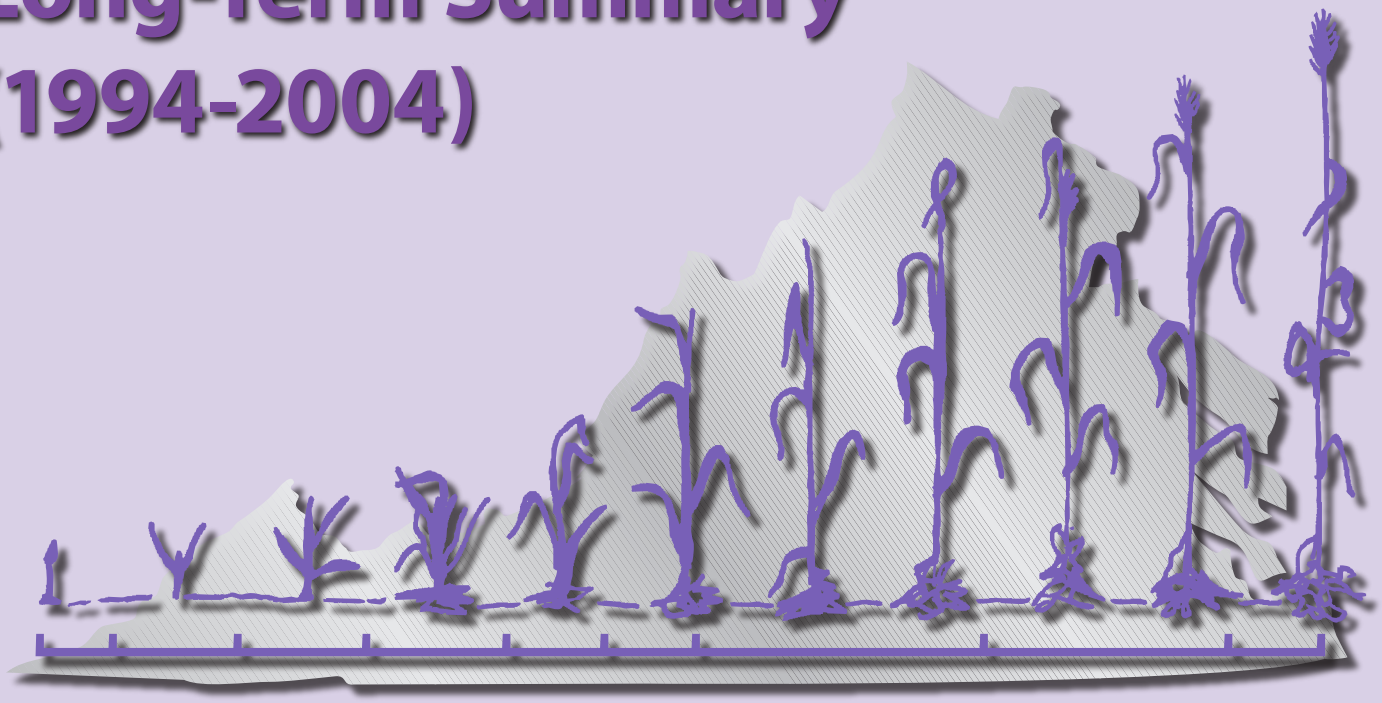
REVISION 2004

PUBLICATION 418-019

Virginia Small Grain Forage Variety Testing Report: Long-Term Summary (1994-2004)



Virginia Tech
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Virginia Cooperative Extension
Knowledge for the CommonWealth

VIRGINIA STATE UNIVERSITY

Virginia Small Grain Forage Variety Testing Report: Long-Term Summary (1994-2004)

*S. Ray Smith, Wade Thomason, Brinkley Benson, Dave Starner, and Denton Dixon**

**Extension Specialist, Forages; Extension Specialist, Grains, Department of Crop and Soil Environmental Sciences; Research Associate, Department of Horticulture, Virginia Tech, respectively; and Superintendent and Retired Technician, Northern Piedmont Agricultural Research and Extension Center*

Introduction

Cool-season cereal crops form the backbone of many farm enterprises in the United States, including those in Virginia. However, except for rye, Virginia producers make limited use of the tremendous forage potential of cereal crops. The hardiness of small grains allows production on land that would not support a corn silage crop, and since a large percentage of small-grain forage is being grown in a double-crop system, productivity from a given land area can be increased. Small-grain silage also permits greater use of silage storage and feeding equipment. Two factors that have a great effect on silage quality and quantity are species and variety of small grain used and the stage of maturity at harvest.

This publication reports 35 percent DM, DM yield, and quality factors for oats, wheat, barley, rye, and triticale crops harvested from trials at the Northern Piedmont Agricultural Research and Extension Center (AREC) from 1994-2004.

Virginia Small-Grain Forage Variety Trials in 1994-2004

One forage production trial of commercial barley, oat, rye, triticale, and wheat cultivars was conducted yearly from 1994-2003 at the Northern Piedmont AREC, Orange. The plots were harvested for forage yield at the boot (GS 45) and soft dough (GS 85) stages for barley, oats, triticale, and wheat and at the boot and flowering stages for rye. The plots were harvested with a 12-inch jari sickle-bar mower from the length of the plot and weighed with a tripod and hanging (milk) scale. A list of the companies and organizations participating in the trials over the years is included along with a summary of cultural practices implemented.

Yield Differences

Experimental plots vary in yield and other measurements due to their location in the field and other factors which cannot be controlled. The statistics given in the tables are intended to help the reader make valid comparisons between cultivars. The magnitude of differences which may have been due to experimental error has been computed for the data and listed at the bottom of columns as the LSD (.05) (least significant difference with 95 percent confidence). Differences less than the LSD are assumed not to be real differences with 95 percent confidence.

Choice of Species and Cultivars

When making selections, the reader should realize that cultivars differ in their performance under different environments. Some are more adapted to a wide range of environments. Cultivar performance often varies with year and location. This is to be expected due to differences in rainfall, temperature, pests, and other environmental variables. In these experiments, many cultivars have essentially the same yield, and great care should be taken in interpreting the results of a single year's tests, especially at only one location. For these reasons it is important, whenever possible, to also look at long-term average yields when making selections. Multi-year averages give even greater confidence to cultivar performance decisions.

Virginia Small Grain Forage Variety Plot Management Information

Location:	Northern Piedmont AREC, Orange
Soil Type:	Davidson silty clay loam
Land prep:	Conventional tillage
2003-2004	
Planting:	10/14/03-10/16/03
Emergence:	10/20/03-10/28/03
Fertilizer:	10/03/03 – 25 lb N, 50 lb P_2O_5, 50 lb K_2O, and 30 lb S per acre
	02/26/04 – 60 lb N per acre
2002-2003	
Planting:	10/02/02
Emergence:	10/11/02
Fertilizer:	09/19/02 – 25 lb N, 50 lb P_2O_5, 50 lb K_2O, and 30 lb S per acre
	03/10/03 – 60 lb N per acre
2001-2002	
Planting:	10/02/01-10/05/01
Emergence:	10/20/01
Fertilizer:	09/17/01 – 25 lb N, 50 lb P_2O_5, 50 lb K_2O, and 30 lb S per acre
	03/06/02 – 60 lb N per acre
2000-2001	
Planting:	10/11/00
Emergence:	Not recorded
Fertilizer:	10/03/00 – 25 lb N, 50 lb P_2O_5, 50 lb K_2O, and 30 lb S per acre
	02/27/01 – 60 lb N per acre
1999-2000	
Planting:	10/25/99-10/26/99
Emergence:	11/08/99
Fertilizer:	09/20/99 – 25 lb N, 50 lb P_2O_5, 50 lb K_2O, and 30 lb S per acre
	03/01/00 – 60 lb N per acre
1998-1999	
Planting:	10/07/98
Emergence:	Not recorded
Fertilizer:	09/24/98 – 25 lb N, 50 lb P_2O_5, 50 lb K_2O, and 30 lb S per acre
	02/01/99 – 60 lb N per acre
1997-1998	
Planting:	10/06/97
Emergence:	10/15/97
Fertilizer:	09/24/97 – 25 lb N, 22 lb P_2O_5, and 50 lb K_2O per acre
	02/22/98 – 60 lb N per acre
1996-1997	
Planting:	10/17/96
Emergence:	10/25/96
Fertilizer:	10/14/96 – 30 lb N, 70 lb P_2O_5, and 70 lb K_2O per acre
	02/18/97 – 60 lb N per acre
1995-1996	
Planting:	10/25/95
Emergence:	11/03/95
Fertilizer:	09/22/95 – 30 lb N per acre. P and K applied at soil test recommended levels
	02/26/96 – 60 lb N per acre
1994-1995	
Planting:	10/05/94
Emergence:	10/14/94
Pesticide:	03/13/95 – ¼ pt. Banvel and ½ pt 2,4-D per acre.
Fertilizer:	10/03/94 – 25 lb N, 50 lb P_2O_5, and 50 lb K_2O per acre
	03/16/95 – 60 lb N per acre
1993-1994	
Planting:	10/13/93
Emergence:	10/22/93
Lime:	09/30/93 – 2.5 tons lime per acre
Fertilizer:	09/30/93 – 60 lb N, 50 lb P_2O_5, and 50 lb K_2O per acre
	03/18/94 – 60 lb N per acre

Virginia Small Grain Forage Variety Plot Test Participants

Source	Cultivar	Species
9	Barsoy	Barley
9	Callao	Barley
9	Nomini	Barley
9	Pamunkey	Barley
9	Price	Barley
9	Starling	Barley
9	VA 92-42-279	Barley
1	N90-6590	Oats
2	Rodgers	Oats
8	SS 76-30	Oats
11	Abruzzi	Rye
5	ABT XR9901	Rye
5	ABT XR9903	Rye
8	Early Grazer	Rye
6	Grazemaster	Rye
11	Grazer	Rye
8	Pastar	Rye
4	SPI EXP	Rye
5	SR-XR9908	Rye
11	V N S (MI)	Rye
11	V N S (SD)	Rye
9	Virginia Abruzzi	Rye
8	Wheeler	Rye
4	Winter Grazer 70	Rye
6	Winter King	Rye
1	Arcia	Triticale
8	Enduro	Triticale
3	RSI Exp 111	Triticale
3	RSI Exp 501	Triticale
3	RSI Exp AZ 1998	Triticale
3	RSI L762	Triticale
3	RSI TCL Exp 368	Triticale
3	RSI TCL Exp 451	Triticale
3	Trical 102	Triticale
3	Trical 2115	Triticale
3	Trical 2205	Triticale
3	Trical 2700	Triticale
3	Trical 308	Triticale
3	Trical 336	Triticale
3	Trical 498	Triticale
3	Trical 815	Triticale
3	Trical Ivan	Triticale
3	Trical Jenkins	Triticale
7	Featherstone 520	Wheat
9	Jackson	Wheat
9	Madison	Wheat
9	Massey	Wheat
9	McCormick	Wheat
9	Pocahontas	Wheat
9	Roane	Wheat
9	Sisson	Wheat
10	Verne	Wheat
9	Wakefield	Wheat
12	VA97W-24	Wheat

Source

1. Paul Murphy
   NCSU
   Campus Box 7629
   840 Method Road Unit 3
   Raleigh, NC 27695-7629

2. Myron Fountain
   NC Foundation Seed
   8220 Riley Hill Rd.
   Zebulon, NC 27597
   (919) 269-5592

3. Bill Smith
   Resource Seeds
   2355 Rice Pike
   Union, KY 41091

4. Tony Harper
   Pennington Seed, Inc.
   PO BOX 290
   Madison, GA 30650

5. Wayne Swink
   PO Box 326
   Tulia, TX 79088

6. Butch Johns
   Evergreen Seed
   PO Box 27
   Rice, VA 23966

7. Juan Whittington
   Featherstone Farm
   13941 Genito Rd.
   Amelia, VA 223002

8. Howard Tabor
   S. States Central Office
   PO Box 26234
   Richmond, VA 23260

9. David Whitt
   Virginia Crop Improvement Assoc.
   9142 Atlee Station Road
   Mechanicsville, VA 23111

10. KY Seed Improvement Assoc.
    PO Box 12008
    Lexington, KY 40579-2008

11. Check - purchased locally

12. Carl Griffey
    Virginia Tech
    Dept. of CSES
    Blacksburg, VA 24061

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va.
Boot Stage Relative Yield and Crude Protein Average of All Years Tested

Cultivar	Species[1]	2004	AVG[2]	2004	AVG[2]	Years Tested
		Relative Yield, %		Crude Protein, %		
Thoroughbred	B	116	116	16.45	16.45	1
Starling	B	103	116	18.00	15.44	11
Callao	B	97	87	17.35	16.59	10
Nomini	B	95	98	17.25	15.50	11
Price	B	88	97	16.45	15.44	2
Barsoy	B	.	101	.	14.40	2
Pamunkey	B	.	97	.	16.01	3
VA 92-42-279	B	.	100	.	17.15	1
SS 76-30	O	100	91	15.18	13.35	11
N90-6590	O	.	119	.	14.10	6
Rodgers	O	.	96	.	13.77	6
Wheeler	R	124	124	19.03	14.89	11
Early Grazer	R	76	87	20.13	17.49	9
6250 Abruzzi	R	.	66	.	17.91	1
Abruzzi	R	.	89	.	14.60	6
ABT XR9901	R	.	105	.	17.89	1
ABT XR9903	R	.	96	.	18.14	1
Grazemaster	R	.	95	.	18.34	2
Pastar	R	.	123	.	13.66	4
SPI Exp	R	.	80	.	18.40	3
SR-XR9908	R	.	89	.	17.74	2
V N S (MI)	R	.	111	.	14.95	4
V N S (SD)	R	.	105	.	14.62	5
VA CT Abruzzi	R	.	92	.	15.87	4
Winter Grazer 70	R	.	94	.	16.74	5
Winter King	R	.	89	.	15.21	8
Trical 102	T	139	124	17.03	11.72	11
Trical 2700	T	124	113	16.03	12.05	9
Trical 336	T	121	109	16.05	13.47	5
Trical 815	T	110	101	17.90	14.06	7
Trical RSI 342	T	93	93	16.48	16.48	1
Trical 2205	T	88	104	16.38	15.01	3
Trical 498	T	76	75	17.95	14.87	10
Trical 2115	T	75	87	18.13	16.95	3
Trical 308	T	73	83	18.23	16.14	4
Arcia	T	.	96	.	15.23	2

Small Grain Forage Variety Test

Northern Piedmont AREC, Orange, Va.

Boot Stage Relative Yield and Crude Protein Average of All Years Tested (continued)

		2004	AVG[2]	2004	AVG[2]	
Cultivar	**Species[1]**	**Relative Yield, %**		**Crude Protein, %**		**Years Tested**
RSI Exp AZ 1998	T	.	122	.	15.50	2
RSI TCL Exp 368	T	.	99	.	13.48	1
RSI TCL Exp 451	T	.	88	.	13.77	3
Trical Jenkins	T	.	116	.	10.79	3
Trical L762	T	.	95	.	16.71	1
VA97W-24	W	106	110	17.40	14.84	3
Jackson	W	103	100	16.30	13.25	11
Roane	W	100	101	15.58	14.29	6
McCormick	W	96	93	16.68	14.29	2
Sisson	W	94	93	16.50	14.79	4
Featherstone 520	W	.	100	.	12.96	8
Madison	W	.	89	.	12.16	5
Massey	W	.	97	.	10.89	4
Pocahontas	W	.	83	.	13.32	6
Verne	W	.	90	.	15.72	1
Wakefield	W	.	100	.	11.66	2

[1]B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

[2]Average of all years tested, 1993-2004.

Relative Yield is the relative ranking of a variety's yield, compared to others in a particular test. A Relative Yield score of 100% indicates that a variety's yield performance is average among those in a test.

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va.
Soft Dough Stage Relative Yield and Crude Protein Average of All Years Tested

Cultivar	Species[1]	2004	AVG[2]	2004	AVG[2]	Years Tested
		Relative Yield, %		Crude Protein, %		
Thoroughbred	B	114	114	7.10	7.10	1
Nomini	B	106	101	7.63	8.20	11
Starling	B	104	104	9.19	8.57	11
Price	B	90	91	7.42	8.93	2
Callao	B	86	98	9.07	8.64	10
Barsoy	B	.	92	.	7.13	2
Pamunkey	B	.	95	.	8.30	3
VA 92-42-279	B	.	108	.	6.68	1
SS 76-30	O	100	97	7.04	7.67	11
N90-6590	O	.	106	7.45	8.53	6
Rodgers	O	.	99	6.49	7.93	6
Wheeler	R[3]	107	110	11.01	10.83	10
Early Grazer	R[3]	93	96	12.46	11.73	9
Pastar	R[3]	.	112	.	9.17	3
V N S (SD)	R[3]	.	110	.	9.60	4
Grazemaster	R[3]	.	106	11.08	12.27	2
ABT XR9901	R[3]	.	105	.	11.24	1
Winter Grazer 70	R[3]	.	102	11.24	11.75	5
Winter King	R[3]	.	100	.	10.81	7
SPI Exp	R[3]	.	97	12.24	11.77	3
ABT XR9903	R[3]	.	95	.	11.97	1
V N S (MI)	R[3]	.	93	12.37	12.69	5
Abruzzi	R[3]	.	89	.	10.75	5
VA CT Abruzzi	R[3]	.	89	.	10.63	3
6250 Abruzzi	R[3]	.	74	.	12.54	1
Trical 336	T	113	113	5.62	6.43	5
Trical RSI 342	T	111	111	5.11	5.11	1
Trical 2700	T	100	105	6.41	6.15	8
Trical 102	T	108	101	6.10	6.38	10
Trical 2205	T	100	101	6.78	6.62	3
Trical 2115	T	93	94	6.27	6.69	3
Trical 815	T	93	101	7.52	6.86	7
Trical 498	T	92	94	6.05	6.43	10
Trical 308	T	81	90	6.69	7.00	4
Arcia	T	.	101	.	7.33	2
RSI Exp 111	T	.	86	.	8.91	1
RSI Exp 501	T	.	108	.	5.83	1

Small Grain Forage Variety Test

Northern Piedmont AREC, Orange, Va.

Soft Dough Stage Relative Yield and Crude Protein Average of All Years Tested (continued)

Cultivar	Species[1]	2004	AVG[2]	2004	AVG[2]	Years Tested
		Relative Yield, %		Crude Protein, %		
RSI Exp AZ 1998	T	.	110	.	7.27	2
RSI TCL Exp 368	T	.	93	.	7.87	1
RSI TCL Exp 451	T	.	91	.	6.95	3
Trical Jenkins	T	.	95	.	6.83	2
Trical L762	T	.	108	.	7.62	1
VA97W-24	W	106	107	6.84	6.90	3
Jackson	W	103	104	6.58	7.02	11
Roane	W	100	97	5.39	7.73	6
McCormick	W	96	96	5.82	6.63	2
Sisson	W	94	99	7.14	7.51	4
Featherstone 520	W	.	97	.	7.59	8
Madison	W	.	85	.	6.76	5
Massey	W	.	99	.	6.25	4
Pocahontas	W	.	98	.	7.99	4
Verne	W	.	84	.	6.96	1
Wakefield	W	.	93	.	7.18	2

[1]B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

[2]Average of all years tested, 1993-2004

[3]Rye harvested at flowering

Relative Yield is the relative ranking of a variety's yield, compared to others in a particular test. A Relative Yield score of 100% indicates that a variety's yield performance is average among those in a test.

Small Grain Forage Variety Test

Northern Piedmont AREC, Orange, Va. 2003-2004

Boot Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	% Ground Cover	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Thoroughbred	B	04/22	32	93	0	16.45	33.63	60.00	62	10.17	3.56
Starling	B	04/20	32	95	0	18.00	33.58	60.28	62	9.06	3.17
Callao	B	04/19	30	88	0	17.35	32.90	60.25	62	8.51	2.98
Nomini	B	04/19	32	95	0	17.25	34.53	60.28	61	8.37	2.93
Price	B	04/19	26	88	0	16.45	32.53	59.90	63	7.76	2.72
SS 76-30	O	04/26	27	85	0	15.18	31.58	55.60	63	5.69	1.99
Wheeler	R	04/22	49	100	10	19.03	33.10	58.03	62	9.78	3.42
Early Grazer	R	04/06	29	88	5	20.13	26.73	52.77	66	6.05	2.12
Trical 102	T	04/30	47	99	6	17.03	37.60	61.23	59	12.30	4.31
Trical 2700	T	04/26	40	98	0	16.03	37.38	62.65	59	10.98	3.84
Trical 336	T	04/26	34	94	0	16.05	35.35	61.13	61	10.71	3.75
Trical 815	T	04/26	32	96	0	17.90	33.55	59.93	62	9.71	3.40
Trical RSI 342	T	04/20	36	86	0	16.48	33.00	59.65	62	8.20	2.87
Trical 2205	T	04/23	27	89	0	16.38	31.68	57.45	63	7.73	2.71
Trical 498	T	04/20	29	95	0	17.95	31.05	56.18	63	6.72	2.35
Trical 2115	T	04/20	25	96	0	18.13	30.03	56.63	64	6.59	2.30
Trical 308	T	04/20	29	93	0	18.23	30.95	56.93	64	6.44	2.25
VA97W-24	W	04/26	37	94	0	17.40	36.83	62.15	60	11.36	3.98
Jackson	W	04/26	31	97	0	16.30	34.53	57.90	61	10.44	3.65
Roane	W	04/26	28	90	0	15.58	33.70	61.48	62	9.61	3.36
McCormick	W	04/26	26	96	0	16.68	34.75	61.48	61	8.77	3.07
Sisson	W	04/22	30	90	0	16.50	30.63	55.85	64	8.61	3.01
LSD 0.05						**2.20**				**1.26**	**0.44**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 2003-2004
Soft Dough Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Thoroughbred	B	05/21	38	3	7.10	39.04	66.60	58	22.93	8.03
Nomini	B	05/17	43	5	7.63	40.65	64.48	57	21.35	7.47
Starling	B	05/17	43	54	9.19	36.87	59.55	60	20.97	7.34
Price	B	05/17	35	3	7.42	38.14	61.54	59	18.10	6.33
Callao	B	05/13	36	11	9.07	37.30	62.59	59	17.24	6.04
SS 76-30	O	05/17	42	0	10.58	35.04	55.93	61	13.13	4.60
Wheeler	R	05/13	63	70	12.22	41.99	66.25	56	16.70	5.85
Early Grazer	R	04/30	68	0	11.70	42.49	68.05	56	14.59	5.11
Trical 336	T	06/07	52	0	5.62	47.20	74.17	53	23.82	8.34
Trical RSI 342	T	06/07	55	0	5.11	45.67	74.69	54	23.37	8.18
Trical 2700	T	06/07	59	20	6.41	47.77	73.26	53	23.10	8.09
Trical 102	T	06/14	61	65	6.10	48.00	73.66	52	22.73	7.95
Trical 2205	T	06/02	45	0	6.78	43.85	71.18	55	21.16	7.41
Trical 2115	T	06/07	41	0	6.27	43.89	72.50	55	19.62	6.87
Trical 815	T	06/10	51	0	7.52	43.00	72.5	56	19.55	6.84
Trical 498	T	06/02	44	0	6.05	47.19	74.18	53	19.48	6.82
Trical 308	T	06/07	39	0	6.69	44.89	74.33	54	17.01	5.95
VA97W-24	W	06/01	44	20	6.84	41.35	65.47	57	22.35	7.82
Jackson	W	06/01	43	7	6.58	42.59	67.49	56	21.70	7.59
Roane	W	06/01	39	0	5.39	45.25	70.31	54	20.97	7.34
McCormick	W	06/01	38	0	5.82	45.50	69.12	54	20.21	7.07
Sisson	W	05/27	38	0	7.14	37.64	61.62	59	19.86	6.95
LSD 0.05					**1.47**				**2.51**	**0.88**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 2002-2003
Boot Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	% Ground Cover	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Nomini	B	04/17	33	97	0	16.17	32.01	52.10	63	8.56	3.00
Starling	B	04/17	33	93	0	17.05	30.72	48.04	64	8.53	2.99
Price	B	04/17	29	79	0	16.62	29.11	48.27	65	7.83	2.74
Callao	B	04/16	27	78	0	18.01	29.94	50.89	64	7.22	2.53
Rodgers	O	04/30	33	82	0	12.58	29.75	50.56	64	9.35	3.27
N90-6590	O	04/30	34	81	0	12.35	27.90	47.21	66	8.92	3.12
SS 76-30	O	04/30	34	78	0	13.59	28.94	48.73	65	8.72	3.05
Wheeler	R	04/24	47	99	1	13.79	32.12	52.66	63	11.63	4.07
V N S (MI)	R	04/21	39	85	0	16.07	31.81	55.02	63	8.27	2.89
Grazemaster	R	04/14	34	93	3	17.19	29.17	51.23	65	7.85	2.75
Winter Grazer 70	R	04/14	34	76	0	18.05	28.48	51.14	65	7.12	2.49
SPI Exp	R	04/14	33	78	0	18.53	29.09	50.25	65	6.85	2.40
Early Grazer	R	04/04	30	96	31	18.76	27.79	50.09	66	6.21	2.17
Trical 336	T	04/27	35	92	0	12.25	33.95	55.43	62	13.64	4.78
Trical 2700	T	04/30	46	98	0	11.59	38.06	60.17	59	13.04	4.56
Trical 102	T	05/02	50	74	29	10.03	37.73	59.47	59	12.45	4.36
Arcia	T	04/25	34	91	0	13.18	32.83	54.94	62	11.62	4.07
Trical 815	T	04/30	35	83	0	12.78	32.50	54.87	63	11.53	4.03
Trical 2205	T	04/28	31	85	0	12.76	30.73	52.27	64	11.18	3.91
Trical 308	T	04/17	32	95	5	14.55	30.58	51.63	64	9.23	3.23
Trical 2115	T	04/17	28	94	0	15.73	28.81	49.75	65	8.94	3.13
Trical 498	T	04/17	30	96	0	15.29	29.64	51.26	64	8.78	3.07
VA97W-24	W	05/02	44	83	9	11.38	36.41	56.81	60	14.63	5.12
Jackson	W	04/30	33	89	0	11.53	32.43	52.02	63	13.20	4.62
Featherstone 520	W	04/30	37	94	0	12.93	32.83	53.94	62	13.20	4.62
Roane	W	05/02	34	79	0	13.38	32.52	54.12	63	12.69	4.44
McCormick	W	05/02	31	77	0	12.57	32.73	53.67	62	11.89	4.16
Sisson	W	04/28	32	83	0	12.84	29.71	49.58	64	11.31	3.96
LSD 0.05						**1.76**				**1.25**	**0.92**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 2002-2003
Soft Dough Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Callao	B	05/12	38	73	9.71	35.66	59.47	60	15.63	5.47
Starling	B	05/12	46	84	9.47	40.50	61.61	57	15.46	5.41
Nomini	B	05/12	47	51	9.91	41.57	63.34	57	15.38	5.38
Price	B	05/12	40	1	10.44	38.70	61.61	58	13.63	4.77
N90-6590	O	06/09	51	71	7.45	40.38	60.33	57	18.94	6.63
SS 76-30	O	06/09	51	84	7.04	40.08	59.77	58	15.47	5.42
Rodgers	O	06/09	46	23	6.49	37.88	57.43	59	14.87	5.20
Wheeler	R[2]	05/05	63	55	11.01	40.07	63.12	58	11.53	4.04
Grazemaster	R[2]	04/30	60	63	11.08	38.79	62.32	58	11.06	3.87
V N S (MI)	R[2]	05/07	68	46	12.37	39.78	64.03	58	10.76	3.77
Winter Grazer 70	R[2]	04/30	63	46	11.24	39.45	63.16	58	10.63	3.72
SPI Exp	R[2]	04/30	62	53	12.24	37.05	60.12	60	10.59	3.71
Early Grazer	R[2]	04/28	57	86	12.46	37.56	60.45	59	8.91	3.12
Trical 2700	T	06/09	62	93	6.28	42.12	65.39	56	21.62	7.57
Trical 2115	T	06/09	45	0	6.83	40.14	64.77	58	19.74	6.91
Trical 2205	T	06/05	45	0	6.94	40.95	64.53	57	18.48	6.47
Trical 336	T	06/05	54	28	7.01	42.50	67.11	56	18.38	6.43
Trical 308	T	06/05	41	3	7.80	40.68	65.45	57	18.15	6.35
Arcia	T	06/05	52	46	7.30	40.60	63.50	57	17.93	6.28
Trical 498	T	06/05	49	0	6.21	44.19	67.18	55	17.84	6.24
Trical 102	T	06/09	68	99	6.27	44.05	65.61	55	17.72	6.20
Trical 815	T	06/09	54	19	7.66	43.68	67.36	55	17.13	5.99
Jackson	W	06/09	45	91	6.31	42.33	63.71	56	20.97	7.34
VA97W-24	W	06/09	47	95	7.04	42.31	63.07	56	20.31	7.11
Sisson	W	06/05	42	48	7.45	39.98	61.54	58	18.80	6.58
Roane	W	06/05	43	21	8.42	39.93	61.71	58	18.40	6.44
McCormick	W	06/05	41	1	7.45	41.57	62.13	57	18.31	6.41
Featherstone 520	W	06/09	42	95	8.25	41.39	65.70	57	17.52	6.13
LSD 0.05					**1.86**				**2.63**	**0.92**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

[2] Rye harvested at flowering

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 2001-2002
Boot Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	% Ground Cover	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	4/15	34	99	0	19.22	29.36	50.65	65	10.41	3.64
Nomini	B	4/15	33	97	0	18.08	29.19	51.59	65	8.29	2.90
Callao	B	4/12	27	98	0	17.76	25.10	46.93	67	7.32	2.56
N90-6590	O	4/24	29	95	0	15.91	26.32	46.93	67	8.79	3.08
SS 76-30	O	4/18	26	95	0	15.45	27.02	48.42	66	6.28	2.20
Rodgers	O	4/18	24	93	0	15.89	25.81	47.33	67	6.24	2.18
Wheeler	R	4/18	45	99	24	18.39	28.15	49.85	65	9.33	3.27
Grazemaster	R	4/8	39	98	3	19.50	25.80	47.16	67	8.97	3.14
Winter Grazer 70	R	4/8	38	98	8	19.74	25.58	47.44	67	8.84	3.09
Early Grazer	R	4/8	37	96	5	17.97	24.60	46.32	68	8.64	3.02
V N S (Mi.)	R	4/18	40	97	20	17.74	30.38	53.15	64	8.38	2.93
RSI Exp Az 1998	T	4/24	34	99	0	15.50	30.13	52.96	64	13.79	4.83
Trical 815	T	4/24	35	99	0	15.59	30.35	53.05	64	13.28	4.65
Trical 2205	T	4/16	28	99	0	15.88	26.23	48.47	67	11.24	3.93
Trical 102	T	4/26	47	98	0	16.40	30.96	52.39	64	10.63	3.72
Trical 2115	T	4/16	28	99	0	17.00	27.08	49.77	66	9.70	3.40
Trical 336	T	4/18	31	99	0	16.09	29.67	52.28	64	9.69	3.39
Trical 498	T	4/18	26	99	0	16.84	29.46	51.73	65	7.55	2.64
Trical 308	T	4/18	24	99	0	17.95	28.19	50.39	65	7.24	2.54
Featherstone 520	W	4/24	31	99	0	14.21	29.09	53.33	65	10.80	3.78
VA97W-24	W	4/24	36	99	0	15.75	30.06	52.71	64	9.95	3.48
Jackson	W	4/24	32	99	0	15.56	29.57	51.93	64	9.27	3.24
Roane	W	4/24	27	99	0	15.90	27.76	51.66	66	9.10	3.19
Sisson	W	4/18	26	100	0	15.56	27.13	49.57	66	7.90	2.76
LSD 0.05						**1.44**				**1.33**	**0.47**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 2001-2002
Soft Dough Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	5/14	41	58	10.49	30.67	50.71	64	17.86	6.25
Callao	B	5/14	35	0	8.56	30.95	53.33	64	17.10	5.98
Nomini	B	5/14	41	0	9.31	30.58	51.20	64	16.99	5.95
Rodgers	O	5/16	44	0	9.59	30.16	51.51	64	14.26	4.99
SS 76-30	O	5/16	48	0	8.92	30.70	51.31	64	14.24	4.98
N90-6590	O	5/16	44	0	10.03	31.75	53.90	63	13.88	4.86
Grazemaster	R	4/24	58	34	13.46	33.26	56.37	62	12.63	4.42
V N S (Mi.)	R	5/3	55	90	12.96	34.15	58.06	61	12.23	4.28
Winter Grazer 70	R	4/24	58	24	12.72	32.81	56.45	62	12.19	4.27
Wheeler	R	5/3	57	90	14.82	33.19	54.90	62	11.25	3.94
Early Grazer	R	4/24	61	20	14.40	32.65	56.08	62	10.90	3.81
Trical 336	T	6/5	52	0	5.92	39.62	65.06	58	22.71	7.95
RSI Exp Az 1998	T	6/5	48	38	7.32	36.95	65.25	60	22.28	7.80
Trical 2205	T	6/5	42	0	6.14	36.34	63.60	60	21.99	7.70
Trical 815	T	6/5	54	8	6.44	38.15	62.97	59	20.88	7.31
Trical 2115	T	6/5	38	5	6.96	36.95	63.12	60	19.90	6.96
Trical 102	T	6/5	61	71	6.61	39.88	63.49	58	19.69	6.89
Trical 308	T	6/5	36	13	7.02	37.00	63.84	60	18.91	6.62
Trical 498	T	6/5	45	10	5.70	40.27	65.08	57	18.57	6.50
VA97W-24	W	5/28	40	14	6.81	34.37	57.42	61	20.13	7.05
Sisson	W	5/28	35	25	6.78	32.79	56.28	62	19.28	6.75
Jackson	W	5/28	41	19	6.30	33.16	55.49	62	18.84	6.59
Roane	W	5/28	36	15	6.51	33.41	56.05	62	18.17	6.36
Featherstone 520	W	5/28	36	44	7.02	32.32	56.19	63	17.89	6.26
LSD 0.05					**1.14**				**1.67**	**0.58**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test

Northern Piedmont AREC, Orange, Va. 2000-2001

Boot Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	% Ground Cover	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	4/27	28	15	0	16.6	27.3	50.5	66	4.19	1.47
Nomini	B	4/27	28	18	0	17.4	26.9	50.6	66	4.03	1.41
Callao	B	4/27	24	14	0	18.9	25.4	50.1	67	3.32	1.16
N90-6590	O	5/7	18	50	0	16.9	20.0	40.1	71	2.62	0.92
Rodgers	O	5/7	22	60	0	16.9	22.6	45.9	69	1.82	0.64
SS 76-30	O	5/7	25	73	0	17.0	22.6	44.6	69	1.34	0.47
Wheeler	R	4/30	36	1	3	15.2	29.4	53.1	65	7.03	2.46
V N S (MI)	R	4/30	34	20	0	15.5	29.2	54.4	65	5.61	1.96
SR-XR9908	R	4/16	30	10	0	19.9	29.2	53.7	65	4.06	1.42
Winter Grazer 70	R	4/16	32	5	0	20.6	29.4	54.3	65	3.91	1.37
Early Grazer	R	4/16	30	8	0	19.5	30.1	54.1	64	3.76	1.32
Winter King	R	4/16	28	6	0	20.7	28.5	52.7	65	3.73	1.31
SPI Exp	R	4/16	29	29	0	22.8	26.7	50.6	66	2.60	0.91
Trical 102	T	5/7	36	16	0	12.3	28.0	51.1	65	7.18	2.51
RSI Exp 501	T	4/30	28	6	0	13.4	27.4	51.3	66	7.03	2.46
RSI Exp AZ 1998	T	5/7	24	9	0	12.3	27.1	52.2	66	6.48	2.27
Trical 308	T	4/30	24	13	0	13.9	28.0	53.6	66	5.56	1.95
Trical 498	T	4/30	23	8	0	13.9	26.5	49.1	66	5.24	1.84
Trical 815	T	5/4	27	16	0	13.2	26.8	51.3	66	5.11	1.79
RSI Exp 111	T	5/4	18	24	0	16.2	25.4	49.5	67	3.96	1.38
Featherstone 520	W	4/30	22	6	0	13.6	26.2	47.4	67	6.09	2.13
Sisson	W	4/30	24	5	0	14.3	24.7	46.7	68	5.93	2.07
Jackson	W	5/4	25	6	0	14.3	27.8	50.4	66	5.92	2.07
Roane	W	5/4	23	5	0	14.3	26.3	50.4	67	5.63	1.97
Pocahontas	W	4/30	18	10	0	16.0	24.4	46.4	68	4.51	1.58
LSD 0.05						**1.3**	**1.8**	**2.9**		**0.88**	**0.31**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 2000-2001
Soft Dough Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	5/24	31	95	9.0	32.8	57.6	62	9.21	3.22
Nomini	B	5/24	33	51	8.8	32.9	58.3	62	7.60	2.66
Callao	B	5/24	26	68	9.2	31.3	59.5	63	7.36	2.57
N90-6590	O	6/11	28	4	10.6	32.8	57.6	62	11.10	3.88
SS 76-30	O	6/11	34	18	10.9	32.8	57.0	62	8.62	3.02
Rodgers	O	6/11	30	5	10.7	32.4	59.0	63	8.55	2.99
Winter Grazer 70	R[2]	5/4	62	0	10.5	39.0	64.1	58	8.59	3.01
Wheeler	R[2]	5/7	54	0	11.8	34.1	58.3	61	8.53	2.99
SR-XR9908	R[2]	5/4	59	0	10.1	38.7	64.3	59	8.28	2.90
Winter King	R[2]	5/4	58	0	11.1	38.3	63.8	59	8.21	2.87
Early Grazer	R[2]	5/4	65	0	10.9	38.4	63.3	59	8.05	2.82
SPI Exp	R[2]	5/4	59	0	11.7	36.5	61.7	60	6.82	2.39
V N S (MI)	R[2]	5/7	46	0	12.3	33.4	59.4	62	6.26	2.19
RSI Exp AZ 1998	T	6/11	38	3	7.2	34.0	62.7	62	16.98	5.94
RSI Exp 501	T	6/11	38	3	5.8	35.5	61.5	61	16.41	5.74
Trical 815	T	6/11	42	5	5.9	34.4	59.9	61	16.31	5.71
Trical 102	T	6/11	56	70	7.1	37.2	60.8	59	16.09	5.63
Trical 498	T	6/11	36	5	6.1	36.6	62.9	60	14.37	5.03
Trical 308	T	6/11	30	3	6.5	33.4	59.9	62	13.55	4.74
RSI Exp 111	T	6/11	30	0	8.9	33.2	59.6	62	13.05	4.57
Featherstone 520	W	5/31	28	0	8.0	30.3	54.6	64	11.52	4.03
Sisson	W	5/31	28	0	8.7	31.3	52.7	63	10.71	3.75
Jackson	W	5/31	25	0	8.4	31.2	53.6	63	10.57	3.70
Roane	W	5/31	24	0	8.7	31.8	56.0	63	10.52	3.68
Pocahontas	W	5/31	28	0	7.6	32.2	56.0	63	10.25	3.59
LSD 0.05					**1.2**	**1.8**	**3.4**		**2.08**	**0.73**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

[2] Rye harvested at flowering

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 1999-2000
Boot Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	% Ground Cover	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	04/19	36	100	45	18.4	28.9	50.6	65	7.85	2.75
Nomini	B	04/14	29	100	0	18.4	25.9	47.4	67	6.74	2.36
Callao	B	04/14	26	100	0	20.1	22.5	46.6	69	5.35	1.87
N90-6590	O	04/26	30	100	0	17.0	26.2	46.5	67	7.17	2.51
Rodgers	O	04/21	30	100	0	17.4	25.5	47.9	67	6.40	2.24
SS 76-30	O	04/26	37	100	0	16.9	25.9	47.1	67	6.16	2.16
Wheeler	R	04/19	38	100	86	18.5	28.8	50.0	65	9.56	3.35
V N S (MI)	R	04/19	41	100	71	17.8	29.5	53.2	65	9.07	3.17
Winter Grazer 70	R	04/07	38	100	70	18.8	27.8	51.0	66	8.64	3.02
ABT XR9901	R	04/10	39	100	45	17.9	27.6	51.3	66	8.61	3.01
ABT XR9903	R	04/07	42	100	70	18.1	27.5	50.7	66	7.88	2.76
SPI Exp	R	04/07	39	100	30	18.3	27.9	50.9	66	7.70	2.69
Winter King	R	04/05	38	100	73	20.6	27.0	49.3	66	7.49	2.62
Early Grazer	R	04/05	39	100	74	19.3	27.5	50.1	66	6.72	2.35
Trical 102	T	05/08	59	100	74	13.5	36.6	58.6	60	14.10	4.93
Trical 2700	T	05/02	48	100	33	14.8	35.1	59.1	61	13.54	4.74
Trical 336	T	04/26	37	100	0	16.9	29.6	52.8	64	11.17	3.91
Trical 815	T	04/26	33	100	0	17.8	29.3	51.5	65	10.59	3.71
Arcia NCSU	T	04/19	33	100	0	17.3	28.9	52.9	65	9.56	3.35
Trical 498	T	04/19	31	100	0	17.3	31.0	54.1	64	9.52	3.33
RSI TCL Exp 451	T	04/21	37	100	10	19.3	28.5	50.4	65	8.31	2.91
Jackson	W	04/28	30	100	0	19.3	29.1	51.0	65	9.93	3.47
Pocahontas	W	04/26	28	100	0	18.4	29.0	51.8	65	9.62	3.37
Roane	W	04/26	27	100	0	19.6	29.0	52.2	65	9.38	3.28
Featherstone 520	W	04/26	30	100	0	18.4	29.8	52.6	64	8.95	3.13
LSD 0.05						**2.3**	**2.0**	**2.6**		**1.32**	**0.46**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 1999-2000
Soft Dough Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Nomini	B	05/15	50	4	8.3	39.2	60.9	58	18.10	6.33
Starling	B	05/15	44	45	9.1	36.5	57.8	60	16.67	5.83
Callao	B	05/15	39	0	9.2	36.2	61.2	60	16.28	5.70
Rodgers	O	05/24	47	39	9.1	35.6	57.6	60	17.17	6.01
N90-6590	O	05/24	46	29	10.1	33.0	54.5	62	17.13	6.00
SS 76-30	O	05/24	51	41	9.0	36.6	55.3	60	14.99	5.25
Wheeler	R[2]	05/08	64	76	11.7	38.9	60.9	58	14.77	5.17
Early Grazer	R[2]	04/26	58	84	11.4	35.8	58.9	60	14.61	5.11
ABT XR9901	R[2]	04/28	56	60	11.2	36.8	59.9	60	14.29	5.00
SPI Exp	R[2]	04/28	60	75	11.3	35.5	58.9	61	14.28	5.00
Winter Grazer 70	R[2]	04/28	60	78	12.6	36.0	58.1	60	13.85	4.85
Winter King	R[2]	04/26	58	89	12.9	35.4	57.9	61	13.13	4.60
ABT XR9903	R[2]	04/28	58	70	12.0	36.6	59.8	60	13.00	4.55
V N S (MI)	R[2]	05/02	54	89	14.5	34.8	58.6	61	11.36	3.98
Trical 336	T	06/01	54	20	7.5	40.0	62.6	58	23.15	8.10
Arcia	T	06/01	54	69	7.4	37.6	60.4	59	22.15	7.75
Trical 498	T	06/01	51	47	6.9	40.6	65.1	57	21.96	7.69
Trical 815	T	06/05	54	20	6.8	40.3	61.6	57	19.84	6.94
Trical 2700	T	06/05	61	91	6.4	40.3	64.1	57	19.73	6.90
Trical 102	T	06/05	64	96	7.1	39.1	59.3	58	19.33	6.77
RSI TCL Exp 451	T	06/05	54	91	6.5	40.9	63.3	57	17.53	6.14
Jackson	W	05/24	44	93	9.7	36.0	55.2	60	20.15	7.05
Pocahontas	W	05/24	45	15	9.1	36.6	56.8	60	19.79	6.93
Featherstone 520	W	05/24	45	76	9.4	37.0	58.8	60	19.73	6.91
Roane	W	05/26	41	76	9.9	36.9	59.2	60	18.55	6.49
LSD 0.05					**1.7**	**2.8**	**3.6**		**2.47**	**0.86**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

[2] Rye harvested at flowering

Small Grain Forage Variety Test

Northern Piedmont AREC, Orange, Va. 1998-1999

Boot Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	% Ground Cover	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	04/15	30	0	0	14.68	30.2	55.1	64	8.03	2.81
Callao	B	04/09	26	0	0	14.24	30.1	55.0	64	8.02	2.81
Nomini	B	04/12	29	0	0	14.83	31.8	58.2	63	6.68	2.34
N90-6590	O	04/28	27	0	0	12.76	24.5	45.9	68	12.26	4.29
Rodgers	O	04/22	29	0	0	12.37	24.3	46.1	68	8.85	3.10
SS 76-30	O	04/22	28	0	0	12.39	23.6	45.0	68	7.37	2.58
Winter King	R	04/06	34	0	5	16.87	28.5	53.3	65	7.91	2.77
Abruzzi	R	04/06	43	0	8	15.86	29.3	53.6	65	7.88	2.76
Early Grazer	R	04/06	38	0	18	14.99	29.9	54.9	64	7.85	2.75
V N S (MI)	R	04/15	38	0	10	15.49	28.9	53.9	65	7.77	2.72
Winter Grazer 70	R	04/06	42	0	18	15.94	29.7	54.6	64	7.47	2.61
Wheeler	R	04/12	31	0	20	17.98	28.6	53.4	65	7.26	2.54
Trical 102	T	05/03	50	0	0	9.43	33.5	54.7	62	14.94	5.23
Trical 336	T	04/23	35	0	0	12.68	31.5	55.3	63	13.61	4.76
Trical 2700	T	04/23	41	0	0	11.87	35.0	59.7	61	12.82	4.49
Trical 815	T	04/23	34	0	0	12.81	29.9	53.8	64	10.99	3.85
RSI TCL Exp 451	T	04/21	36	0	0	12.39	28.2	51.2	65	9.81	3.43
Trical 498	T	04/19	29	50	0	14.28	25.9	47.5	67	7.44	2.60
Featherstone 520	W	04/23	32	0	0	11.82	28.4	51.9	65	12.87	4.50
Roane	W	04/26	31	0	0	12.23	27.7	51.6	66	14.63	5.12
Pocahontas	W	04/23	31	0	0	12.83	29.1	52.0	65	12.75	4.46
Jackson	W	04/23	32	0	0	11.37	28.2	51.3	65	12.57	4.40
LSD 0.05						**1.90**	**1.9**	**2.2**		**1.29**	**0.45**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 1998-1999
Soft Dough Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Callao	B	05/11	37	0	7.55	27.9	48.6	66	20.43	7.15
Starling	B	05/11	42	0	7.81	29.0	47.0	65	18.86	6.60
Nomini	B	05/11	46	0	7.55	30.4	47.4	64	18.83	6.59
Rodgers	O	05/24	41	0	7.70	33.3	54.0	62	15.65	5.48
SS 76-30	O	05/24	45	0	7.31	31.5	50.4	63	13.85	4.85
N90-6590	O	05/24	36	0	7.85	31.7	53.3	63	13.49	4.72
Wheeler	R[2]	04/28	57	44	10.19	36.8	57.9	60	14.81	5.18
Winter King	R[2]	04/26	61	20	8.92	39.2	60.6	58	13.70	4.80
V N S (MI)	R[2]	04/28	56	30	10.96	37.3	59.9	59	12.70	4.45
Early Grazer	R[2]	04/26	66	30	11.29	37.8	63.6	59	12.31	4.31
Abruzzi	R[2]	04/26	65	35	9.79	39.3	60.8	58	12.24	4.28
Winter Grazer 70	R[3]	04/26	66	23	10.38	38.1	61.2	59	12.19	4.27
Trical 336	T	06/01	54	35	7.28	31.0	55.5	64	24.99	8.75
Trical 2700	T	06/01	62	23	6.57	35.7	54.8	60	24.38	8.53
Trical 815	T	06/01	54	13	7.18	30.8	50.9	64	22.89	8.01
RSI TCL Exp 451	T	06/01	52	13	6.05	35.6	60.5	61	22.71	7.95
Trical 102	T	06/01	58	96	6.48	35.4	56.2	61	21.53	7.54
Trical 498	T	06/01	46	3	6.93	29.1	49.1	65	19.61	6.86
Jackson	W	05/24	42	33	7.20	29.9	50.7	64	22.21	7.77
Featherstone 520	W	05/24	41	5	6.97	29.1	49.0	65	21.99	7.70
Pocahontas	W	05/24	41	0	7.95	28.3	47.8	65	19.80	6.93
Roane	W	05/24	41	5	7.58	29.4	50.6	65	19.56	6.85
LSD 0.05					**1.30**	**2.72**	**4.88**		**2.36**	**0.83**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

[2] Rye harvested at flowering

Small Grain Forage Variety Test

Northern Piedmont AREC, Orange, Va. 1997-1998

Boot Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	% Ground Cover	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	04/11	30	0	0	16.7	30.5	56.3	64	8.47	2.96
Nomini	B	04/11	28	8	0	15.9	31.1	58.3	63	8.15	2.85
Callao	B	04/06	23	0	0	18.5	26.0	54.1	67	5.46	1.91
N90-6590	O	05/01	36	0	0	12.5	32.2	55.2	63	10.26	3.59
Rodgers	O	04/17	31	0	0	15.3	27.4	54.0	66	8.93	3.12
SS 76-30	O	04/22	33	0	0	14.1	30.2	54.9	64	7.65	2.68
Wheeler	R	04/14	39	11	5	15.5	31.2	55.8	63	10.69	3.74
Pastar	R	04/14	42	5	8	15.0	31.7	58.7	63	10.07	3.52
V N S (SD)	R	04/14	36	4	0	14.8	29.6	56.2	64	9.56	3.35
Early Grazer	R	04/03	24	91	79	18.0	27.2	54.4	66	7.90	2.77
Winter King	R	04/03	34	68	24	16.7	28.1	53.4	65	7.50	2.62
Abruzzi	R	04/03	29	91	50	16.4	27.0	53.3	66	7.02	2.46
6250 Abruzzi	R	04/03	23	94	89	17.9	26.4	53.3	67	5.49	1.92
Trical 2700	T	04/24	42	3	0	12.9	36.7	61.7	60	14.93	5.22
Trical 102	T	05/01	52	0	71	10.3	39.6	62.5	58	14.64	5.12
RSI TCL Exp 451	T	04/17	36	9	0	14.8	32.1	57.3	63	12.09	4.23
RSI TCL Exp 368	T	04/22	36	1	0	13.5	31.8	56.6	63	11.53	4.04
Trical 815	T	04/22	34	0	0	14.0	32.9	57.0	62	10.93	3.83
Trical 498	T	04/14	22	80	0	17.3	27.8	53.8	66	6.06	2.12
Pocahontas	W	04/17	30	43	0	13.6	31.9	56.8	63	11.92	4.17
Jackson	W	04/17	29	45	0	14.1	31.5	56.0	63	10.61	3.71
Madison	W	04/17	30	0	0	15.3	31.3	57.6	63	9.86	3.45
Featherstone 520	W	04/17	27	55	0	15.1	30.0	56.0	64	8.77	3.07
LSD 0.05						**2.0**	**2.0**	**2.7**		**1.64**	**0.57**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 1997-1998
Soft Dough Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Nomini	B	05/09	42	33	9.1	36.0	60.3	60	16.50	5.78
Starling	B	05/09	42	36	8.9	38.8	62.7	58	15.39	5.39
Callao	B	05/09	31	44	9.9	34.3	60.4	61	15.15	5.30
N90-6590	O	06/08	52	35	7.2	38.8	59.7	58	19.73	6.91
Rodgers	O	06/01	50	40	6.7	36.0	59.8	60	17.29	6.05
SS 76-30	O	06/01	55	77	6.9	40.0	60.5	58	17.15	6.00
Pastar	R[2]	05/01	58	83	8.0	41.1	65.6	57	16.54	5.79
Wheeler	R[2]	05/01	60	69	9.9	38.8	62.7	58	15.74	5.51
V N S (SD)	R[2]	05/01	60	79	8.9	38.5	63.5	59	15.23	5.33
Winter King	R[2]	04/24	48	35	12.3	36.6	62.3	60	12.69	4.44
Abruzzi	R[2]	04/24	46	30	12.4	35.8	60.9	60	9.63	3.37
Early Grazer	R[2]	04/24	44	23	12.9	35.2	61.5	61	9.51	3.33
6250 Abruzzi	R[2]	04/24	46	33	12.5	35.7	60.9	60	9.45	3.31
Trical 102	T	06/12	68	98	5.7	45.5	67.4	54	25.40	8.89
Trical 815	T	06/12	56	36	6.5	40.2	62.9	57	25.33	8.87
Trical 2700	T	06/12	66	60	6.6	39.3	62.3	58	24.58	8.60
RSI TCL Exp 368	T	06/12	50	63	7.9	39.8	65.8	58	20.81	7.28
RSI TCL Exp 451	T	06/08	52	78	7.1	38.4	61.7	59	19.54	6.84
Trical 498	T	06/08	48	3	8.1	39.5	63.6	58	18.92	6.62
Jackson	W	06/01	44	84	6.3	35.6	57.1	60	21.52	7.53
Pocahontas	W	05/26	42	48	7.3	34.9	55.3	61	20.54	7.19
Madison	W	05/26	42	45	8.0	38.1	59.5	59	20.35	7.12
Featherstone 520	W	06/01	40	90	7.3	34.7	57.1	61	20.27	7.09
LSD 0.05					**2.0**	**4.7**	**5.0**		**2.66**	**0.93**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat
[2] Rye harvested at flowering

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 1996-1997
Boot Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	% Ground Cover	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	04/21	31	87	0	9.2	25.0	42.2	67	8.84	3.10
Callao	B	04/14	24	97	0	11.0	28.6	49.7	65	5.13	1.79
Nomini	B	04/14	27	97	0	11.4	29.1	48.4	65	4.92	1.72
SS 76-30	O	04/29	22	60	0	10.4	19.4	36.7	71	3.53	1.24
Wheeler	R	04/25	44	100	0	11.1	28.5	48.5	65	11.40	3.99
Pastar	R	04/25	42	100	0	9.7	31.9	53.6	63	10.73	3.76
VA. CT Abruzzi	R	04/04	35	98	0	14.2	28.1	49.4	65	9.51	3.33
Abruzzi	R	04/04	32	81	0	13.5	27.1	48.9	66	6.16	2.16
V N S (SD)	R	04/25	34	100	0	11.3	29.2	49.9	65	6.08	2.13
Early Grazer	R	04/04	32	98	0	13.4	29.1	51.9	65	5.43	1.90
Winter King	R	04/04	27	88	0	15.2	24.3	44.1	68	4.76	1.67
Trical 102	T	05/08	49	100	0	7.6	33.8	54.4	62	11.24	3.93
Trical 498	T	04/21	27	100	0	10.1	25.0	44.5	67	9.59	3.36
Trical 2700	T	05/02	39	100	0	9.6	33.7	55.7	62	9.15	3.20
Featherstone 520	W	04/29	30	100	0	8.1	24.2	43.2	68	9.47	3.31
Jackson	W	04/29	28	100	0	8.7	25.5	42.8	67	8.86	3.10
Massey	W	04/29	31	100	0	7.8	21.4	39.3	70	8.74	3.06
Madison	W	04/29	29	100	0	8.9	23.1	42.6	69	7.98	2.79
LSD 0.05						**1.7**	**2.7**	**3.6**		**1.49**	**0.52**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 1996-1997
Soft Dough Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	05/19	42	0	5.6	25.9	50.8	67	14.81	5.18
Callao	B	05/13	36	0	6.8	27.6	54.0	66	12.26	4.29
Nomini	B	05/13	42	0	5.9	30.0	54.8	64	11.70	4.10
SS 76-30	O	06/05	36	0	7.1	31.0	55.0	63	8.95	3.13
Early Grazer	R[2]	04/29	68	13	8.0	39.1	63.5	58	11.97	4.19
Abruzzi	R[2]	04/29	64	47	6.8	38.7	63.5	59	11.84	4.15
Pastar	R[2]	05/08	60	0	8.2	42.6	66.7	56	11.27	3.95
Winter King	R[2]	04/29	62	17	9.1	38.7	63.0	59	11.18	3.91
Wheeler	R[2]	05/08	64	0	8.4	41.6	65.6	57	11.04	3.86
V N S (SD)	R[2]	05/08	55	0	8.9	38.1	63.6	59	10.91	3.82
VA CT Abruzzi	R[2]	04/29	64	30	8.6	38.4	64.3	59	10.64	3.72
Trical 2700	T	06/13	56	0	5.1	35.1	64.7	61	18.99	6.65
Trical 498	T	06/13	48	0	4.7	36.4	62.5	60	18.01	6.30
Trical 102	T	06/20	59	40	5.0	34.9	59.2	61	17.94	6.28
Jackson	W	06/05	39	0	5.7	31.5	58.4	63	16.51	5.78
Massey	W	06/05	40	0	5.9	30.3	55.9	64	14.54	5.09
Featherstone 520	W	06/05	37	0	5.9	28.9	57.6	65	13.69	4.79
Madison	W	06/05	38	0	6.0	30.2	59.2	64	13.14	4.60
LSD 0.05					**1.3**	**3.4**	**4.2**		**1.57**	**0.55**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat
[2] Rye harvested at flowering

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 1995-1996
Boot Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	% Ground Cover	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	04/29	25	13	0	16.1	27.2	54.7	66	3.72	1.30
Pamunkey	B	04/29	25	18	0	19.1	27.0	55.8	66	2.87	1.00
Nomini	B	04/26	23	16	0	19.6	27.6	56.2	66	2.72	0.95
Callao	B	04/26	20	9	0	20.4	28.1	59.5	65	2.50	0.87
SS 76-30	O	05/06	25	36	0	17.0	26.7	52.1	66	3.30	1.15
Pastar	R	04/29	40	1	14	16.4	31.7	56.7	63	6.38	2.23
Wheeler	R	04/29	40	6	9	14.4	30.9	55.1	64	6.21	2.18
V N S (SD)	R	04/29	37	5	3	17.2	28.4	56.5	65	5.64	1.97
Early Grazer	R	04/22	37	4	0	19.0	29.7	57.3	64	4.82	1.69
Winter King	R	04/22	37	4	0	17.9	30.8	56.2	64	4.44	1.55
VA CT Abruzzi	R	04/22	34	3	0	19.5	30.3	57.2	64	4.03	1.41
Abruzzi	R	04/22	31	9	0	20.1	27.9	55.1	66	2.88	1.01
Trical 102	T	05/14	49	3	89	13.4	35.8	54.4	60	10.22	3.58
Trical Jenkins	T	05/14	47	4	1	12.8	35.3	56.5	61	9.19	3.22
Trical 2700	T	05/06	40	1	18	13.3	35.1	60.3	61	9.19	3.22
Trical L762	T	05/10	35	3	91	16.7	31.6	58.6	63	6.30	2.20
Trical 498	T	04/29	26	1	0	17.6	28.1	55.4	65	5.82	2.04
Verne	W	05/06	34	0	0	15.7	31.7	59.1	63	7.36	2.58
Featherstone 520	W	05/06	32	1	0	15.0	31.3	58.8	63	7.02	2.46
Massey	W	05/06	31	0	0	13.1	30.6	56.5	64	6.81	2.39
Jackson	W	05/06	28	4	0	16.0	30.2	57.0	64	6.30	2.21
Madison	W	05/06	29	0	0	14.8	30.8	56.3	64	5.83	2.04
LSD 0.05						**3.5**	**2.08**	**NS**		**0.94**	**0.33**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 1995-1996
Soft Dough Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Nomini	B	05/30	35	0	9.2	29.3	56.9	65	12.56	4.40
Starling	B	05/30	36	0	10.2	29.9	57.9	64	11.81	4.13
Callao	B	05/30	27	0	9.9	25.4	55.2	67	11.04	3.86
Pamunkey	B	05/30	32	0	10.5	27.9	54.2	66	10.49	3.67
SS 76-30	O	06/21	36	20	7.6	34.1	52.8	61	12.31	4.31
V N S (SD)	R[2]	05/14	56	73	9.9	38.1	65.1	59	10.45	3.66
Wheeler	R[2]	05/14	54	78	11.1	37.7	63.0	59	9.69	3.39
Pastar	R[2]	05/14	58	73	11.3	37.5	63.7	59	9.36	3.28
Early Grazer	R[2]	05/06	54	20	11.6	37.8	64.3	59	9.18	3.21
Winter King	R[2]	05/06	51	48	10.6	38.8	64.2	58	8.90	3.12
VA CT Abruzzi	R[2]	05/06	50	53	11.2	38.5	66.3	59	7.48	2.62
Abruzzi	R[2]	05/06	48	55	11.9	37.9	65.3	59	7.07	2.47
Trical 498	T	06/11	45	28	6.7	36.4	58.8	60	17.52	6.13
Trical L762	T	06/21	47	96	7.6	39.0	64.2	58	16.89	5.91
Trical 102	T	06/21	57	98	6.7	39.7	62.6	58	15.75	5.51
Trical Jenkins	T	06/21	58	98	7.6	36.0	61.9	60	14.55	5.09
Trical 2700	T	06/21	54	96	6.4	36.0	63.1	60	13.29	4.65
Massey	W	06/11	42	84	7.3	28.4	52.0	65	16.60	5.81
Featherstone 520	W	06/11	37	66	7.8	28.9	51.4	65	16.50	5.78
Verne	W	06/11	41	48	7.0	30.9	52.9	64	16.44	5.75
Jackson	W	06/11	36	63	7.8	28.7	49.4	65	15.57	5.45
Madison	W	06/11	40	23	7.5	28.3	51.6	65	11.84	4.14
LSD 0.05					**1.3**	**3.2**	**3.9**		**3.78**	**1.32**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat
[2] Rye harvested at flowering

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 1994-1995
Boot Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	% Ground Cover	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	04/14	26	98	0	16.0	25.3	48.1	67	5.96	2.08
Pamunkey	B	04/14	28	96	0	13.4	25.9	53.7	67	5.95	2.08
Barsoy	B	04/14	24	97	0	14.4	25.0	50.6	67	5.68	1.99
Nomini	B	04/14	28	96	0	13.9	25.9	52.1	67	5.50	1.93
SS 76-30	O	04/21	19	89	0	11.7	19.6	39.9	71	5.56	1.95
Wheeler	R	04/25	44	99	0	14.7	29.0	53.1	65	9.16	3.21
V N S (SD)	R	04/25	33	95	0	14.4	26.9	53.6	66	8.19	2.87
Winter King	R	04/07	41	99	0	14.3	25.4	48.5	67	7.61	2.66
Abruzzi	R	04/07	37	98	13	14.8	24.5	47.4	68	7.42	2.60
VA CT Abruzzi	R	04/07	37	98	3	15.5	23.4	47.6	68	6.99	2.45
Trical 102	T	05/04	45	91	0	11.8	31.6	55.9	63	10.19	3.57
Trical 2700	T	04/25	37	98	0	12.6	28.6	54.7	65	9.10	3.19
Trical Jenkins	T	05/04	44	81	0	10.7	31.1	55.8	63	8.62	3.02
Trical 498	T	04/14	23	81	0	15.6	24.4	48.9	68	3.90	1.37
Massey	W	04/25	29	94	0	12.2	24.0	45.9	68	8.01	2.80
Jackson	W	04/25	25	81	0	11.4	23.8	46.7	68	7.58	2.65
Madison	W	04/25	27	80	0	11.0	24.7	48.2	68	6.89	2.41
Wakefield	W	04/25	25	81	0	12.2	22.7	45.0	69	6.84	2.39
LSD 0.05						**1.5**	**1.8**	**2.17**		**0.98**	**0.34**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 1994-1995
Soft Dough Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	Lodging %	% Crude Protein	ADF %	NDF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Nomini	B	05/11	36	0	7.9	26.1	50.0	67	15.01	5.25
Starling	B	05/11	34	0	8.9	27.1	49.7	66	14.89	5.21
Pamunkey	B	05/11	33	0	7.8	26.7	50.6	66	14.73	5.16
Barsoy	B	05/11	33	0	7.7	27.1	49.9	66	13.43	4.70
SS 76-30	O	05/11	35	0	8.7	30.5	54.2	64	11.05	3.87
Wheeler	R[2]	05/11	69	0	9.6	39.0	63.4	58	13.69	4.79
V N S (SD)	R[2]	05/11	57	0	10.7	37.4	62.4	59	12.40	4.34
Winter King	R[3]	04/21	58	0	11.0	36.1	61.0	60	10.85	3.80
Abruzzi	R[3]	04/21	56	0	12.8	31.9	59.5	63	10.35	3.62
VA CT Abruzzi	R[2]	04/21	59	0	12.1	34.1	59.5	61	9.62	3.37
Trical 2700	T	06/09	58	14	5.4	38.5	65.2	59	19.22	6.73
Trical 102	T	06/09	64	81	6.7	33.5	61.3	62	16.71	5.85
Trical Jenkins	T	06/09	64	86	6.1	38.1	62.3	59	15.30	5.36
Trical 498	T	05/31	39	0	7.0	34.1	58.3	62	11.59	4.05
Massey	W	05/31	41	0	6.5	29.2	51.4	65	14.09	4.93
Jackson	W	05/31	35	0	6.9	29.9	51.4	64	13.63	4.77
Wakefield	W	05/31	38	0	8.7	26.9	50.0	66	11.53	4.03
Madison	W	05/31	33	0	6.8	29.2	52.6	65	10.96	3.84
LSD 0.05					**1.4**	**3.3**	**2.2**		**1.60**	**0.56**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat
[2] Rye harvested at flowering

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 1993-1994
Boot Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	Lodging %	% Crude Protein	ADF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	04/18	21	0	14.9	28.5	74	3.69	1.29
Nomini	B	04/18	23	0	14.8	29.8	74	3.33	1.16
Barsoy	B	04/18	23	0	14.4	30.2	74	3.28	1.15
VA 92-42-279	B	04/18	21	0	17.2	29.2	73	3.16	1.11
Callao	B	04/18	22	0	16.3	29.7	73	3.12	1.09
Pamunkey	B	04/18	20	0	15.5	30.8	74	2.88	1.01
SS 76-30	O	05/03	17	0	13.7	26.9	75	2.08	0.73
VA CT Abruzzi	R	04/14	39	0	14.2	36.6	75	4.95	1.73
Abruzzi	R	04/14	39	0	13.0	39.7	75	4.75	1.66
Wheeler	R	04/21	32	0	13.0	30.6	75	4.36	1.53
Pastar	R	04/21	24	0	13.7	30.5	75	4.21	1.47
Winter King	R	04/14	37	0	12.8	34.6	75	3.87	1.35
V N S (SD)	R	04/21	24	0	15.5	28.3	74	2.89	1.01
Trical 102	T	05/03	42	0	10.1	36.0	77	8.49	2.97
Trical Jenkins	T	05/09	46	0	8.9	38.8	78	7.07	2.47
Enduro	T	05/03	28	0	12.1	31.4	76	6.40	2.24
Trical 2700	T	04/29	32	0	11.0	34.7	77	5.91	2.07
Wakefield	W	04/29	26	0	11.4	29.2	76	5.34	1.87
Jackson	W	04/29	27	0	11.4	31.1	76	5.29	1.85
Massey	W	04/29	28	0	10.6	28.0	77	4.76	1.67
Madison	W	04/29	27	0	11.0	29.0	77	4.56	1.60
LSD 0.05					**1.1**	**2.6**		**1.21**	**0.42**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Small Grain Forage Variety Test
Northern Piedmont AREC, Orange, Va. 1993-1994
Soft Dough Stage

Cultivar	Species[1]	Harvest Date	Height (inches)	Lodging %	% Crude Protein	ADF %	TDN %	35% DM Yield (tons/ac)	DM Yield (tons/ac)
Starling	B	05/18	29	0	5.7	25.1	80	11.31	3.96
VA 92-42-279	B	05/18	29	0	6.7	26.6	79	11.09	3.88
Nomini	B	05/18	30	0	6.7	26.0	79	10.36	3.62
Callao	B	05/18	25	0	6.6	22.8	79	10.19	3.57
Pamunkey	B	05/18	24	0	6.6	24.4	79	9.48	3.32
Barsoy	B	05/18	29	0	6.6	26.0	79	9.32	3.26
SS 76-30	O	06/03	32	0	6.6	35.6	80	6.21	2.17
Jackson	W	06/03	34	0	6.1	30.8	80	14.25	4.99
Massey	W	06/03	37	0	5.4	28.4	80	11.62	4.07
Wakefield	W	06/03	33	0	5.7	25.2	80	11.21	3.92
Madison	W	06/03	33	0	5.6	27.5	80	10.55	3.69
LSD 0.05					**0.8**	**6.0**		**1.76**	**0.62**

[1] B - Barley, O - Oat, R - Rye, T - Triticale, W - Wheat

Climate

2003-04

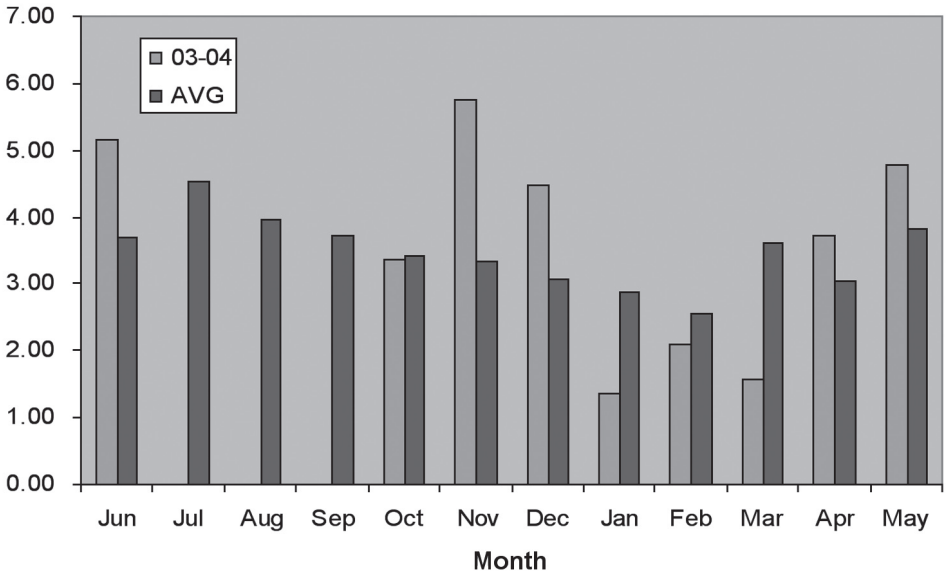
The 2003-2004 small-grain crop began in the wake of Hurricane Isabel and the planting of some double-crop fields was delayed due to hurricane damage and heavy rains. Otherwise planting conditions were mostly favorable. Temperatures were warm from October into early November but it was much wetter and cooler by the middle of the month. The winter months brought temperatures and precipitation slightly below normal for the state. In late winter, many small-grain fields were stunted or tillering poorly due to late planting, inadequate topsoil moisture, and especially cold temperatures. This same trend continued into March with small grains developing slowly. Concerns over inadequate moisture were felt statewide but more so in the southern and eastern counties where rainfall was well below normal. Average daily temperatures in March also were five degrees below normal for the entire state. April ended on a warm, mostly dry note with temperatures above normal. In many areas of eastern Virginia, high temperatures reached 85°F on more than 15 days of the month. Overall, timely rains were received throughout most of the season with excessive rain received in some areas at harvest time.

2002-03

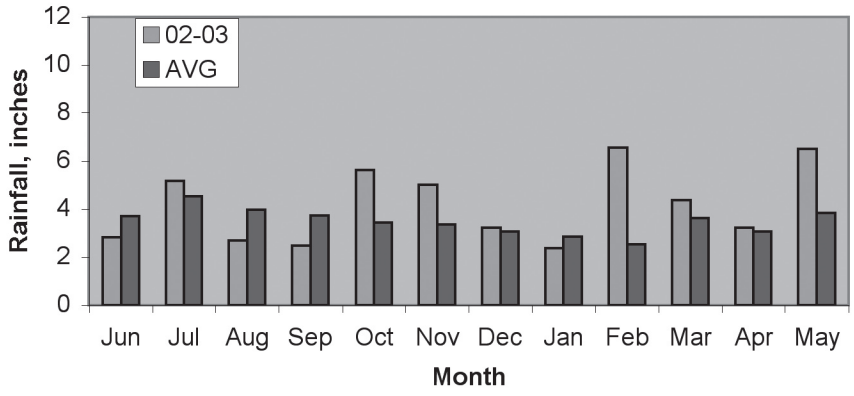
The dry conditions that prevailed during most of 2002 had producers beginning to plant into dry soil during fall 2002, hoping for moisture later. Midway through the planting season, fall rains turned the dry conditions into extremely wet conditions. This delayed some small-grain planting until much later than usual. Only 76 percent of the intended acres were planted by Nov. 16. These unusually wet conditions continued through the winter, and temperatures were lower than average for much of the state. Cool and wet conditions continued through April and May. Many farmers proclaimed the spring of 2003 as “the wettest spring I can remember” and indeed it was one of the wettest years on record. These cool, wet conditions remained through the harvest season, delaying wheat maturity and harvest by one to two weeks.

Rainfall greatly affects forage yields in dryland conditions. The following graphs represent yearly rainfall at the testing location compared to a 57-year average.

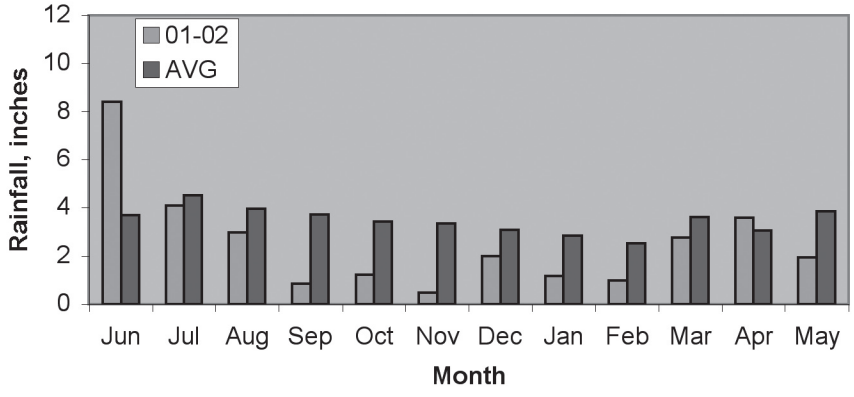
2002-03 Monthly Precipitation



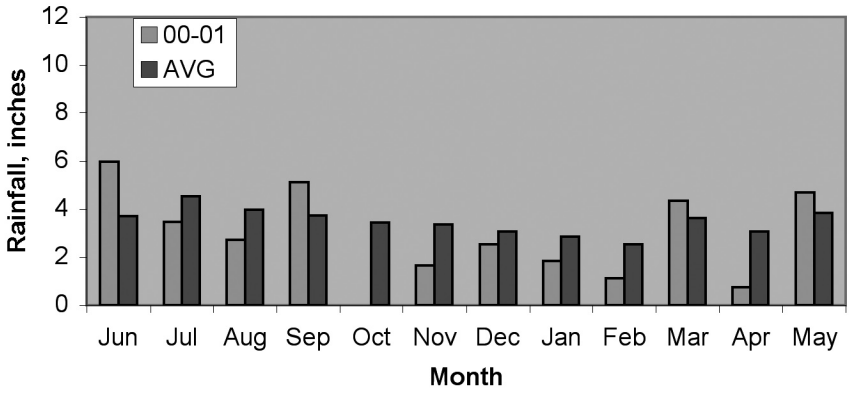
2002-03 Monthly Precipitation



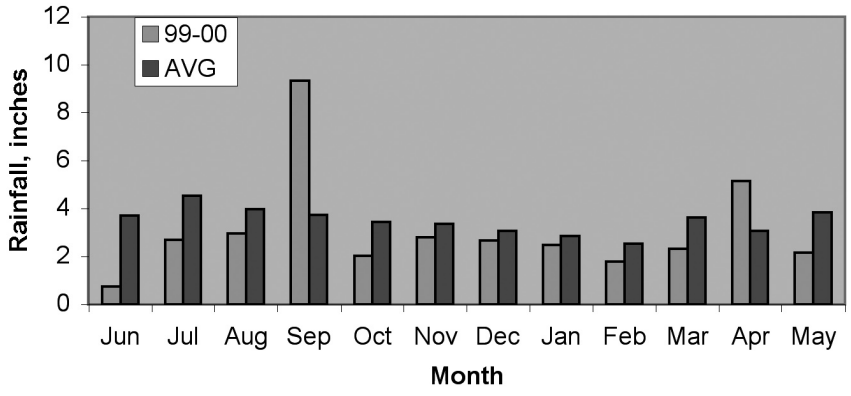
2001-02 Monthly Precipitation



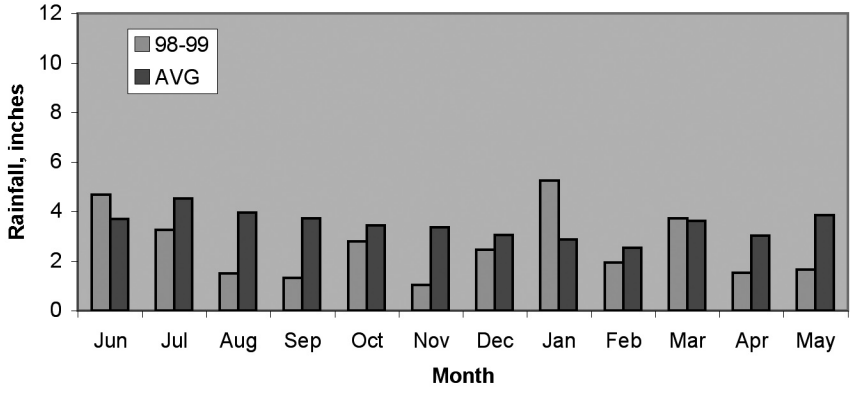
2000-01 Monthly Precipitation



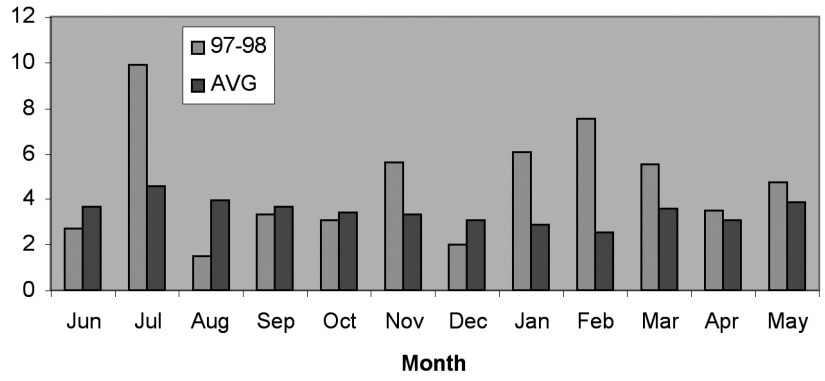
1999-00 Monthly Precipitation



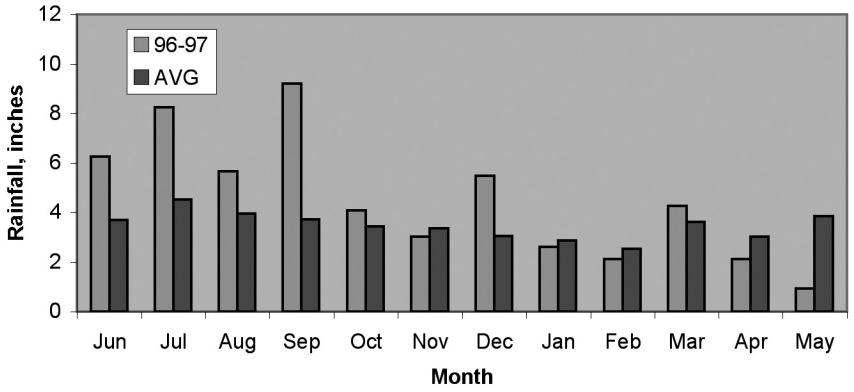
1998-99 Monthly Precipitation



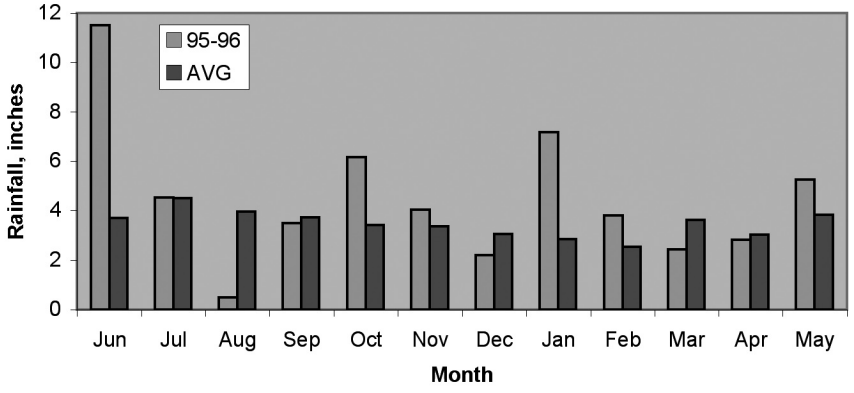
1997-98 Monthly Precipitation



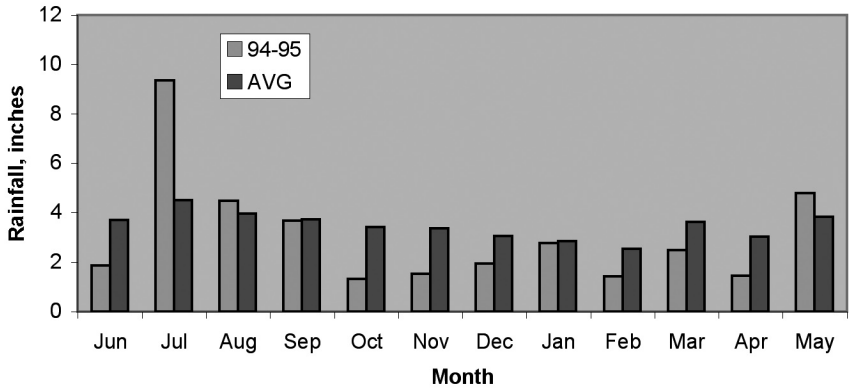
1996-97 Monthly Precipitation



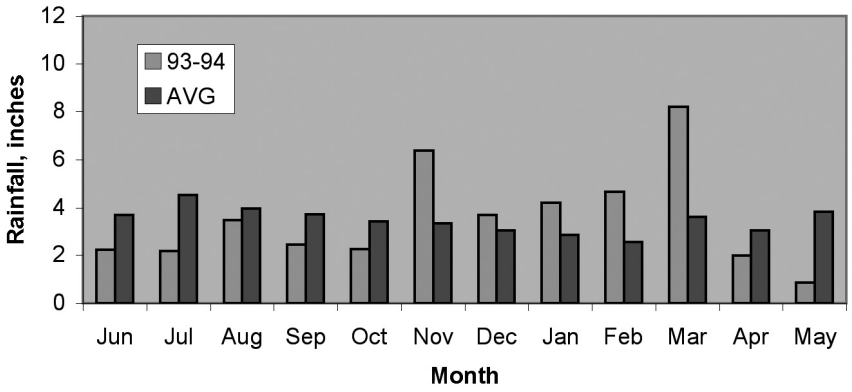
1995-96 Monthly Precipitation



1994-95 Monthly Precipitation



1993-94 Monthly Precipitation



Additional Information on Small Grains

Small Grains as Forage Crops. Ed Rayburn's web page on the West Virginia University Extension Service. http://www.caf.wvu.edu/~forage/5192.htm

Winter Rye for Extending the Grazing Season. Ohio State University. http://ohioline.osu.edu/agf-fact/0026.html

Small Grain Cereals for Silage And Hay. Kansas State University.

http://www.oznet.ksu.edu/pr_forage/pubs/97notebook/fora29.pdf

Extension Circular 396 - Harvesting and Utilizing Silage. Penn State University. http://www.das.psu.edu/dcn/catforg/396/index.html

Wheat Silage for Beef Cattle. University of Missouri – Columbia. http://muextension.missouri.edu/xplor/agguides/ansci/g02059.htm

Wheat Silage for Dairy Cattle. University of Missouri – Columbia. http://muextension.missouri.edu/xplor/agguides/dairy/g03260.htm

Grazing Wheat Pasture. Kansas State University. http://www.oznet.ksu.edu/pr_forage/pubs/97notebook/fora23.pdf

Wheat for Pasture. Oklahoma State University.

http://agweb.okstate.edu/pearl/plantsoil/crops/grains.htm

Grazing and feeding restrictions for small-grain herbicides and livestock use. Penn State University. http://agguide.agronomy.psu.edu/sect7/tab7-11.htm

Small Grain Forages for Dairy Cattle. Cornell University. http://wwwscas.cit.cornell.edu/forage/comment/sgrain.html

Fall and Spring Forage Yield and Quality from Fall-Seeded Cereal Crops. University of Wisconsin. http://soybean.agronomy.wisc.edu/publications/97_fall_seeded_forage_aa.pdf

www.ext.vt.edu

VT/1204//251365/418019