

# Small Grain Variety Performance



M. Sorrells, D. Benschler, J. Shiffer, J. Tanaka,  
M. Smith

Plant Breeding & Genetics, Cornell



# Topics

- Variety testing at Cornell
- Winter wheat (white, red)
- Hybrid rye
- Spring oat
- Malting barley (winter, spring)
- Organic/heirloom grains

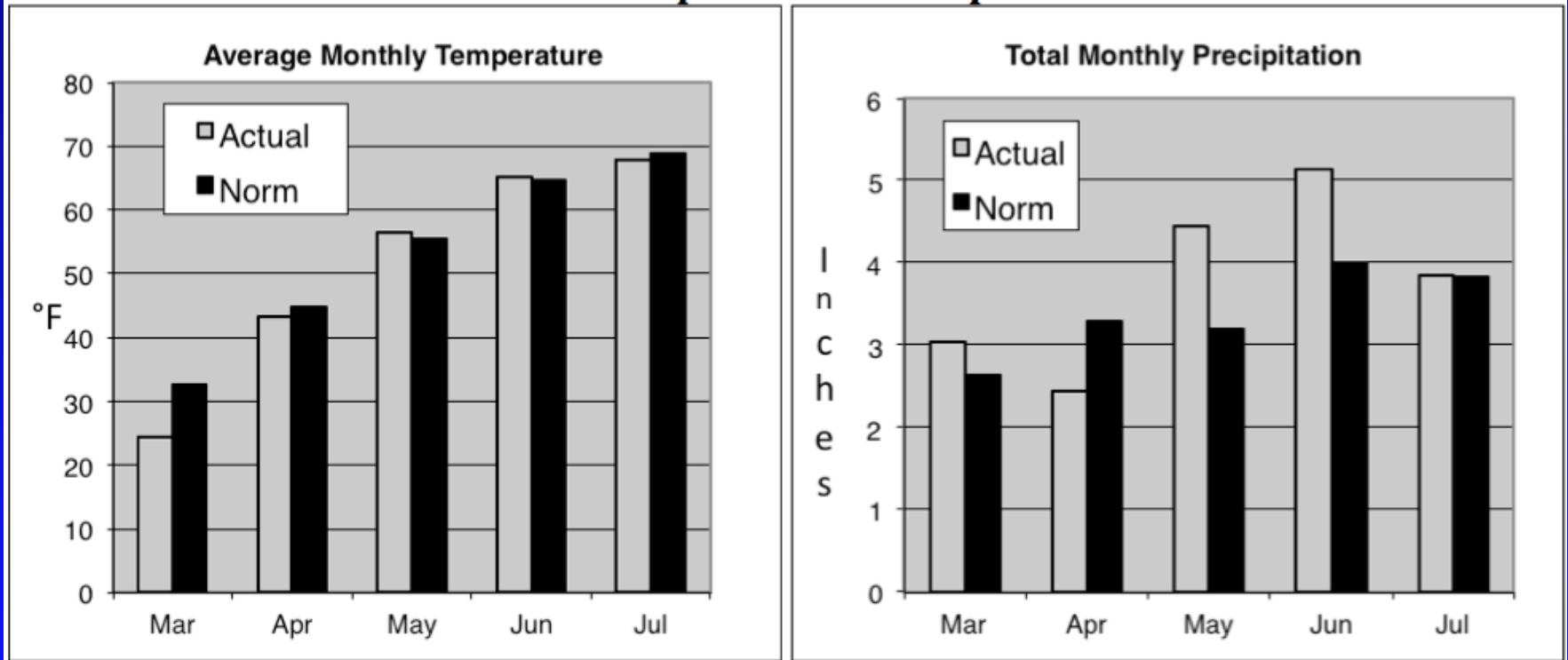


# Testing Sites in 2014



# 2014 Weather (Ithaca)

## 2014 Precipitation and Temperature



# Soft White Winter Wheat



# Soft White Winter Wheat

Variety	Grain Yield, bu/A	Test Weight, lb/bu	Lodging, 0-9 score*	Heading Date	Pre-harvest Sprouting, 0-9 Score*	Fusarium Head Blight			Mosaic Virus Rating**	
						Incidence, %	Severity, %	Index, 0-100	Spindle Streak	Soil-borne
	5 Yr	3 Yr	3 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr
Caledonia	75	56.5	1.1	5/29	5.8	60	26	15	2.2	1.3
Cayuga	67	58.9	3.9	5/31	1.1	na	na	na	1.0	0.8
Medina	75	57.4	2.0	5/30	2.2	40	22	9	0.7	0.5
Hopkins	75	56.0	2.2	5/30	3.5	49	14	7	1.0	0.5



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						Incidence, %	Severity, %	Index, 0-100	Spindle Streak	Soil-borne
	<i>5 Yr</i>	<i>3 Yr</i>	<i>3 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>
Caledonia	75	56.5	1.1	5/29	5.8	60	26	15	2.2	1.3
Cayuga	67	58.9	3.9	5/31	1.1	na	na	na	1.0	0.8
Medina	75	57.4	2.0	5/30	2.2	40	22	9	0.7	0.5
Hopkins	75	56.0	2.2	5/30	3.5	49	14	7	1.0	0.5



# Soft White Winter Wheat

- Potential new interest for farm breweries





# Soft Red Winter Wheat



# Soft Red Winter Wheat

Variety	Grain Yield, bu/A			Test Weight, lb/bu	Lodging, 0-9 score*	Heading Date	Plant Height, cm	Pre-harvest Sprouting, 0-9 Score*	Fusarium Head Blight			Mosaic Virus Rating**	
	5 Yr	4 Yr	2 Yr						Incidence, %	Severity, %	Index, 0-100	Spindle Streak	Soil-borne
	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr
Otsego	76	74	75	58.5	1.6	5/29	83	1.0	45	14	6.1	0.5	1.2
Emmit	82	80	86	58.3	1.4	5/30	84	0.5	38	17	6.4	6.7	0.7
HY116-SRW	80	78	80	57.3	2.7	5/29	84	3.2	57	15	9.0	0.7	4.3
Erie	84	81	85	58.5	0.9	6/1	83	4.0	29	14	4.5	0.3	0.8
Pio.25R34		85	91	58.0	1.2	5/29	80	2.0	43	10	4.2	6.7	1.5
Pio.25R46			95	58.6	1.0	5/29	75	1.3	38	9	3.2	1.5	1.0
Pio.25R40			95	58.7	2.0	5/29	75	1.2	63	15	9.2	5.5	0.3



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	5 Yr	4 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	Incidence, %	Severity, %	Index, 0-100	Spindle Streak	Soil-borne
Otsego	76	74	75	58.5	1.6	5/29	83	1.0	45	14	6.1	0.5	1.2
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Erie	84	81	85	58.5	0.9	6/1	83	4.0	29	14	4.5	0.3	0.8
Pio.25R34		85	91	58.0	1.2	5/29	80	2.0	43	10	4.2	6.7	1.5
Pio.25R46			95	58.6	1.0	5/29	75	1.3	38	9	3.2	1.5	1.0
Pio.25R40			95	58.7	2.0	5/29	75	1.2	63	15	9.2	5.5	0.3



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	5 Yr	4 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	Incidence, %	Severity, %	Index, 0-100	Spindle Streak	Soil-borne
Otsego	76	74	75	58.5	1.6	5/29	83	1.0	45	14	6.1	0.5	1.2
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Pio.25R46			95	58.6	1.0	5/29	75	1.3	38	9	3.2	1.5	1.0
Pio.25R40			95	58.7	2.0	5/29	75	1.2	63	15	9.2	5.5	0.3



# Hybrid Rye



# Hybrid Rye

- High quality milling and baking varieties
  - NOT conservation varieties
- Versatile utilization
  - Feed
  - Brewing
  - Biogas



# Hybrid Rye

	Grain	Test			Plant	Winter
	Yield,	Weight,	Lodging,	Heading	Height,	Survival,
	bu/A	lb/bu	0-9 score*	Date	cm	%
Variety	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>
Palazzo	105	53.6	2.1	5/24	126	97
KWS Magnifico	105	54.6	2.7	5/24	122	94
Brasetto	110	53.6	1.9	5/24	123	98
KWS Bono (H 119)	104	54.0	2.2	5/24	121	96
KWS Rhavo (H 120)	104	54.9	1.8	5/24	123	97





# Hybrid Rye

<b>Variety</b>	<b>Grain Yield, bu/A</b>	<b>Test Weight, lb/bu</b>	<b>Lodging, 0-9 score*</b>	<b>Heading Date</b>	<b>Plant Height, cm</b>	<b>Winter Survival, %</b>
	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>	<i>2 Yr</i>
Palazzo	105	53.6	2.1	5/24	126	97
KWS Magnifico	105	54.6	2.7	5/24	122	94
Brasetto	110	53.6	1.9	5/24	123	98
KWS Bono (H 119)	104	54.0	2.2	5/24	121	96
KWS Rhavo (H 120)	104	54.9	1.8	5/24	123	97
Medina (wheat check)	61	54.6	3.9	5/30	102	99



# Spring Oats



# Spring Oats

Variety	Grain Yield, bu/A			Test Wt., lb/bu	Lodging, 0-9 score*	Heading Date	Plant Height, cm
	8 Yr	4 Yr	3 Yr	2 Yr	2 Yr	2 Yr	2 Yr
Ogle	80	75	82	33.9	2.5	6/22	83
Corral	93	91	100	35.5	1.5	6/25	82
SD081936		93	101	36.4	2.3	6/21	82
SD081107			101	36.1	3.9	6/24	86
MN09255			101	36.2	3.4	6/27	88



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Ogle	80	75	82	33.9	2.5	6/22	83
Corral	93	91	100	35.5	1.5	6/25	82
SD081936		93	101	36.4	2.3	6/21	82
SD081107			101	36.1	3.9	6/24	86
MN09255			101	36.2	3.4	6/27	88



# Malting Barley

- Lots of potential for NY growers
- Lots of challenges for NY growers!



# Winter Malting Barley (2-row)

Variety	Grain Yield, bu/A		Test Weight, lb/bu	Lodging, 0-9 score*	Heading Date	Plant Height, cm	Winter Survival, %	Barley Protein, %	Dia-static Power, ° ASBC	Beta Glucan, ppm	FAN, ppm	Overall Quality Score, 0-70**
	3 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr
Charles	59	48	42.8	1.3	5/29	56	67	11.9	112	152	236	43
KWS Scala	76	53	45.2	0.3	5/31	62	70	11.8	110	90	194	47
Mystic	75	56	43.4	0.4	5/25	53	62	13.1	124	194	209	52
Salanandre	75	57	42.9	0.4	5/28	55	63	12.3	102	389	161	33
Sytepee	78	56	46.8	0.4	6/1	62	64	12.4	168	42	198	62
Endeavor		56	48.0	0.9	6/2	71	56	11.7	110	394	183	35
WintMalt		40	41.7	0.3	6/4	64	61	12.4	89	34	260	52



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	3 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr
Charles	59	48	42.8	1.3	5/29	56	67	11.9	112	152	236	43
KWS Scala	76	53	45.2	0.3	5/31	62	70	11.8	110	90	194	47
Mystic	75	56	43.4	0.4	5/25	53	62	13.1	124	194	209	52
Salanandre	75	57	42.9	0.4	5/28	55	63	12.3	102	389	161	33
Sytepee	78	56	46.8	0.4	6/1	62	64	12.4	168	42	198	62
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	3 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr
Charles	59	48	42.8	1.3	5/29	56	67	11.9	112	152	236	43
KWS Scala	76	53	45.2	0.3	5/31	62	70	11.8	110	90	194	47
Mystic	75	56	43.4	0.4	5/25	53	62	13.1	124	194	209	52
Salanandre	75	57	42.9	0.4	5/28	55	63	12.3	102	389	161	33
Sytepee	78	56	46.8	0.4	6/1	62	64	12.4	168	42	198	62
Endeavor		56	48.0	0.9	6/2	71	56	11.7	110	394	183	35
WintMalt		40	41.7	0.3	6/4	64	61	12.4	89	34	260	52
Saturn	96	72	44.8	0.6	5/27	62	68	11.4	93	540	142	20



Saturn is a 6-row feed barley...

# Scala (2-row, winter)



# Spring Malting Barley

Variety	Row #	Grain	Test	Lodging,	Plant	Barley	Diastatic	Beta	Overall		
		Yield,	Weight,	0-9	Heading	Protein,	Power,	Glucan,	FAN,	Quality	
		bu/A	lb/bu	score*	Date	%	° ASBC	ppm	ppm	Score,	
		2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	
Herta	2	61	49.3	1.6	6/26	70	11.7	82	264	209	36
Conlon	2	51	47.0	3.4	6/18	61	11.5	96	253	213	46
LCS Genie	2	41	44.1	2.1	6/21	57	11.4	122	46	215	50
Lacey	6	62	46.9	1.8	6/19	68	11.3	99	115	257	48
Quest	6	63	47.3	2.8	6/19	75	11.3	108	272	239	47
M152	6	61	46.6	1.7	6/21	76	11.9	122	125	252	47
KWS Irina	2	45	42.9	1.9	6/28	47	10.3	57	65	257	40
KWS Thessa	2	52	45.0	1.9	6/26	50	11.0	72	69	254	41
Cerveza	2	56	45.9	1.3	6/21	60	11.1	69	67	271	41
Newdale	2	57	46.1	0.9	6/21	62	11.6	83	68	262	37
AAC Synergy	2	65	46.0	0.9	6/20	64	10.7	56	31	285	43



# Spring Malting Barley

Variety	Row #	Grain	Test	Lodging,	Plant	Barley	Diastatic	Beta	Overall		
		Yield,	Weight,	0-9	Heading	Protein,	Power,	Glucan,	FAN,	Quality	
		bu/A	lb/bu	score*	Date	cm	%	° ASBC	ppm	ppm	0-70
		2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr
Herta	2	61	49.3	1.6	6/26	70	11.7	82	264	209	36
Conlon	2	51	47.0	3.4	6/18	61	11.5	96	253	213	46
LCS Genie	2	41	44.1	2.1	6/21	57	11.4	122	46	215	50
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Quest	6	63	47.3	2.8	6/19	75	11.3	108	272	239	47
M152	6	61	46.6	1.7	6/21	76	11.9	122	125	252	47
KWS Irina	2	45	42.9	1.9	6/28	47	10.3	57	65	257	40
KWS Thessa	2	52	45.0	1.9	6/26	50	11.0	72	69	254	41
Cerveza	2	56	45.9	1.3	6/21	60	11.1	69	67	271	41
Newdale	2	57	46.1	0.9	6/21	62	11.6	83	68	262	37
AAC Synergy	2	65	46.0	0.9	6/20	64	10.7	56	31	285	43



# Quest (6-row, spring)



# Heirloom Grains

- Renewed interest for specialty uses
- Winter and spring wheat
- Winter and spring spelt
- Emmer



# Heirloom Winter Wheat

- 39 varieties tested for two years
- Ranked by yield, lodging
- Will show top 1/3 of varieties
  - Full table in the handout
- Current winter wheat varieties average about 75 bu/A...



# Heirloom Winter Wheats

Variety	Grain Yield, Test Weight,		Lodging, 0-9 Score*	Plant Height, cm	Heading Date
	bu/A	lb/bu			
Arrow	53	56.4	0.2	103	5/29
ARS07-0785 **	49	58.7	0	71	5/24
Warthog	49	59.1	0	89	5/29
Susquehanna	49	55.7	0.1	89	6/1
ARS09-173	48	60.2	0.1	76	5/26
Genesee	48	56.3	1.2	109	6/1
Yorkstar	48	55.4	0.2	107	5/31
ARS07-1214	47	59.1	0	79	5/28
Appalachian White	47	59.3	0	79	5/27
NuEast	46	60.5	0	78	5/27
AC Morley	46	59.2	0.1	96	5/29
Frederick	45	57.6	0.1	101	5/30
ARS05-1044	45	58.8	0.4	79	5/20



\*\* 100% winterkill in either 2012 or 2013.



# Heirloom Spring Wheat

- 24 varieties tested for two years
- Ranked by yield, lodging
- Will show top 1/3 of varieties
  - Full table in the handout
- Current spring wheat varieties typically don't yield that well in NY...



# Heirloom Spring Wheat

<b>Variety</b>	<b>Grain Yield, bu/A</b>	<b>Test Weight, lb/bu</b>	<b>Lodging, 0-9 Score*</b>	<b>Plant Height, cm</b>	<b>Heading Date</b>
Tom	45	57.5	0	91	6/14
Sabin	44	56.0	0.2	84	6/11
MN00261-4	44	56.3	0	85	6/12
Steele	43	56.1	0	89	6/13
ND735	43	56.5	0.1	92	6/11
RB07	43	55.3	0.3	83	6/17
Ulen	43	55.4	0.2	89	6/12
Glenn	41	58.3	0	89	6/12



# Spelt



# Organic Winter Spelt

<b>Variety</b>	<b>Grain Yield, Test Weight,</b>		<b>Lodging,</b>	<b>Plant</b>	<b>Heading</b>
	<b>kg/ha</b>	<b>kg/hl</b>	<b>0-9 Score*</b>	<b>Height, cm</b>	<b>Date</b>
Comet**	3358	31.1	0.2	74	6/2
Frank	2891	37	0.5	110	6/8
Maverick	3771	33.5	0.9	103	5/29
Oberkorn**	3257	31.3	0	114	6/2
Oberkulmer	3048	34.3	0	119	6/5
PI348159	2911	35.9	0.5	110	6/9
Sungold**	3761	31.3	0	104	6/10

\*\* Oberkorn tested only in 2012. Comet and Sungold tested only in 2013.



# Organic Spring Spelt

<b>Variety</b>	<b>Grain Yield, kg/ha</b>	<b>Test Weight, kg/hl</b>	<b>Lodging, 0-9 Score*</b>	<b>Plant Height, cm</b>	<b>Heading Date</b>
94-288**	1664	38.4	2.8	94	6/12
AC Boveria	2212	33	4.4	122	6/24
CDC Zorba	2781	33.2	1.6	118	6/23
Forage Spelt**	1701	45.9	3	135	6/19
Red Chaff**	1548	43.2	1.5	105	6/13

\*\* These three varieties were only tested in 2013 at Freeville and in Pennsylvania.



# Emmer Wheat



# Organic Emmer

Variety	Grain Yield, kg/ha	Test Weight, kg/hl	Lodging, 0-9 Score*	Plant Height, cm	Heading Date
Bowman	1816	44.7	4.4	107	6/23
Bread 4**	712	28.7	6.8	90	6/19
Debra	1872	69.1	0.6	65	6/15
Lucille	2605	46.8	3.7	112	6/22
ND Common	2479	47.7	4.4	112	6/23
Neigel**	733	28.1	4.1	105	6/29
Red Vernal	2546	47.3	3.5	115	6/23
TM23	2197	42.8	2	103	6/22
Vernal	2541	48.1	3	111	6/22
Yaroslav**	1196	33.8	6.2	104	6/25

\*\* Tested in 2013 only.



The image features a background of wood grain patterns. At the top, there is a light-colored wood grain. Below it is a wide, horizontal band of a darker wood grain with prominent, wavy, concentric growth rings. Underneath this band is another section of wood grain, similar in pattern to the top section but with a slightly different texture. At the bottom, there is a final section of light-colored wood grain. The text is overlaid on these sections.

**The end for grains!**

**Thank you**