	11.43	112
Raven	AgriCulver	2.62	121	68	11.23	110
RC9101	Allied Seed, L.L.C.	2.44	113	57	10.84	106
Marathon (check)	Check	2.20	102	57	10.64	104
Freedom!	Barenbrug	2.21	102	68	10.63	104
FSG-9601	Seedway/FSG	2.46	114	60	10.57	103
Arlington (check)	Check	2.11	98	45	9.82	96
			Ck. Mean			Ck. Mean
Trial Mean		2.32	2.16	58		10.23
5% LSD		0.22		12		
CV(%)		8.1		18.5		

Sown May 7, 2004		2006			2-Yr.
		Total Season	% of Trial Checks	% Stand 5-Oct	% of Cks.
Red Clover	Marketing Company*				
Cultivar/Experimental					
Duration	Check	4.78	100	87	104
Rocket	Grassland Central / Chemgro	5.16	108	86	106
Marathon (check)	Check	4.78	100	89	100
Arlington (check)	Check	4.77	100	86	100
CW 10002	Cal/West	4.62	97	87	98
WVPB-RC-NT-KY2	Smith Seed Services	4.54	95	89	95
			Ck. Mean		
Trial Mean		4.78	4.77	87	
5% LSD		0.34		4	
CV(%)		5.9		3.6	

Sown April 29, 2005		2006		
		Total Season	% of Cks.	% Stand 25-Sep
Red Clover	Marketing Company*			
Cultivar/Experimental				
RC9602	Allied Seed, L.L.C.	4.41	113	88
Dynamite	UAP NE	4.40	113	89
Kenway	Smith Seed Services	4.28	110	89
Dominion	Land O'Lakes	4.22	108	88
FSG-9601	Seedway/FSG	4.16	107	87
RC9603	Allied Seed, L.L.C.	4.09	105	86
Cardinal	Blue River Organic Seed	4.05	104	91
CW 10002	Cal/West	4.04	104	89
Marathon (check)	Check	3.90	100	87
Arlington (check)	Check	3.87	99	79
			Ck. Mean	
Trial Mean		4.14	3.89	87
LSD(.05)		0.26		5
CV(%)		5.4		4.7

Sown May 6, 2006		2006	
		Total Season	% of Cks.
Birdsfoot Trefoil	Marketing Company*		
Norcen	Check	3.21	100
Pardee	Seedway/FSG/FS Seeds	3.11	97
Steadfast	Seed Research of Oregon	2.49	78
			Ck. Mean
Trial Mean		3.01	3.21
LSD(.05)		0.35	
CV(%)		9.7	

* For marketing company information see Table 2 (page 6) and Table 6 (page 11) .

Table 4: 2006 Perennial Forage Grass Yield Summary

Ithaca, Tompkins Co., Sown 2003, 2004, 2005

T/A = tons per acre dry matter

Marketing contacts listed in Table 6 page 11

5%LSD = claim statistically significant yield differences between two varieties, the yield difference must be equal to or greater than the LSD.

Heading date is date when 5 heads in a 3.5 x 16 foot plot were visible.

Grass Species		2006			2005		2004		2 or 3-Yr. Total
		Total Season	% Stand	Heading Date	Total Season	Heading Date	Total Season	Heading Date	
Variety	Marketing Company	T/A			T/A		T/A	T/A	
Perennial Ryegrass and Festulolium		Sown May 9, 2003							
Spring Green (festulolium)	Check	3.79	65	26-May	3.49	25-May	5.70	16-May	12.98
Remington	Barenbrug	3.34	74	5-Jun	3.19	3-Jun	5.32	25-May	11.85
PSGG9-04	PICKSEED CANADA INC	3.40	63	20-May	2.94	22-May	4.85	16-May	11.20
Bastion	Check	3.31	65	19-May	3.17	19-May	4.70	14-May	11.18
Citadel	Check	3.01	68	29-May	2.99	30-May	4.66	18-May	10.66
Paddock	Seedway	3.22	68	7-Jun	2.55	6-Jun	3.81	27-May	9.58
	5% LSD	0.45	5		0.32		0.47		
Perennial Ryegrass		Sown May 18, 2004							
Modane	Seed Research of Oregon	4.33	85	2-Jun	3.59	3-Jun			7.92
Bastion	Check	4.30	83	24-May	3.47	22-May			7.78
Bargala	Barenbrug	4.46	86	31-May	3.28	3-Jun			7.73
Eurostar	Seed Research of Oregon	4.36	84	31-May	3.35	3-Jun			7.71
Grand Daddy	Seedway/FSG	4.43	86	26-May	3.21	27-May			7.64
Citadel	Check	4.21	81	31-May	3.31	31-May			7.52
Barsprinter	Barenbrug	4.38	87	31-May	3.01	3-Jun			7.38
RESPECT	DLF International Seeds	4.32	83	26-May	2.88	27-May			7.19
Proton	Seed Research of Oregon	3.57	80	7-Jun	3.18	6-Jun			6.75
	5% LSD	0.48	4		0.39				
Perennial Ryegrass		Sown May 4-5, 2005							
Clermont	Seed Research of Oregon	5.73	85	31-May					
Citadel	Check	5.38	84	26-May					
Bastion	Check	5.01	81	19-May					
Green Gold	UAP NE	4.77	85	31-May					
Barnhem	Barenbrug	4.76	87	7-Jun					
	5% LSD	0.55	5						
Festulolium		Sown May 4-5, 2005							
Salino	Allied Seed, L.L.C.	6.87	81	26-May					
Agula	Allied Seed, L.L.C.	6.85	81	26-May					
Felopa	Allied Seed, L.L.C.	6.81	81	26-May					
Spring Green	Check	5.93	90	22-May					
	5% LSD	0.44	3						
Tall Fescue		Sown May 9, 2003							
Bull	Preferred Seed Co.	5.91	64	17-May	4.63	23-May	6.70	14-May	17.24
Enhance	Seedway, FSG/ Allied Seed	5.75	71	24-May	4.62	25-May	6.74	16-May	17.12
Select	Check	5.89	64	24-May	4.64	23-May	6.55	16-May	17.08
Montendre	Seed Research of Oregon	4.92	68	26-May	4.02	27-May	5.69	17-May	14.62
	5% LSD	0.36	8		0.38		0.36		
Tall and Meadow Fescue		Sown May 4-5, 2005							
Select	check	7.54	88	19-May					
Jesup MaxQ	Pennington Seed	7.25	89	18-May					
Bull	check	7.22	89	17-May					
Barcarella	Barenbrug	7.12	89	20-May					
Bartura (meadow fescue)	check	6.30	84	19-May					
Pradel (meadow fescue)	Barenbrug	6.07	83	26-May					
	5% LSD	0.28	5						

Table 4: 2006 Perennial Forage Grass Yield Summary

Ithaca, Tompkins Co., Sown 2003, 2004, 2005

T/A = tons per acre dry matter

Marketing contacts listed in Table 6 page 11

5%LSD = claim statistically significant yield differences between two varieties, the yield difference must be equal to or greater than the LSD.

Heading date is date when 5 heads in a 3.5 x 16 foot plot were visible.

		2006			2005			2004		
Orchardgrass		Sown May 9, 2003								
Stampede	Check	4.88	66	15-May	4.66	16-May	5.33	12-May	14.87	
Bounty (OG9701)	Seedway/ FSG/ Allied, L.L.C	4.47	73	15-May	4.73	12-May	5.18	11-May	14.37	
Extend	Seedway, FSG	4.20	63	18-May	4.45	19-May	5.33	14-May	13.98	
Baridana	Check	4.22	65	15-May	4.63	19-May	4.77	13-May	13.62	
Potomac	Check	4.13	73	15-May	4.30	13-May	4.90	11-May	13.33	
Haymaster (OG9704)	Allied Seed, L.L.C.	4.09	68	18-May	4.26	19-May	4.46	14-May	12.81	
	5% LSD	0.38	5		0.27		0.40			
Orchardgrass		Sown May 18, 2004								
Stampede	Check	6.40	86	16-May	5.03	20-May			11.42	
Command	Land O Lakes	5.98	84	19-May	4.74	23-May			10.72	
Intensiv	Check	5.83	79	26-May	4.48	25-May			10.31	
Baridana	Check	5.60	86	17-May	4.45	20-May			10.05	
Impuls	Seed Research of Oregon	5.38	80	25-May	4.03	24-May			9.41	
LG 31	DLF International Seeds	5.04	83	26-May	4.36	30-May			9.41	
	5% LSD	0.46	4		0.33					
Orchardgrass		Sown May 4-5, 2005								
Icon	AgriCulver / Chemgro	6.47	92	15-May						
Stampede	check	6.34	89	15-May						
Checkmate (OG0001)	Seed Research of Oregon	6.30	91	17-May						
Quick Draw	UAP NE	6.20	91	15-May						
Barexcel	Barenbrug	6.03	90	16-May						
Crown Royale	Preferred Seed Co.	5.76	91	16-May						
Pizza	Seed Research of Oregon	5.71	92	20-May						
Baridana	Barenbrug	5.52	92	17-May						
Intensiv	Barenbrug	5.50	91	25-May						
	5% LSD	0.47	2							
Reed Canarygrass		Sown May 9, 2003								
Palaton	Check	5.28	80	31-May	3.34	31-May	5.62	21-May	14.24	
Marathon	FS Seeds	5.30	81	31-May	3.26	31-May	5.35	21-May	13.91	
	5% LSD	0.50	8		0.24		0.64			
Timothy		Sown May 9, 2003								
Derby (TM9901)	Allied Seed, L.L.C.	4.75	70	26-May	3.48	25-May	6.04	21-May	14.27	
Crest (TM0102)	Seedway / FSG	4.47	73	2-Jun	3.50	1-Jun	5.96	27-May	13.93	
Summit	Seedway / FSG	4.51	70	26-May	3.44	25-May	5.54	20-May	13.49	
AC Opal	PICKSEED CANADA, INC.	4.54	70	7-Jun	3.17	7-Jun	5.48	7-Jun	13.20	
AC Alliance	PICKSEED CANADA, INC.	4.38	71	29-May	3.32	30-May	5.22	25-May	12.92	
Comer	PICKSEED CANADA, INC.	4.28	68	5-Jun	3.04	3-Jun	5.51	31-May	12.83	
Chazy	Check	4.36	71	29-May	3.08	30-May	5.30	21-May	12.74	
Express	Seed Research of Oregon	4.17	74	2-Jun	2.98	1-Jun	5.47	28-May	12.62	
Climax	Check	4.24	70	31-May	2.73	31-May	4.86	27-May	11.84	
Tenho	Barenbrug	4.29	69	7-Jun	2.97	7-Jun	4.20	7-Jun	11.46	
	5% LSD	0.32	6		0.35		0.55			
Timothy		Sown May 18, 2004								
Climax	Check	5.53	85	2-Jun	3.77	3-Jun			9.30	
Chazy	Check	5.52	83	29-May	3.65	30-May			9.17	
Monza	Seed Research of Oregon	5.39	85	26-May	3.76	27-May			9.15	
Moverdi	Seed Research of Oregon	5.04	80	14-Jun	3.76	10-Jun			8.80	
	5% LSD	0.51	4		0.49					
Timothy		Sown May 4-5, 2005								
Talon	Land O Lakes / Chemgro	6.76	89	26-May						
Treasure	Seed Research of Oregon	6.64	90	29-May						
Glacier	AgriCulver	6.50	90	26-May						
GO-LMT-04	UAP NE	6.12	91	2-Jun						
Chazy	Check	5.90	88	29-May						
Climax	Check	5.53	90	7-Jun						
	5% LSD	0.34	3							

Table 5:

Spring, First Harvest Forage Quality Data for Grass Varieties - 2005 DATA for trial planted in 2003 at Ithaca, NY

NDF = neutral detergent fiber, **IVTD** = in vitro true digestibility (48 hour digestion), **NDFD** = digestible NDF.

RFQ = relative feed quality. First harvest forage RFQ, milk per ton, and milk per acre were predicted by using **MILK2000** from U. of Wisconsin.

Boot Stage is date when 5 heads in a 3.5 x 16 foot plot were visible; **Maturity score** T=number of nodes;

R 0=boot stage, R 1=head partially emerged; R 2=head fully emerged; R 3=peduncle fully emerged.

In 2005, a drier and cooler than normal spring resulted in low forage yield at the first harvest.

Ammonium Nitrate was applied on April 11, 2005 at a rate of 200 lb/A.

Forage Quality at Boot Stage

Date at Boot Stage	% PRO- TEIN	% NDF	% IVTD
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Forage Quality at First Harvest in 2005

Date at Harvest	Yield Harvest 1	Maturity Score	% PRO- TEIN	% NDF	% IVTD	% NDFD	RFQ	Milk / Ton	Milk / Acre
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Perennial Ryegrass and Festulolium (F)

Spring Green (festulolium)	25-May	12.6	32.1	97.7
Bastion	19-May	11.5	28.0	98.0
PSGG9-04	22-May	13.0	33.4	98.0
Citadel	30-May	11.2	32.4	96.9
Remington (BAR LpT ROM99)	3-Jun	11.3	36.5	96.0
Paddock	6-Jun	11.8	39.3	95.3

26-May	1.40	R0.5	11.9	30.8	97.3	91.3	336	4,461	6,245
26-May	1.27	R2	11.6	30.5	96.7	89.0	332	4,407	5,580
26-May	1.14	R1	13.3	34.2	98.6	95.8	323	4,562	5,214
26-May	0.86	R0	13.0	28.8	97.9	92.6	358	4,496	3,862
26-May	0.78	T3	13.3	30.5	98.1	93.7	346	4,516	3,522
26-May	0.46	T3	14.7	30.3	98.0	93.3	346	4,502	2,056

Tall Fescue

Select	23-May	14.9	44.4	93.2
Bull	23-May	15.6	45.1	92.2
Enhance	25-May	14.2	42.5	93.6
Montendre	27-May	15.4	42.3	93.4

26-May	1.02	R1	15.0	44.8	92.8	84.0	231	4,125	4,216
26-May	0.98	R1	14.8	47.0	90.8	80.5	212	3,974	3,909
26-May	0.92	R0.5	14.4	42.9	93.3	84.4	241	4,159	3,827
26-May	0.67	R0.5	16.4	44.2	93.4	85.0	237	4,161	2,768

Reed Canarygrass

Palaton	31-May	15.8	50.4	92.2
Marathon	31-May	15.8	54.2	90.7

26-May	0.73	R0	19.2	49.4	94.0	87.8	225	4,210	3,091
26-May	0.69	R0	19.5	49.7	94.7	89.2	229	4,263	2,948

Orchardgrass

Potomac	13-May	16.5	46.7	94.2
Bounty (OG9701)	12-May	17.1	48.1	94.3
Stampede	16-May	16.1	49.4	94.1
Baridana	19-May	15.2	46.7	94.1
Haymaster (OG9704)	19-May	15.2	45.6	94.7
Extend	19-May	15.1	44.9	94.4

28-May	1.71	R3.5	13.6	51.2	91.2	82.8	205	4,017	6,885
28-May	1.65	R2.5	13.0	52.3	90.7	82.3	200	3,986	6,570
28-May	1.58	R2	14.9	49.8	92.7	85.4	217	4,128	6,515
28-May	1.58	R2	14.7	50.2	92.5	85.1	215	4,115	6,506
28-May	1.56	R1.5	15.4	50.2	93.1	86.3	218	4,161	6,493
28-May	1.47	R2	14.1	47.3	93.4	86.2	228	4,183	6,146

Timothy

Crest (TM0102)	1-Jun	11.2	49.6	91.6
Derby (TM9901)	25-May	11.5	45.3	93.4
Summit	25-May	11.7	44.9	93.5
AC Alliance	30-May	11.9	45.3	93.5
Comer	3-Jun	10.6	53.5	89.0
AC Opal	7-Jun	11.0	58.7	87.5
Express	1-Jun	10.6	48.8	92.3
Chazy	30-May	11.8	44.1	93.5
Climax	31-May	12.0	44.4	93.6
Tenho	7-Jun	12.2	55.8	89.1

26-May	1.60	T3	12.0	42.2	95.0	88.3	256	4,304	6,877
26-May	1.60	R0.5	12.0	45.7	94.3	87.5	239	4,254	6,819
26-May	1.56	R0	11.9	44.7	94.3	87.3	242	4,255	6,640
26-May	1.47	E3.5	12.7	40.2	96.1	90.3	271	4,381	6,436
26-May	1.37	E2	12.4	40.7	95.9	89.9	268	4,366	5,982
26-May	1.35	T2	13.1	43.2	95.6	89.8	256	4,344	5,864
26-May	1.32	T3	12.4	39.8	96.3	90.8	275	4,399	5,797
26-May	1.31	T2	12.4	38.7	95.6	88.7	275	4,341	5,672
26-May	1.07	T2.5	13.4	42.2	95.0	88.3	256	4,299	4,587
26-May	0.93	T2.5	13.8	37.4	96.7	91.2	289	4,419	4,107

Spring, First Harvest Forage Quality Data for Grass Varieties - 2005 DATA for trial planted in 2004 at Ithaca, NY

NDF = neutral detergent fiber, **IVTD** = in vitro true digestibility (48 hour digestion), **NDFD** = digestible NDF.

RFQ = relative feed quality. First harvest forage RFQ, milk per ton, and milk per acre were predicted by using **MILK2000** from U. of Wisconsin.

Boot Stage is date when 5 heads in a 3.5 x 16 foot plot were visible; **Maturity score** T=number of nodes;

R 0=boot stage, R 1=head partially emerged; R 2=head fully emerged; R 3=peduncle fully emerged.

In 2005, a drier and cooler than normal spring resulted in low forage yield at the first harvest.

Ammonium Nitrate was applied on April 11, 2005 at a rate of 200 lb/A.

Forage Quality at Boot Stage					Forage Quality at First Harvest in 2005									
Date at Boot Stage	% PRO-TEIN	% NDF	% IVTD		Date at Harvest	Yield Harvest 1	Maturity Score	% PRO-TEIN	% NDF	% IVTD	% NDFD	RFQ	Milk / Ton	Milk / Acre
Perennial Ryegrass and Festulolium (F)														
Bastion	22-May	12.0	28.4	95.4	26-May	0.95	R1.5	11.8	30.2	96.3	87.8	331	4,377	4,175
Grand Daddy	27-May	12.0	27.7	96.6	26-May	0.82	R1	12.9	29.7	95.2	83.7	323	4,276	3,502
Eurostar	3-Jun	9.9	29.1	95.3	26-May	0.64	T2	14.2	28.4	97.0	89.3	352	4,417	2,831
Bargala	3-Jun	10.3	35.1	94.6	26-May	0.60	T3	13.5	29.6	96.8	89.1	340	4,408	2,648
Citadel	31-May	10.7	26.4	97.1	26-May	0.53	T3	13.5	28.0	96.9	89.0	355	4,416	2,321
RESPECT	27-May	12.8	32.0	96.3	26-May	0.50	R0.5	13.9	31.3	96.7	89.3	326	4,402	2,222
Modane	3-Jun	10.8	33.3	95.5	26-May	0.48	T2	14.1	27.0	96.7	87.6	362	4,389	2,128
Barsprinter	3-Jun	11.6	36.7	95.0	26-May	0.47	T4	15.9	32.2	97.2	91.2	323	4,437	2,066
Proton	6-Jun	10.4	39.0	93.4	26-May	0.44	T2.5	14.0	30.8	96.5	88.5	327	4,383	1,939

Orchardgrass

Command	23-May	13.5	41.4	95.3	27-May	1.26	R1.5	13.4	43.2	94.8	87.8	250	4,278	5,380
Stampede	20-May	15.5	45.6	94.0	27-May	1.15	R2	13.4	46.2	93.5	85.9	232	4,187	4,812
Baridana	20-May	15.1	42.6	94.8	27-May	1.03	R1	13.2	42.5	95.0	88.3	254	4,300	4,431
Intensiv	25-May	14.5	47.4	92.0	27-May	1.01	R0.5	13.7	47.0	92.8	84.7	225	4,133	4,190
Impuls	24-May	13.9	40.5	95.7	27-May	0.89	R0.5	14.1	43.2	94.5	87.3	248	4,255	3,791
LG 31	30-May	13.0	48.6	93.3	27-May	0.62	T2	13.8	45.2	95.1	89.1	245	4,308	2,652

Timothy

Monza	27-May	12.6	44.7	93.5	27-May	1.31	T3	12.7	41.4	95.6	89.3	263	4,341	5,700
Moverdi	10-Jun	10.7	61.9	85.6	27-May	0.99	T2	12.1	39.0	96.3	90.5	279	4,396	4,348
Climax	3-Jun	11.7	54.7	90.4	27-May	0.95	T3.5	13.5	42.7	96.0	90.7	261	4,377	4,158
Chazy	30-May	12.8	45.2	94.1	27-May	0.80	T3	13.5	38.6	96.2	90.1	279	4,380	3,525

Company Contact Information: If company phone number and web site are not listed below, see Table 2 (Page 6).

Company	Phone	Web/E-mail Address
AMPAC	1-541-928-1651	www.ampacseed.com
Blue River Organic Seed	1-800-370-7979	www.blueriverorgseed.com
Burlingham Seeds	1-503-623-2306	www.burlinghamseeds.com
Cal/West	1-530-666-3331	www.calwestseeds.com
Cropmark Seeds Ltd		www.cropmark.co.nz
DLF International Seeds	1-541-369-2251	www.dlfis.com
Farm Science Genetics(FSG)	1-888-305-0500	www.farmsciencegenetics.com
Grassland Central	1-877-560-5181	
Grassland Oregon	1-503-566-9900	
Pennington Seed	1-800-286-6100	www.penningtonseed.com
PICKSEED CANADA INC.	1-705-878-9240	www.pickseed.com
Seed Research of Oregon	1-800-253-5766	www.sroseed.com
Smith Seed Services	1-888-550-2930	www.smithseed.com
UAP NE	1-315-483-9146	www.uap.com/uap

Intermediate and Perennial Ryegrass				
2006				
Variety	Marketing Co.	22-Aug	9-Oct	Total Season
-- tons per acre dry matter --				
Tetrelite II (inter.)	DLF International Seeds	1.40	1.73	3.12
FH2004A	Cropmark Seeds Ltd	1.50	1.45	2.95
GO ABE (inter.)	Grassland Oregon	1.54	1.33	2.87
Boost	Seedway/FSG	1.26	1.61	2.86
Spring Green (festulolium)	check	1.30	1.53	2.84
Bandito (inter.)	Grassland Oregon	1.28	1.38	2.66
GO ABD	Grassland Oregon	1.10	1.42	2.52
Birger	Burlingham Seeds	1.12	1.40	2.52
Opus	Burlingham Seeds	0.90	1.45	2.35
Green Gold	Grassland Oregon	0.95	1.31	2.26
GO ABA	Grassland Oregon	1.08	1.17	2.24
BAR1M	Barenbrug	0.92	1.17	2.09
Citadel	check	0.87	1.19	2.06
Linn	check	0.81	1.13	1.94
Trial Mean		1.14	1.38	2.52
LSD(.05)		0.20	0.32	0.45
CV(%)		12.1	16.5	12.5

Tall Fescue				
2006				
Variety	Marketing Co.	22-Aug	9-Oct	Total Season
-- tons per acre dry matter --				
Drover	Barenbrug	1.89	2.07	3.96
GO-TF	Grassland Oregon	1.78	1.91	3.69
Enhance	check	1.84	1.81	3.65
Select	check	1.68	1.93	3.61
BarElite	Barenbrug	1.56	1.89	3.46
Savory	DLF International Seeds	1.57	1.79	3.35
FA2003CS	Cropmark Seeds Ltd	1.54	1.56	3.09
Trial Mean		1.69	1.85	3.54
LSD(.05)		0.13	0.12	0.19
CV(%)		5.0	4.5	3.6

Orchardgrass				
2006				
Variety	Marketing Co.	22-Aug	9-Oct	Total Season
-- tons per acre dry matter --				
IS-OG 39	DLF International Seeds	1.67	2.06	3.73
Olympia	Pennington Seed	1.70	1.89	3.59
Pennlate	check	1.62	1.88	3.50
Potomac	check	1.54	1.87	3.41
OG 0204G	Seed Research of Oregon	1.55	1.74	3.30
Endurance	DLF International Seeds	1.58	1.71	3.29
Intensiv	check	1.45	1.66	3.11
Montana (M. brome)	Seed Research of Oregon	1.23	1.09	2.32
Trial Mean		1.54	1.74	3.28
LSD(.05)		0.11	0.27	0.34
CV(%)		5.0	10.7	7.1

Timothy				
2006				
Variety	Marketing Co.	22-Aug	9-Oct	Total Season
-- tons per acre dry matter --				
Clair	check	1.61	1.19	2.81
TM9701	Allied Seed L.L.C.	1.47	1.17	2.65
Summit	Allied Seed L.L.C.	1.53	1.05	2.58
Crest (TM0102)	Allied Seed L.L.C.	1.50	0.87	2.37
Climax	check	0.96	0.89	1.85
PT2004A	Cropmark Seeds Ltd	1.04	0.73	1.77
Barpenta	Barenbrug	1.08	0.65	1.73
Chazy	check	0.95	0.74	1.69
Trial Mean		1.27	0.91	2.18
LSD(.05)		0.26	0.16	0.30
CV(%)		13.9	11.7	9.5

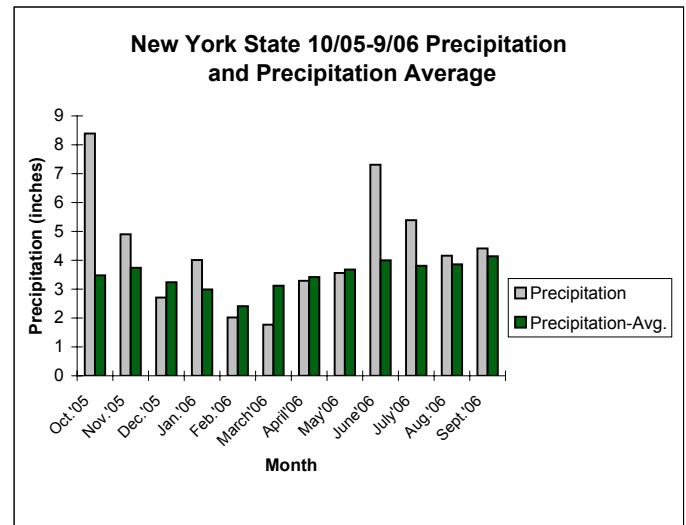
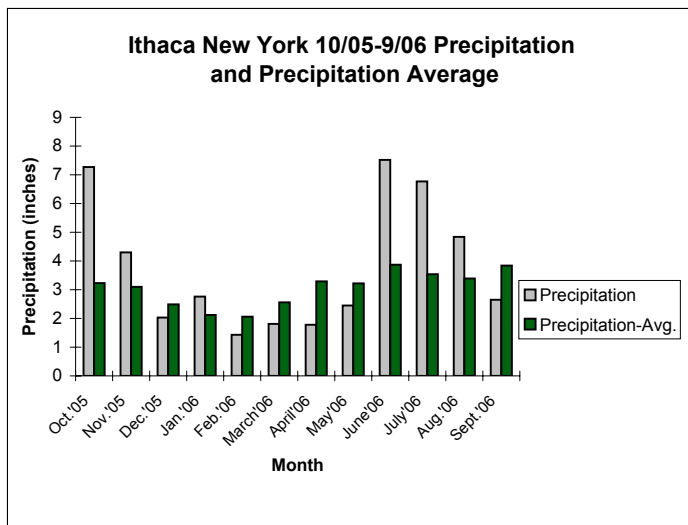
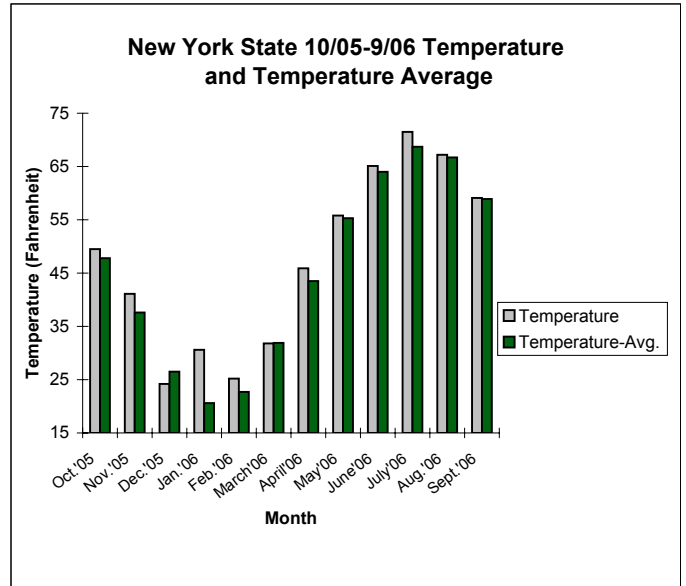
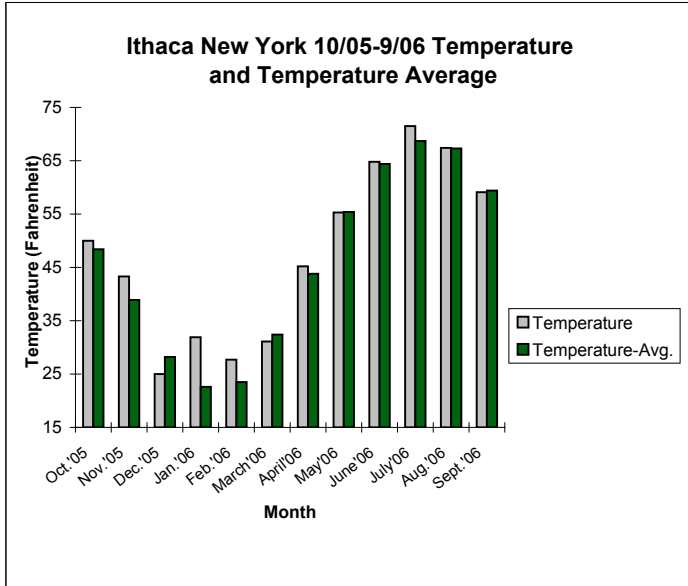


Figure 2: New York State 10/05-9/06 temperature and precipitation. Weather data from the Northeast Regional Climate Center at Cornell University.

Figure 3: New York State 10/05-9/06 temperature and precipitation. Weather data from the Northeast Regional Climate Center at Cornell University.

Index

Cultivar	Page No.	Species	Cultivar	Page No.	Species
361 HY	3,4,6	Alfalfa	Bartura	8	Meadow Fescue
6325	5,6	Alfalfa	Pradel	8	Meadow Fescue
420	3,6	Alfalfa			
4375LH	3,5,6	Alfalfa	Barexcel	9	Orchardgrass
4A421	3,4,5,6	Alfalfa	Baridana	9,10,11	Orchardgrass
4G418RR	5,6	Alfalfa	Bounty (OG9701)	9,10	Orchardgrass
4R429	4,6	Alfalfa	Command	9,11	Orchardgrass
4S419	3,4,6	Alfalfa	Crown Royale	9	Orchardgrass
53H92	5,6	Alfalfa	Endurance	12	Orchardgrass
53Q30	4,6	Alfalfa	Extend	9,10	Orchardgrass
54H91	3,5,6	Alfalfa	Haymaster (OG9704)	9,10	Orchardgrass
54Q25	3,6	Alfalfa	Icon	9	Orchardgrass
54V46	3,4,5,6	Alfalfa	Impuls	9,11	Orchardgrass
6400HT	3,6	Alfalfa	Intensiv	9,11,12	Orchardgrass
6415	3,4,6	Alfalfa	IS-OG 39	12	Orchardgrass
6420	4	Alfalfa	LG 31	9,11	Orchardgrass
A4440	5,6	Alfalfa	Montana	12	Meadow Brome
Baralfa 32IQ	3,4,6	Alfalfa	OG 0204G	12	Orchardgrass
Baralfa 53 HR	3,6	Alfalfa	Checkmate (OG0001)	9	Orchardgrass
BPR 387	3,4,6	Alfalfa	Olympia	12	Orchardgrass
Dakota	3,6	Alfalfa	Pennlate	12	Orchardgrass
DKA33-16	3,6	Alfalfa	Pizza	9	Orchardgrass
DKA34-17RR	5,6	Alfalfa	Potomac	9,10,12	Orchardgrass
DKA41-18RR	5,6	Alfalfa	Quick Draw	9	Orchardgrass
DKA42-15	3,4,6	Alfalfa	Stampede	9,10,11	Orchardgrass
Enforcer	5,6	Alfalfa			
Everlast	3,6	Alfalfa	Bargala	8,11	Perennial Ryegrass
Evermore	3,6	Alfalfa	Bandito	12	Intermediate Ryegrass
FSG 351	3,6	Alfalfa	BAR1M	12	Perennial Ryegrass
FSG 400LH	4,6	Alfalfa	Barnhem	8	Perennial Ryegrass
FSG 406	3,6	Alfalfa	Barpenta	12	Perennial Ryegrass
FSG 408DP	3,4,6	Alfalfa	Barsprinter	8,11	Perennial Ryegrass
FSG 505	3,6	Alfalfa	Bastion	8,10,11	Perennial Ryegrass
Genoa	3,4,6	Alfalfa	Birger	12	Perennial Ryegrass
Guardsman	4	Alfalfa	Boost	12	Perennial Ryegrass
Guardsman II	3,4,5,6	Alfalfa	Citadel	8,10,11,12	Perennial Ryegrass
HybriForce-400	3,6	Alfalfa	Clermont	8	Perennial Ryegrass
HybriForce-420/Wet	3,4,6	Alfalfa	Eurostar	8,11	Perennial Ryegrass
HYTEST 410	3,6	Alfalfa	FH2004A	12	Perennial Ryegrass
Integrity	4,5,6	Alfalfa	GO ABA	12	Perennial Ryegrass
Kingfisher 30-30Q	5,6	Alfalfa	GO ABD	12	Perennial Ryegrass
LegenDairy 5.0	3,4,6	Alfalfa	GO ABE	12	Intermediate Ryegrass
Lightning EXTRA	3,4,5,6	Alfalfa	Grand Daddy	8,11	Perennial Ryegrass
Mariner III	5,6	Alfalfa	Green Gold	8	Perennial Ryegrass
Milestone	3,4,6	Alfalfa	Green Gold	12	Perennial Ryegrass
NOVA	3,4,6	Alfalfa	Linn	12	Perennial Ryegrass
Oneida Ultra	3,4,6	Alfalfa	Modane	8,11	Perennial Ryegrass
Paramount II	3,6	Alfalfa	Opus	12	Perennial Ryegrass
Power 4.2	3,6	Alfalfa	Paddock	8,10	Perennial Ryegrass
Prolific	3,4,6	Alfalfa	Proton	8,11	Perennial Ryegrass
Radiant -AM	5,6	Alfalfa	PSGG9-04	8,10	Perennial Ryegrass
Rebound 5.0	3,4,6	Alfalfa	Remington	8,10	Perennial Ryegrass
ReGen	5,6	Alfalfa	RESPECT	8,11	Perennial Ryegrass
Seedway 9558	4,5,6	Alfalfa	Tetrelite	12	Intermediate Ryegrass
Starbuck	5,6	Alfalfa			
WL 319 HQ	3,6	Alfalfa	Marathon	9,10	Reed Canarygrass
WL 335HQ	3,4,6	Alfalfa	Palaton	9,10	Reed Canarygrass
WL 343 HQ	5,6	Alfalfa			
WL 345 LH	5,6	Alfalfa	Barcarella	8	Tall Fescue
WL 346LH	3,5	Alfalfa	BarElite	12	Tall Fescue
WL 347 LH	5,6	Alfalfa	Bull	8,10	Tall Fescue
WL 348AP	3,4,6	Alfalfa	Drover	12	Tall Fescue
WL 355RR	5,6	Alfalfa	Enhance	8,10,12	Tall Fescue
WL 357HQ	3,4,6	Alfalfa	FA2003CS	12	Tall Fescue
			GO-TF	12	Tall Fescue
RC9602	7	Red Clover	Jesup MaxQ	8	Tall Fescue
Cardinal	7	Red Clover	Montendre	8,10	Tall Fescue
CW 10002	7	Red Clover	Savory	12	Tall Fescue
Dominion	7	Red Clover	Select	8,10,12	Tall Fescue
Duration	7	Red Clover			
Dynamite	7	Red Clover	AC Alliance	9,10	Timothy
Freedom!	7	Red Clover	AC Opal	9,10	Timothy
FSG-9601	7	Red Clover	Chazy	9,10,11,12	Timothy
Kenway	7	Red Clover	Clair	12	Timothy
Raven	7	Red Clover	Climax	9,10,11,12	Timothy
RC9101	7	Red Clover	Comer	9,10	Timothy
RC9603	7	Red Clover	Crest (TM0102)	9,10,12	Timothy
Rocket	7	Red Clover	Derby (TM9901)	9,10	Timothy
WVPB-RC-NT-KY2	7	Red Clover	Express	9,10	Timothy
			Glacier	9	Timothy
Norcen	7	BFT	GO-LMT-04	9	Timothy
Pardee	7	BFT	Monza	9,11	Timothy
Steadfast	7	BFT	Moverdi	9,11	Timothy
			PT2004A	12	Timothy
Agula	8	Festulolium	Summit	9,10,12	Timothy
Felopa	8	Festulolium	Talon	9	Timothy
Salino	8	Festulolium	Tenho	9,10	Timothy
Spring Green	8,10,12	Festulolium	TM9701	12	Timothy