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# 2004 Agronomy Update Meetings

Madison, Fond du Lac, Kimberly, Wausau,  
Eau Claire, Sparta, Platteville, Janesville

January 5-8, 2004

Joe Lauer

University of Wisconsin

<http://corn.agronomy.wisc.edu/Extension/AU04>

# Overview

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- 2003 in Review
  - ✓ How bad was the drought of 2003?
  - ✓ What did we learn about corn management?
- Trends in the UW Corn Hybrid Performance Trials
  - ✓ Changes to the Results book
  - ✓ Entry numbers
  - ✓ Specialty hybrid performance
- Silage Relative Maturity Ratings – Do we need them?
  - ✓ Greenness
  - ✓ Silage drydown
- How does hail affect corn silage yield?
- Odds and ends

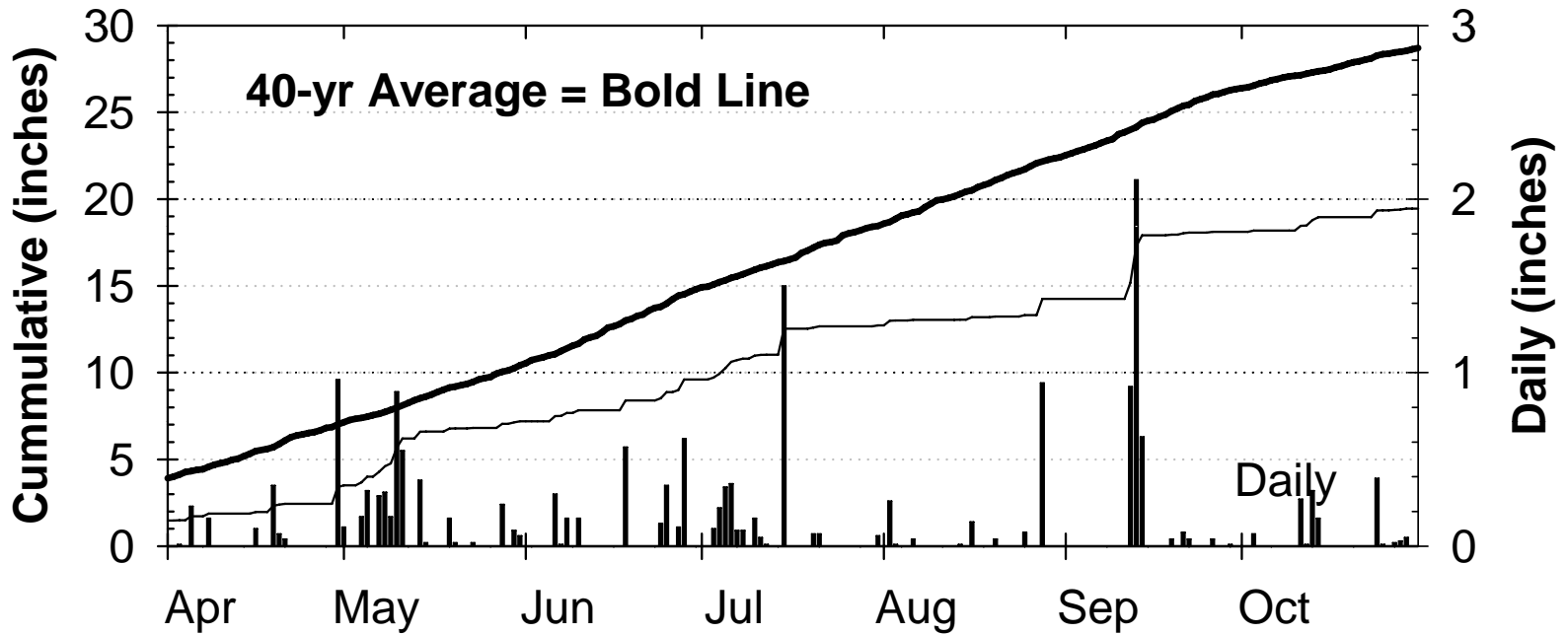
# 2003 Corn in Review

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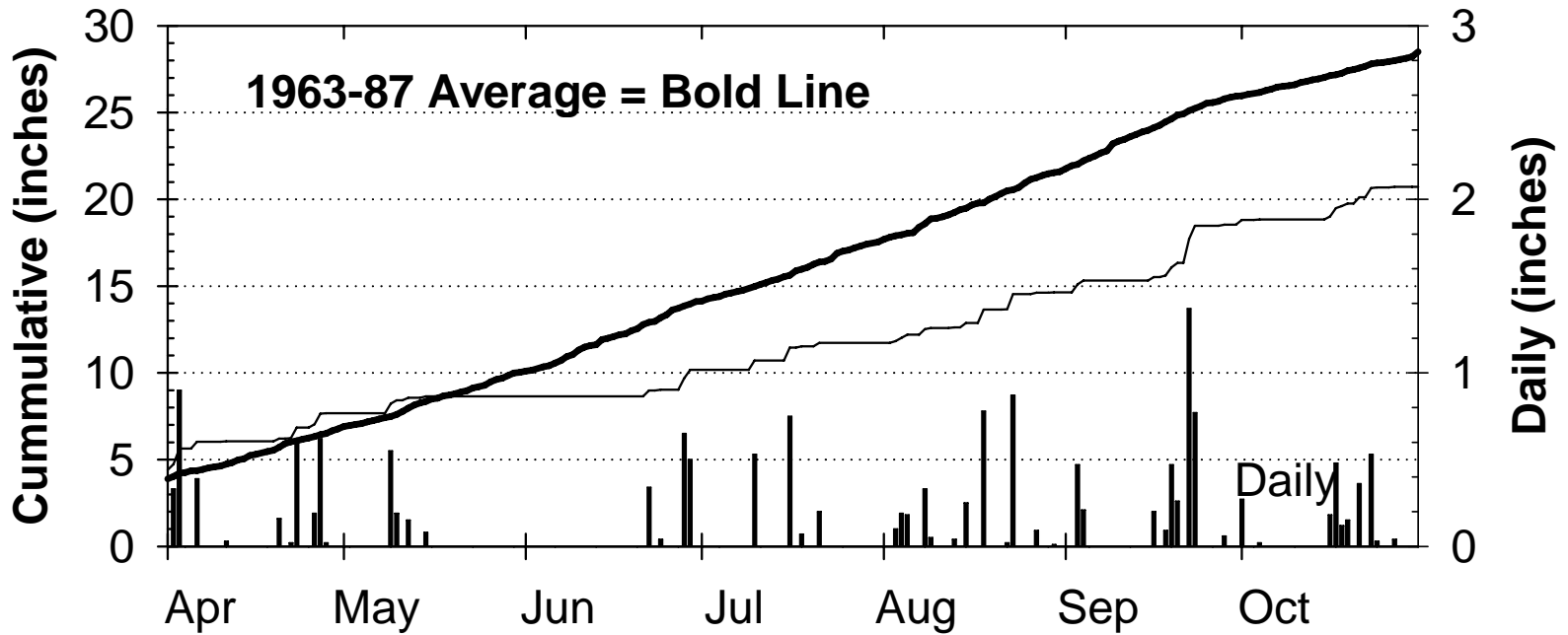
- Corn planting and emergence slower than average
  - ✓ Due to cool, wet conditions in the north
  - ✓ Slow start to vegetative growth
- Severe drought in SW Wisconsin
  - ✓ Less precipitation with relatively cool temperatures
  - ✓ Time of drought was during grain-filling. Adequate moisture for pollination and early grain-filling
  - ✓ Late planting dates and longer-season maturities most affected
  - ✓ Test weight and grain moisture lower than normal, but not abnormally low
- Variable crop maturity within a field
- In spite of drought situation, corn yields were good to excellent (most farmers pleasantly surprised), but soybean yield was poor (most farmers disappointed).

# Growing Season Precipitation at Arlington, WI

2003

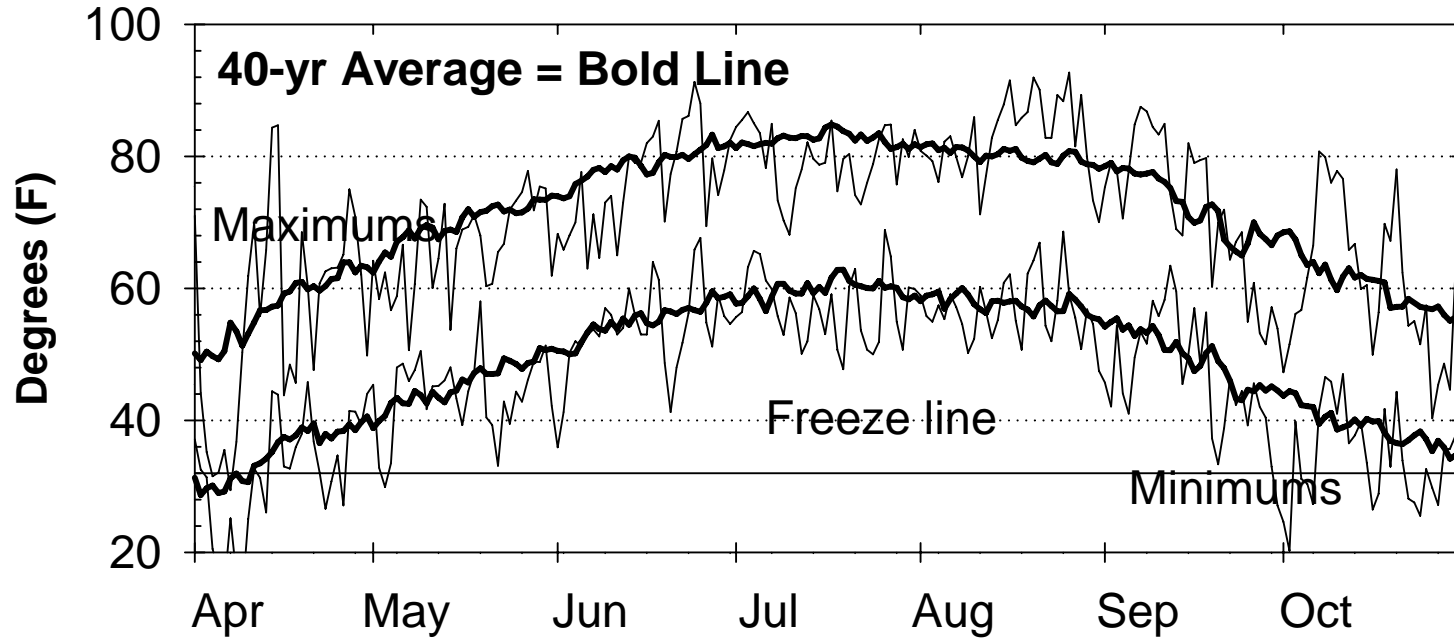


1988

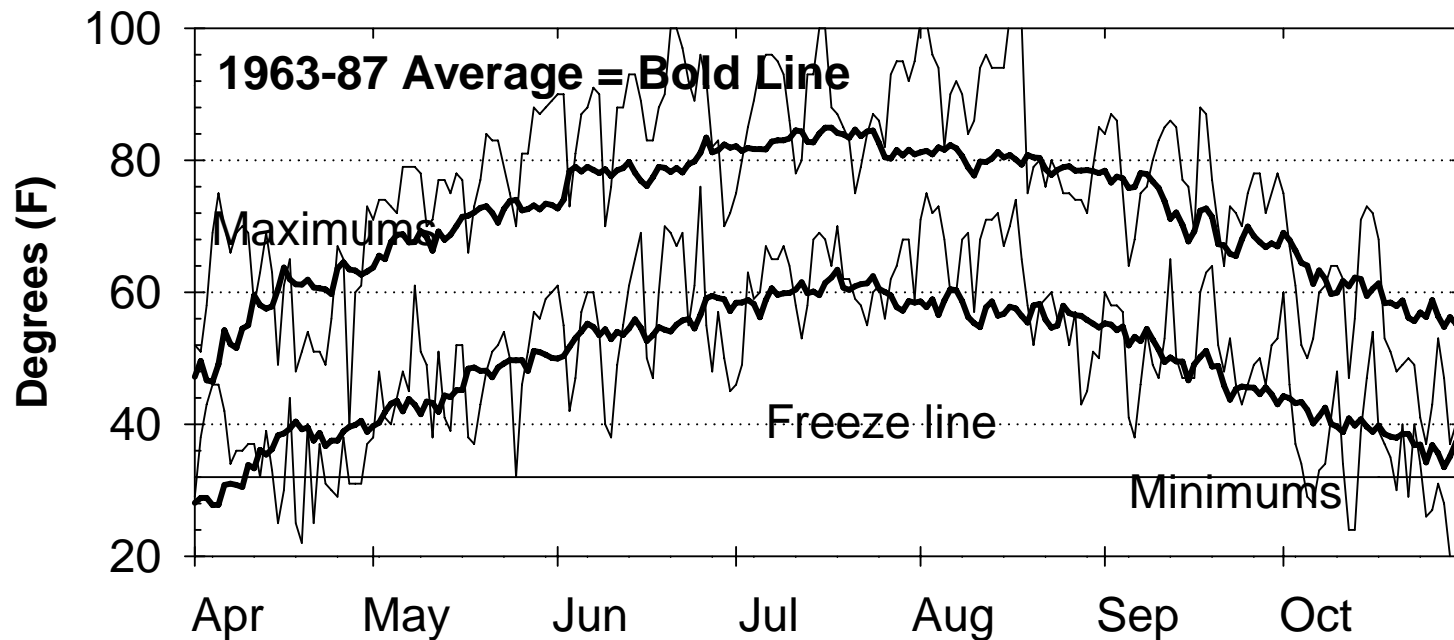


# Growing Season Daily Temperatures at Arlington, WI

2003

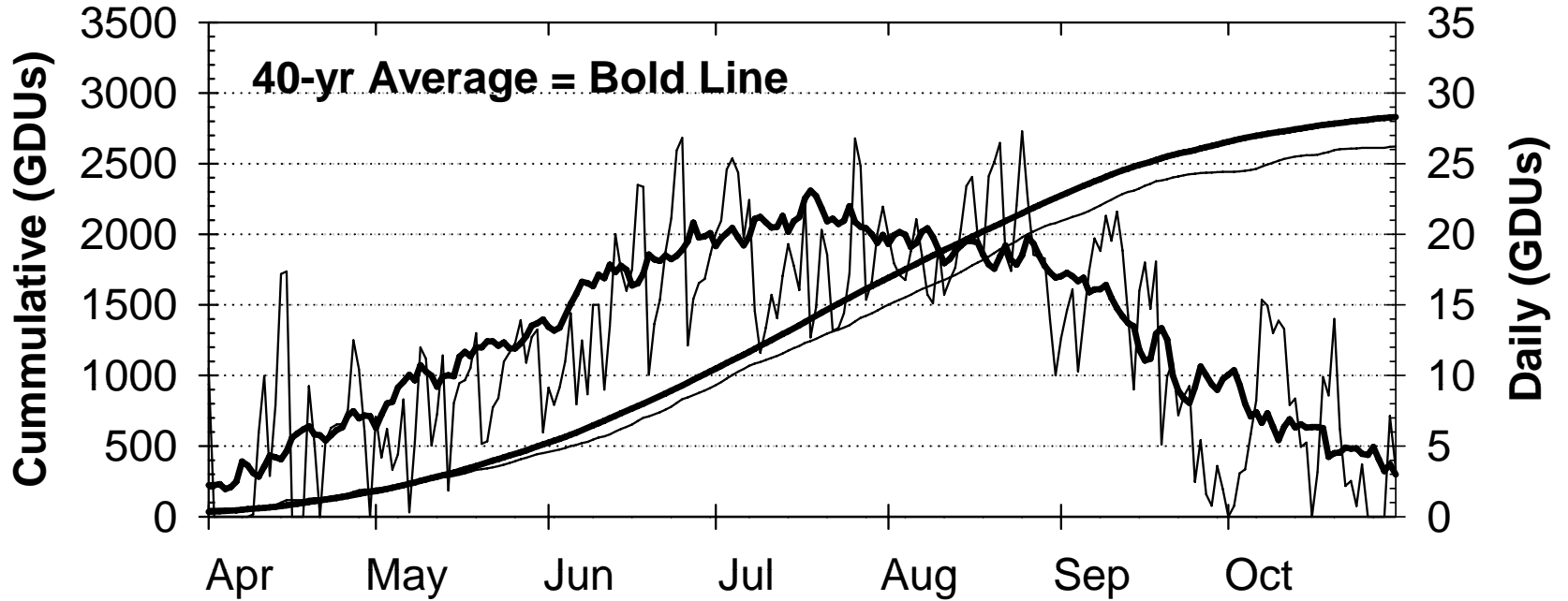


1988

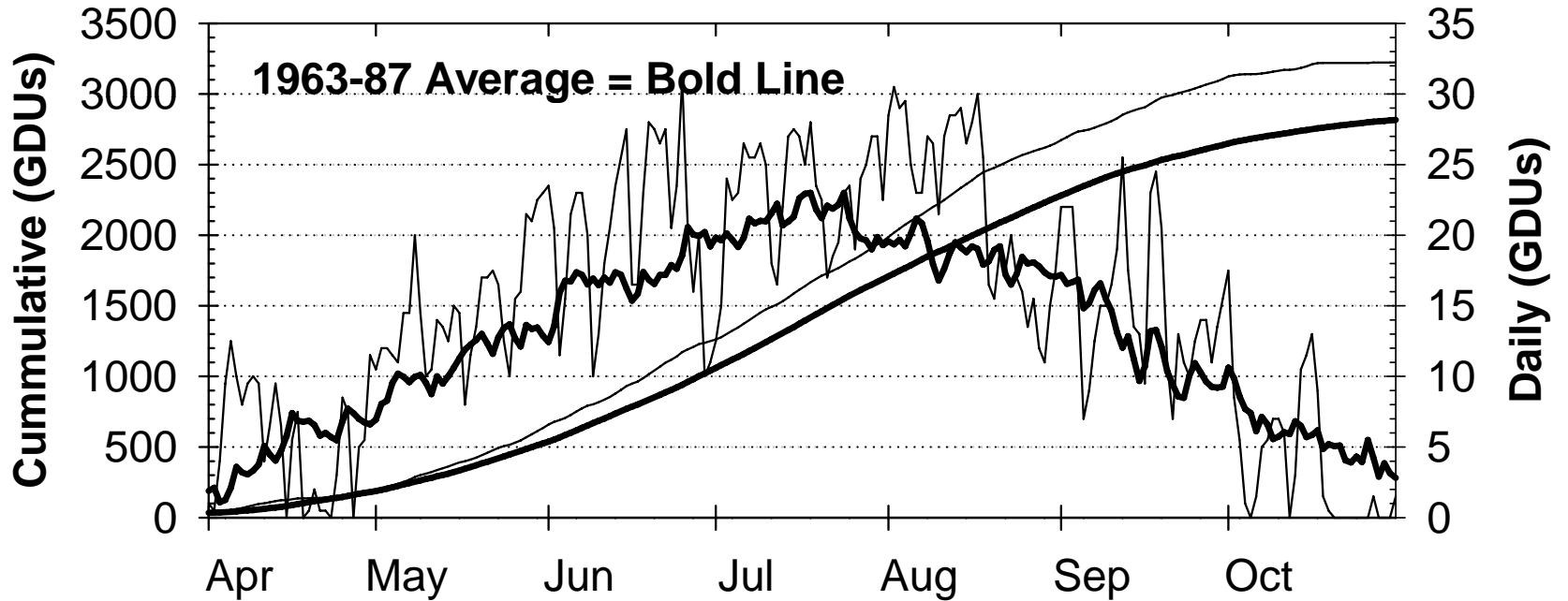


# Growing Season Growing Degree Units at Arlington, WI

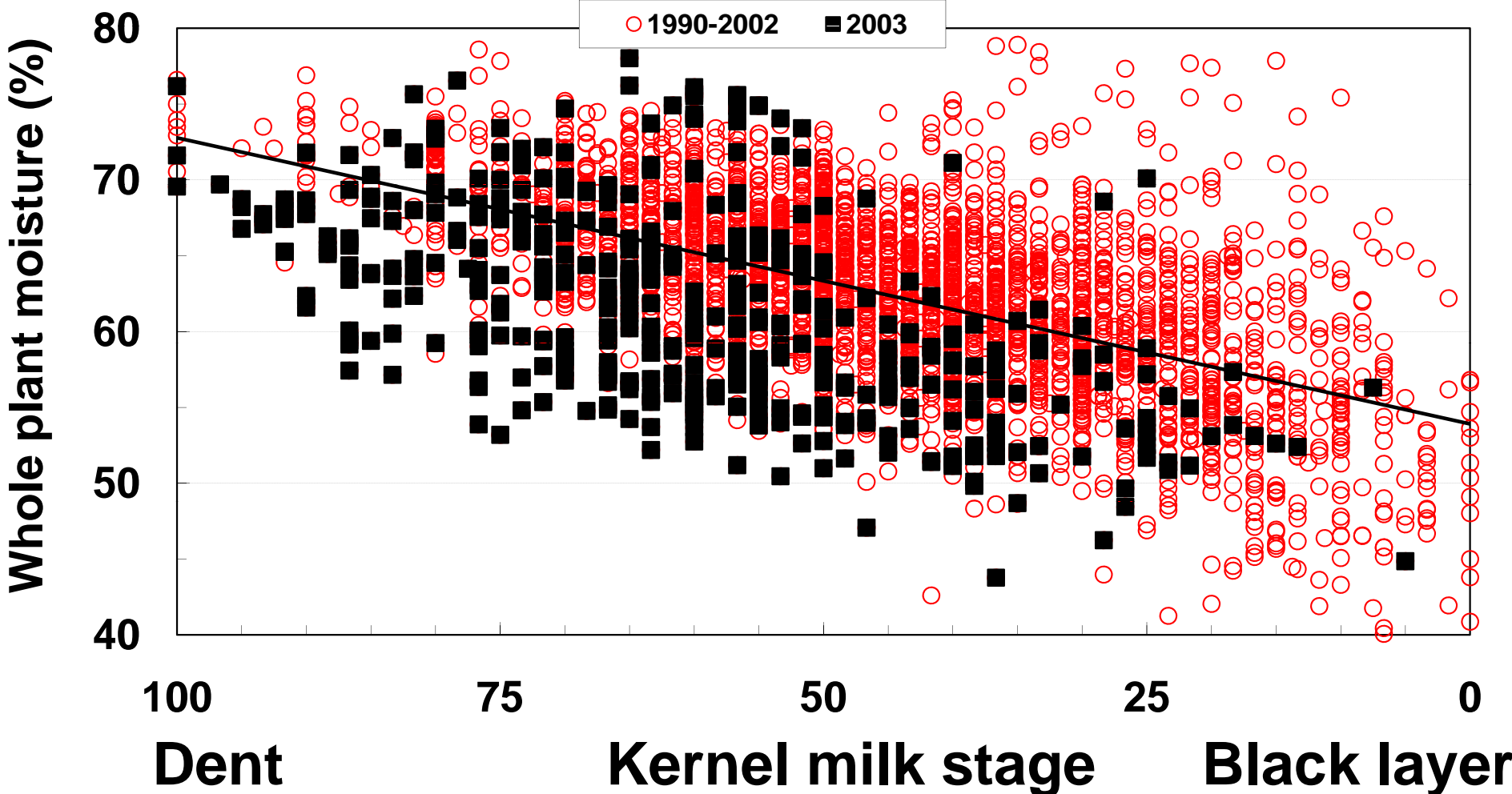
**2003**



**1988**

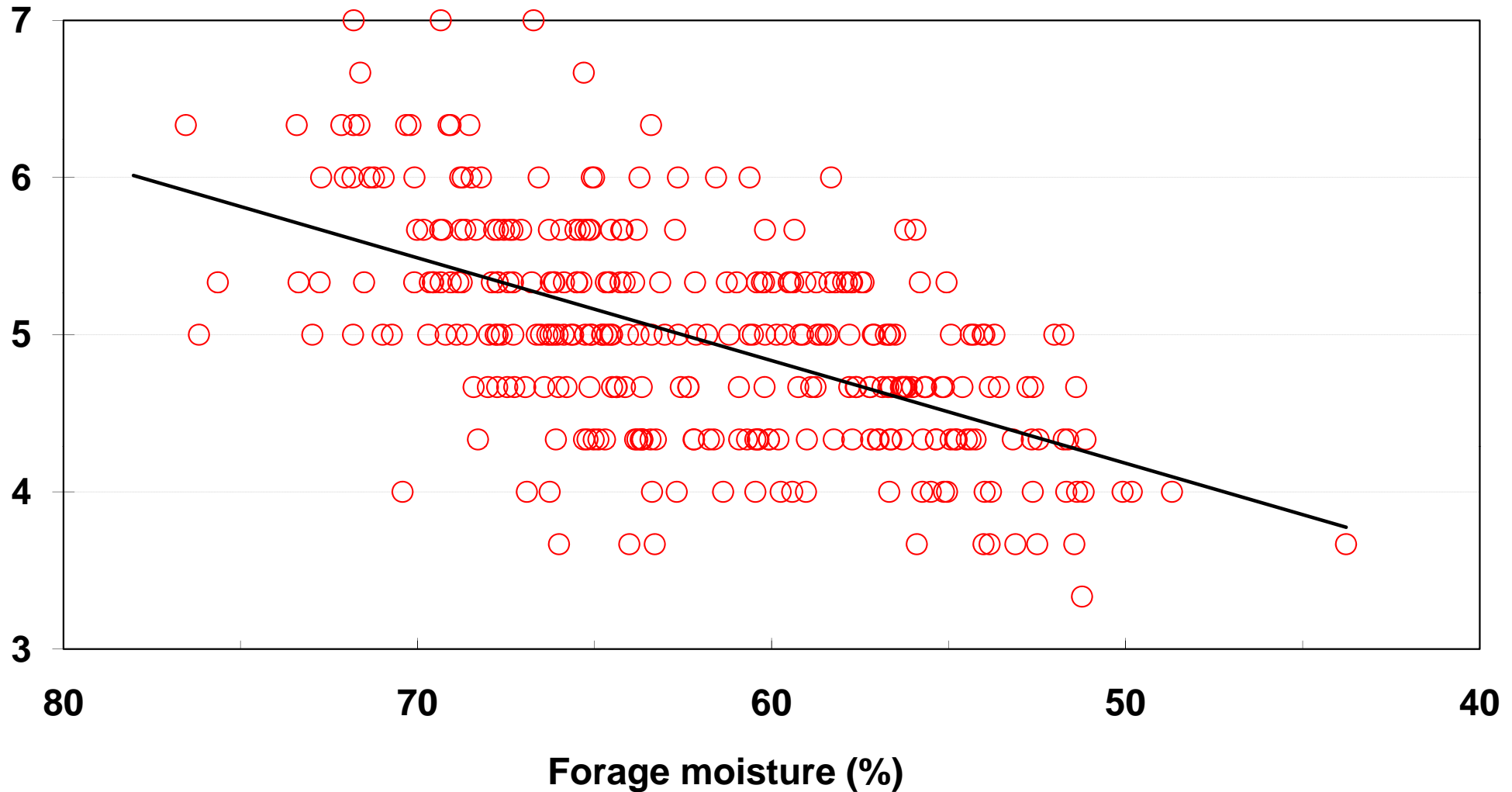


# Relationship Between Forage Moisture and Kernel Milk Stage



# Relationship between Green rating and Forage moisture (%) during 2003

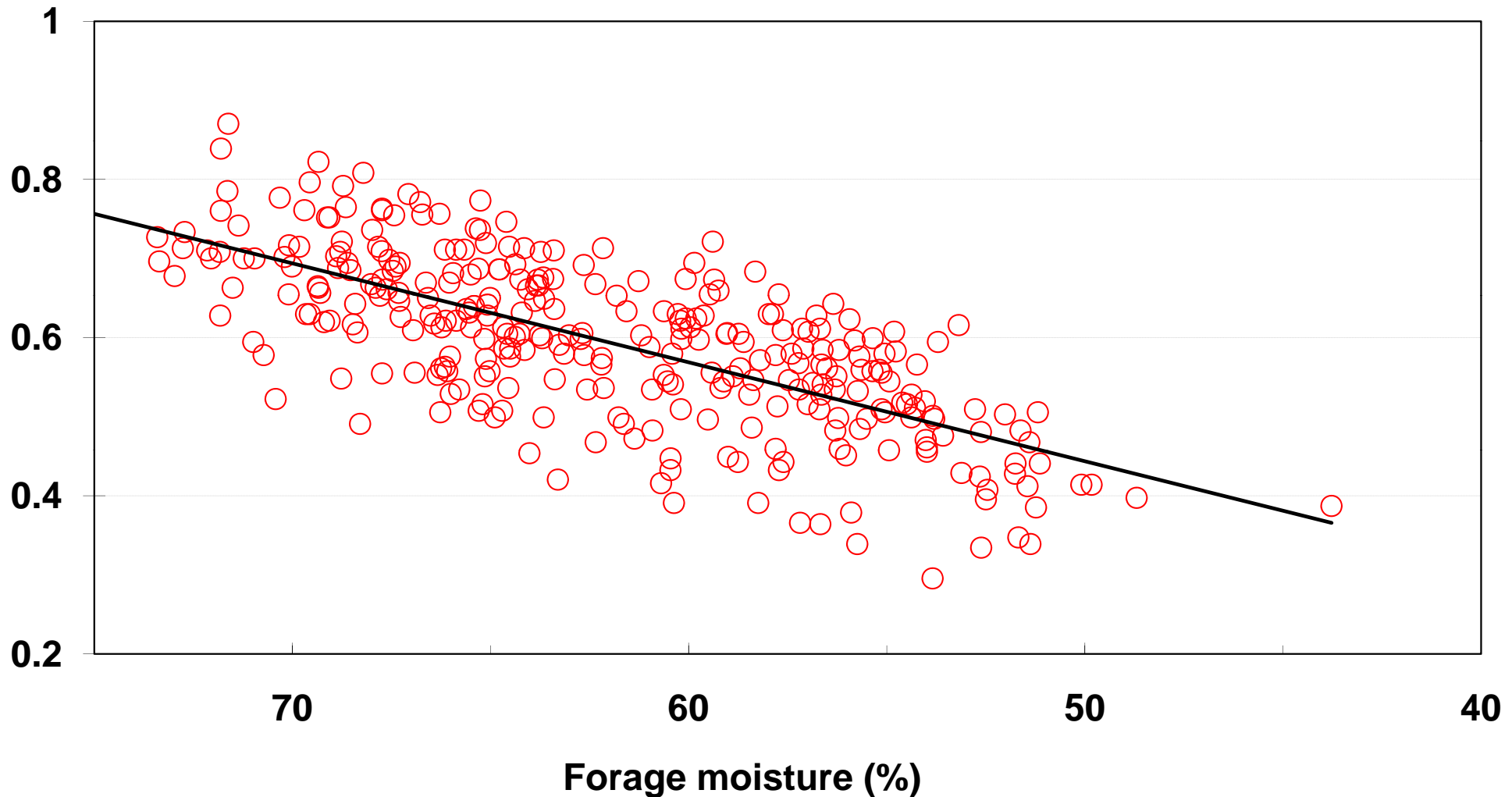
Green rating (1=brown, 9=green)



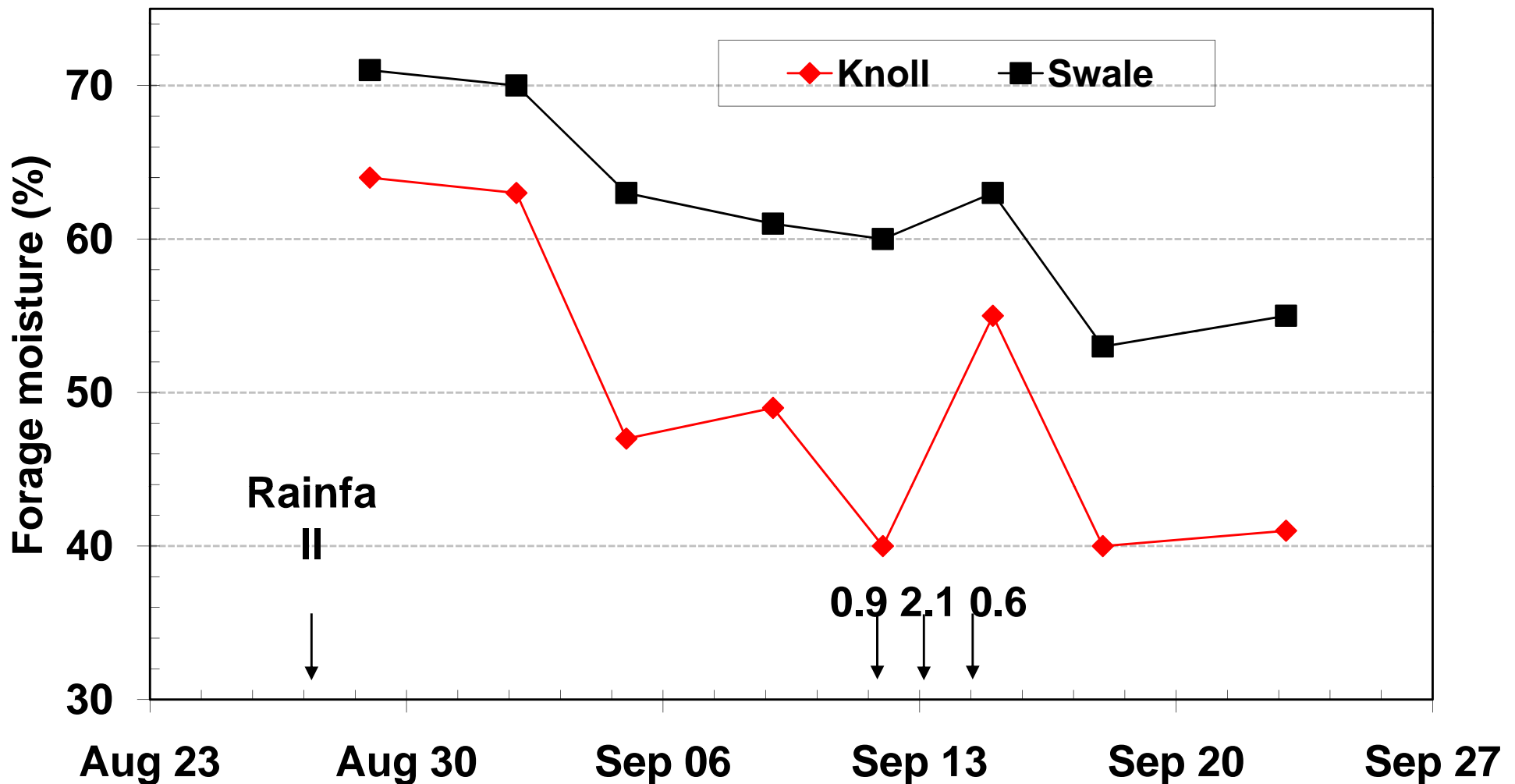


# Relationship between Green rating \* Kernel milkline and Forage moisture (%) during 2003

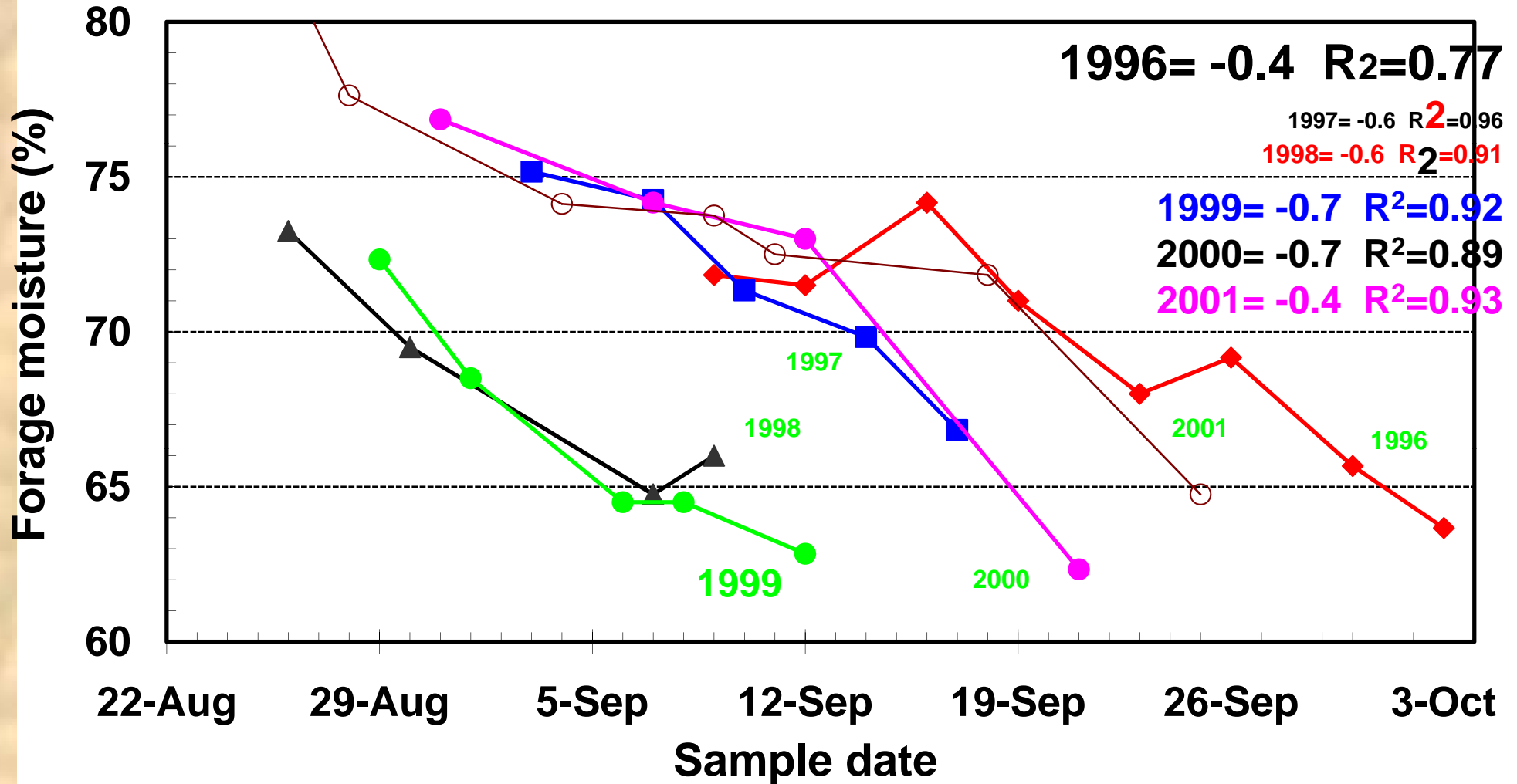
Green rating (50%) \* Kernel milkline (50%)



# Forage moisture of corn growing on a knoll and a swale at Arlington during 2003



# Corn Silage Drydown Rate in Manitowoc County, WI.



# 2003 Wisconsin Corn Performance Trials

## Grain Summary

Location	1993-2002		2003		Percent change
	N	Yield	N	Yield	
Arlington	1831	195	183	189	-3
Janesville	1833	191	180	201	5
Lancaster	1833	178	180	179	1
Fond du Lac	1608	171	156	168	-2
Galesville	1608	168	153	195	16
Hancock	1607	189	153	226	20
Chippewa Falls	1529	152	135	106	-30
Marshfield	1220	160	137	121	-24
Seymour	1062	157	137	202	29
Valders	1529	144	137	178	24
Spooner	1778	136	102	122	-10
White Lake	592	103	33	88	-15

# 2003 Wisconsin Corn Performance Trials

## Grain Summary

Location	1973-2002 Average			2003		
	N	Range	STD	N	Range	STD
Arlington	184	86	15	183	78	13
Janesville	167	83	15	180	68	14
Lancaster	165	85	15	180	87	15
Fond du Lac	162	79	14	156	77	13
Galesville	164	90	15	153	76	13
Hancock	176	90	17	153	75	14
Chippewa Falls	134	78	15	135	86	14
Marshfield	131	70	12	137	85	14
Seymour	133	90	16	137	98	16
Valders	144	83	16	137	103	15
Spooner	153	94	20	122	156	50
White Lake	59	64	13	33	71	17

# 2003 Wisconsin Corn Performance Trials Silage Summary

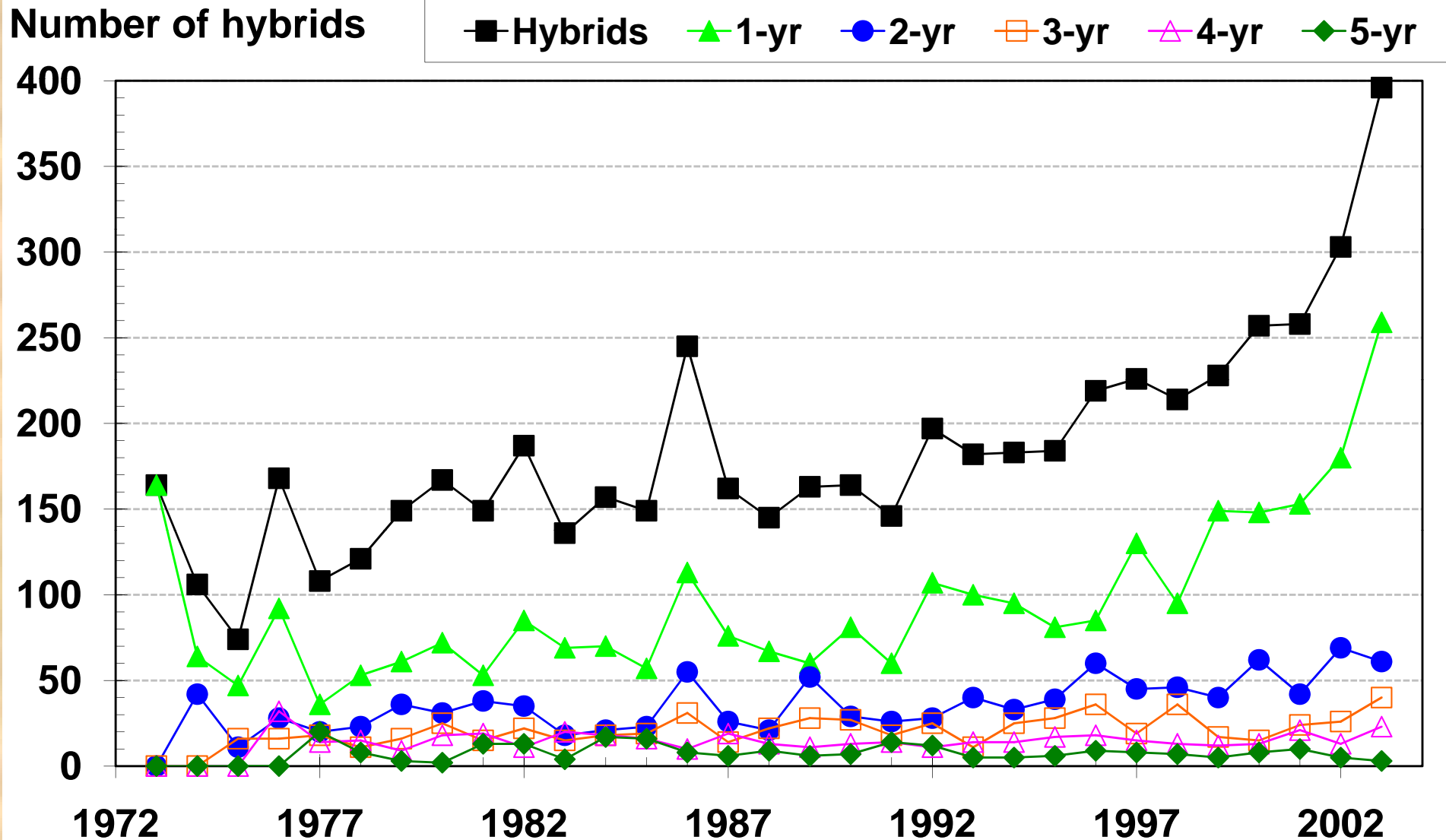
Location	<u>1993-2002</u>		<u>2003</u>		Percent change
	N	Yield	N	Yield	
Arlington	443	9.5	48	8.9	-6
Lancaster	443	7.9	48	8.6	8
Fond du Lac	417	8.6	59	7.7	-10
Galesville	418	8.6	59	8.7	1
Chippewa Falls	53	7.9	51	7.0	-11
Marshfield	436	6.9	50	6.1	-12
Valders	441	6.5	50	8.0	23
Rhineland	17	7.0	25	5.8	-17
Spooner	34	8.2	50	7.8	-5

# Trends and Changes in the 2003 UW Corn Hybrid Performance Trials and Results Book

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- Previously tested corn hybrids (last 4 years).
  - ✓ You never test any hybrids I am interested in?
- Number of hybrids being tested.
- Transgenic genes listed (all tables).
  - ✓ Select hybrids by performance rather than by trait.
- Bmr hybrid performance in trials.
- Silage Relative Maturity Rating (Table 1).

# Number of hybrids tested in the UW Corn Grain Performance Trials

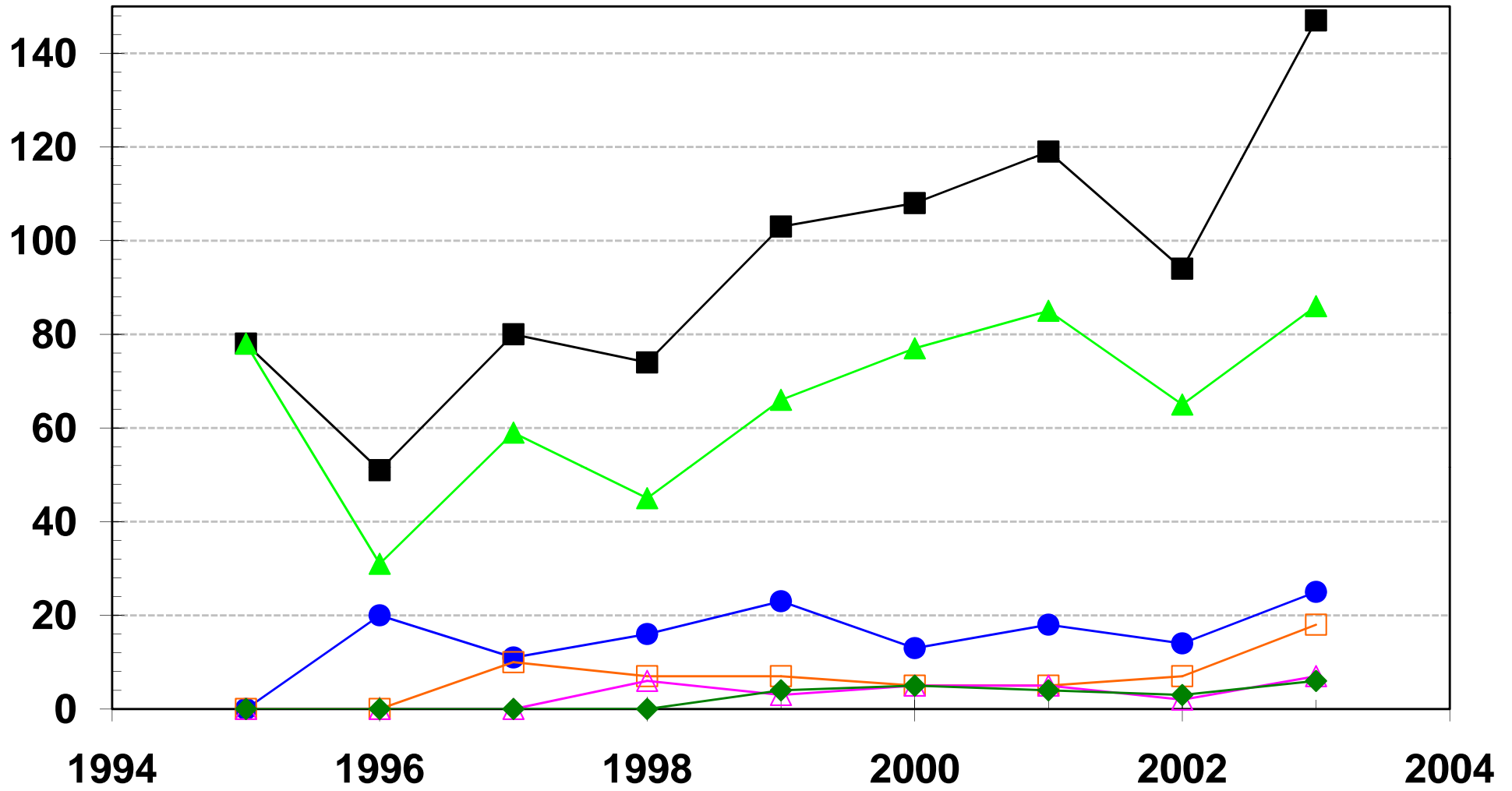




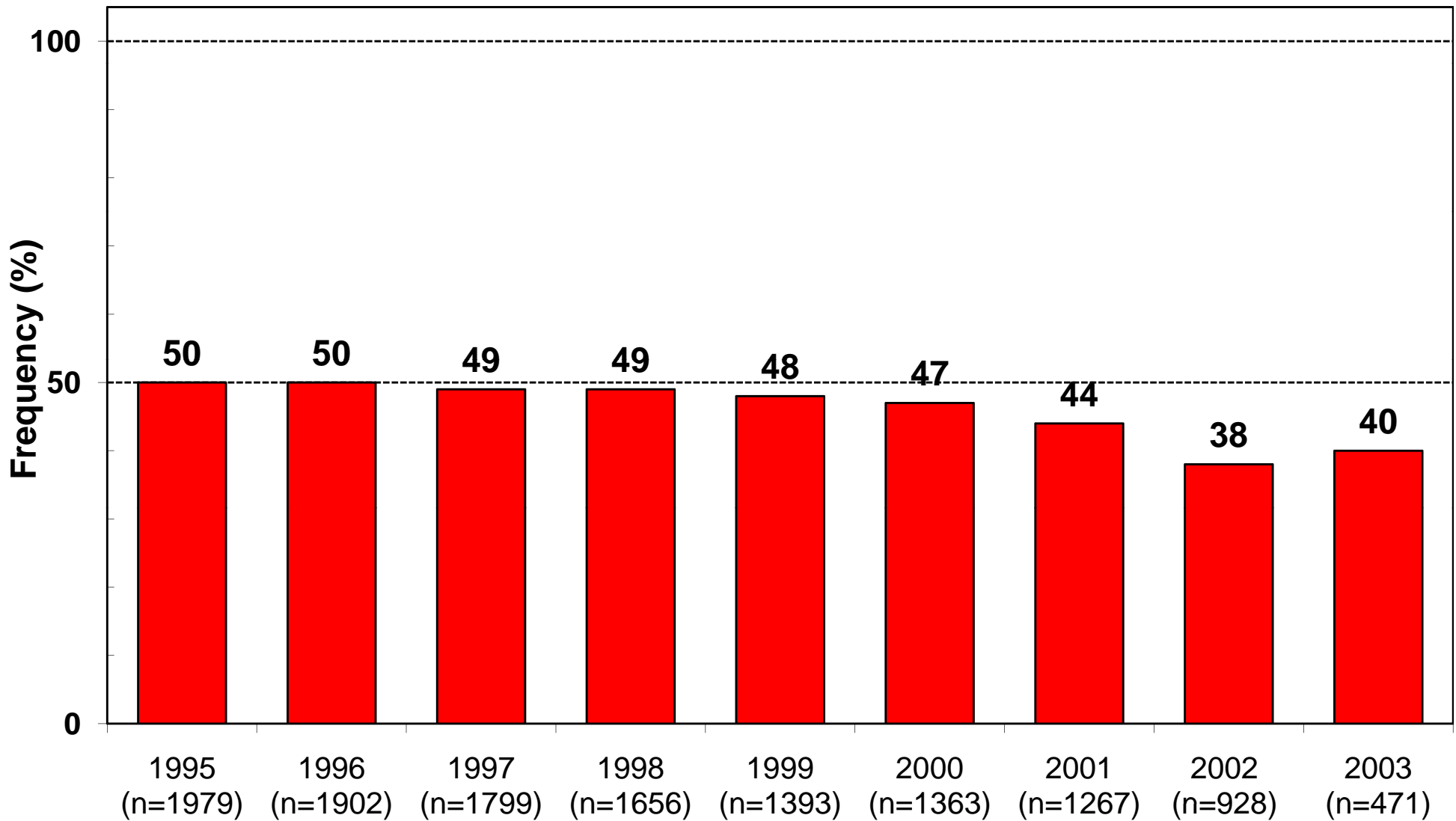
# Number of hybrids tested in the UW Corn Silage Performance Trials

Number of hybrids

■ Hybrids ▲ 1-yr ● 2-yr □ 3-yr △ 4-yr ◆ 5-yr

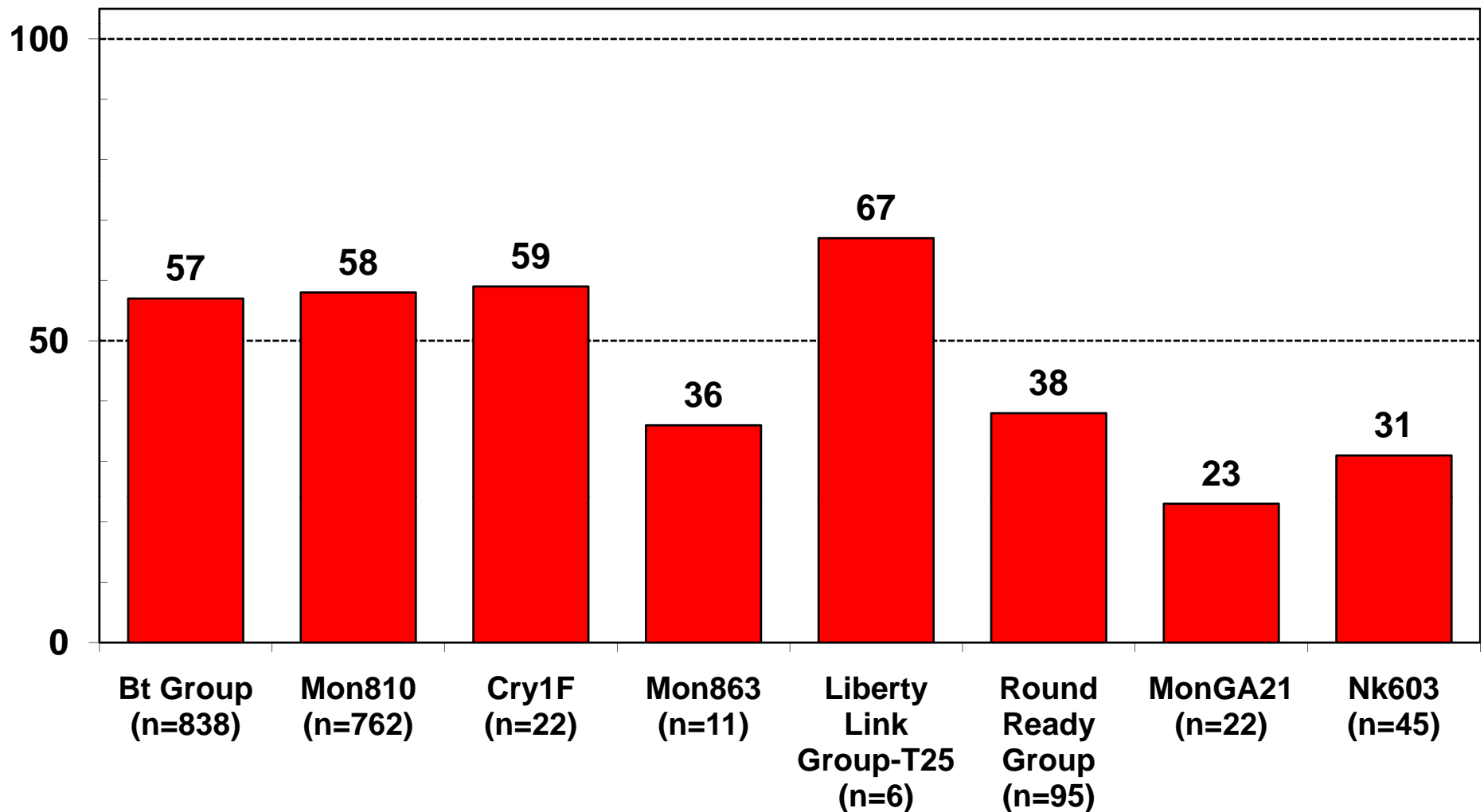


# Frequency of 'Normal' Corn Hybrids Yielding Above Average in the WI Hybrid Trials



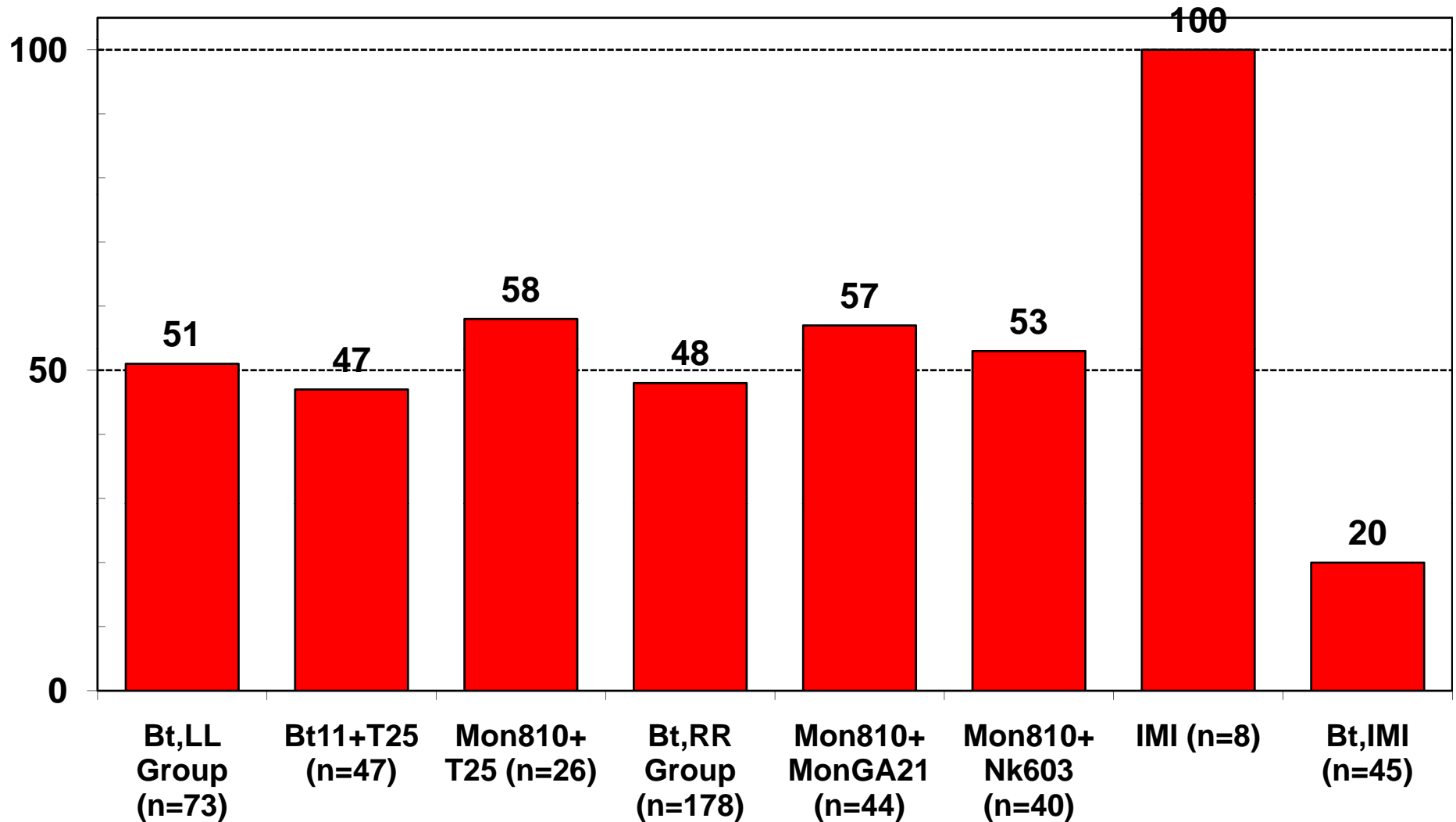
# Frequency of Transgenic Hybrids Yielding Above Average in the 2003 WI Hybrid Trials

Frequency (%)

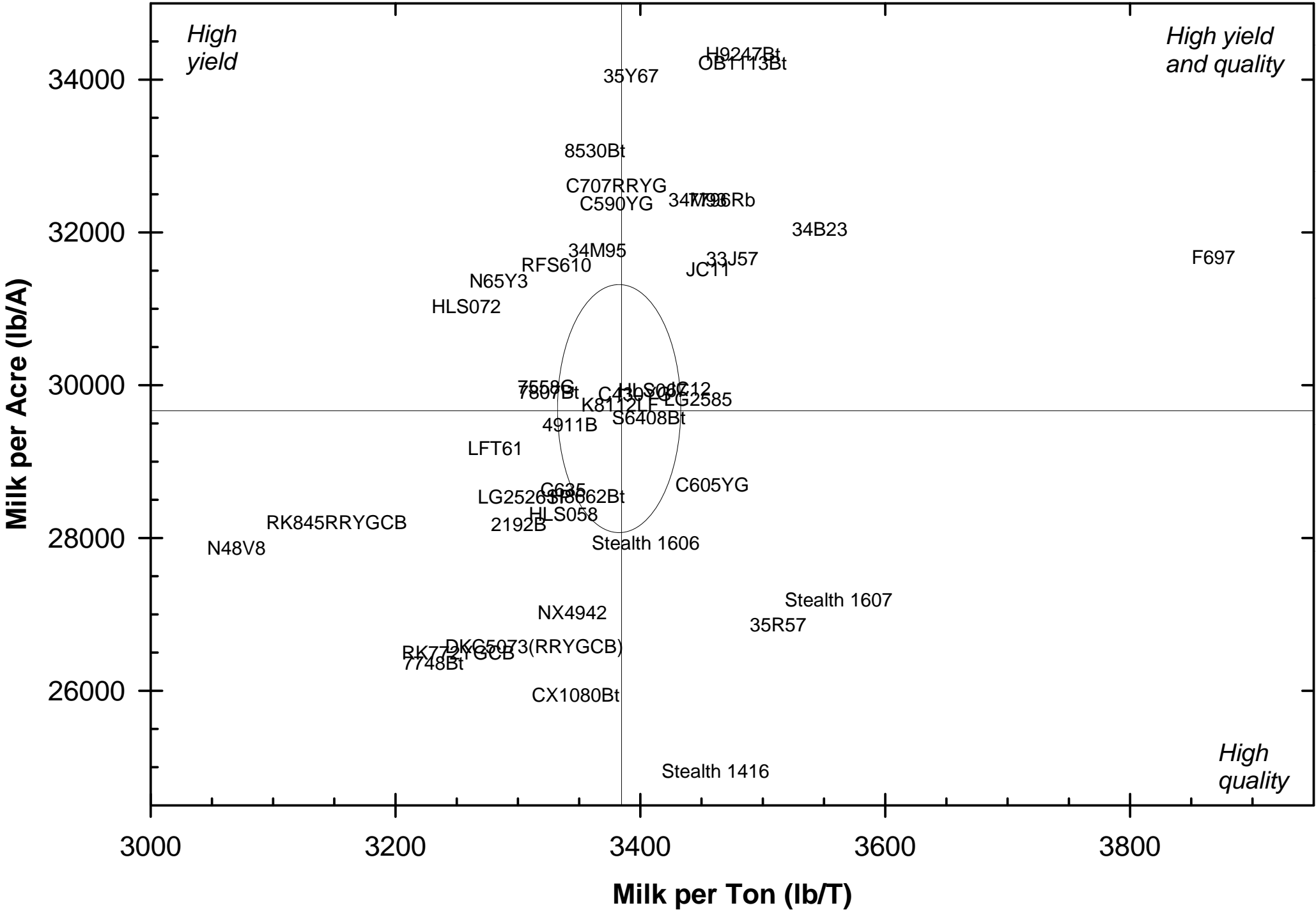


# Frequency of “Stacked” Transgenic Hybrids Yielding Above Average in the 2003 WI Hybrid Trials

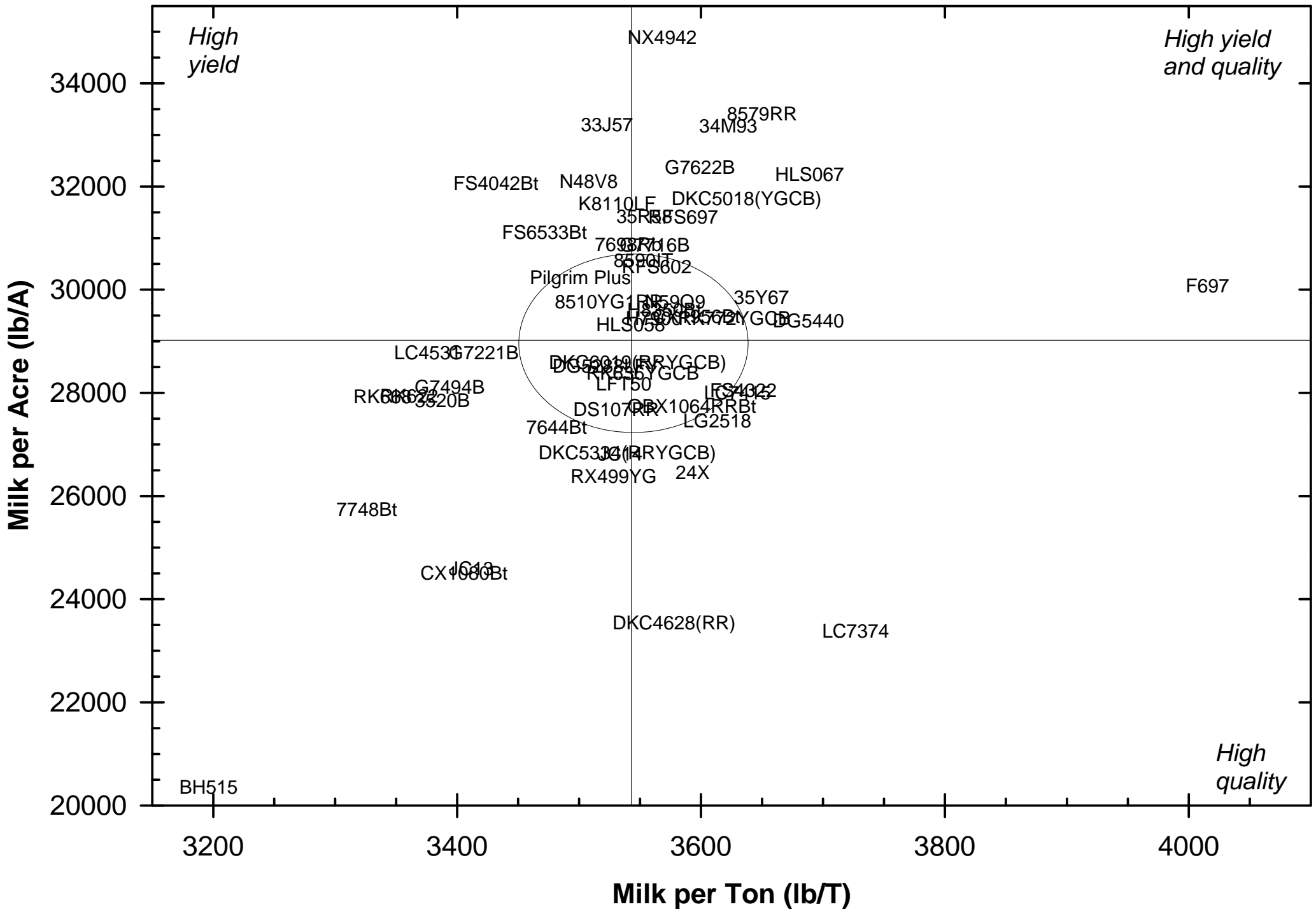
Frequency (%)



Relationship between milk per acre and milk per ton of corn hybrids in Southern WI during 2003.



# Relationship between milk per acre and milk per ton of corn hybrids in South Central WI during 2003.



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# **Silage Relative Maturity Ratings – Do we need them?**

## 2002 Wisconsin Corn Hybrid Performance Trial Results

### Table 13. South Central Zone - Early Maturity Silage Trial.

100 DAY RELATIVE MATURITY OR EARLIER, BASED ON COMPANY RATING (FOND DU LAC = FON, GALESVILLE = GAL)

BRAND	HYBRID	2002											2001				2 Year Average Yield T/A			
		AVERAGE											AVERAGE							
		Yield T/A	MILK PER		Kernel									Yield T/A	Yield T/A	Yield T/A		Yield T/A		
TON	ACRE		Moist %	Milk %	CP %	ADF %	NDF %	IVD %	NDFD %	Starch %	FON Yield T/A	GAL Yield T/A								
Dekalb	DKC4446	8.8	3380	30000	48.1	20	6.6	25	49	82	63	37	7.5	10.2 *						
Golden Harvest	H2387	8.9	3440	30900 *	54.7	20	7.5	23	46	82	62	37	7.3	10.5 *						
Dairyland	HiDF3300	8.9	3440	30800 *	55.7	20	7.2	24	46	83	62	37	8.0	9.8 *						
Golden Harvest	H6775Bt	8.8	3350	29800	57.0	20	7.2	25	47	81	60	35	7.5	10.1 *						
<b>100-DAY HYBRID TRIAL AVERAGE##</b>					58.7															
Growmark	FS4042Bt	9.7 *	3400	33100 *	58.9	30	7.0	25	47	82	61	37	9.3 *	10.2 *						
La Crosse Forage	LC7415	8.8	3380	29900	59.2	40	7.6	25	47	81	60	35	8.3	9.3	8.1	2870 *	23400	7.7	8.5	8.5
Garst	8779	9.2	3430	31600 *	59.3	30	6.9	25	47	82	61	36	8.3	10.0 *	9.0	2770	24900	7.7	10.2	9.1
Battleground	3195	7.8	3370	26500	59.4	30	7.3	25	48	81	61	34	7.1	8.6						
LG Seeds	LG2488	8.6	3320	28700	61.5	30	7.4	26	50	80	60	32	7.8	9.4						
Dekalb	DKC5073	8.7	3340	29000	62.0	40	7.1	25	47	81	59	35	8.5	8.9						
NK Brand	N48V8	10.7 *	3380	36100 *	63.2	40	7.1	28	52	80	62	27	10.2 *	11.1 *	10.6 *	2720	29000 *	9.7 *	11.6 *	10.7 *
Battleground	3203	8.9	3330	29700	63.9	50	7.4	27	50	80	60	32	8.9	8.9						
MEAN		9.0	3380	30500	58.6	30	7.2	25	48	81	61	34	8.2	9.8	8.9	2720	24100	8.0	9.7	9.4
LSD(0.10)**		1.2	NS	5800	5.2	10	0.5	3	5	2	2	5	1.0	1.4	0.7	130	2700	1.0	1.1	0.6

## Average whole plant moisture of all hybrids in the trial as rated by the Minnesota Relative Maturity Rating System. Ratings are rounded to 5 day increments.

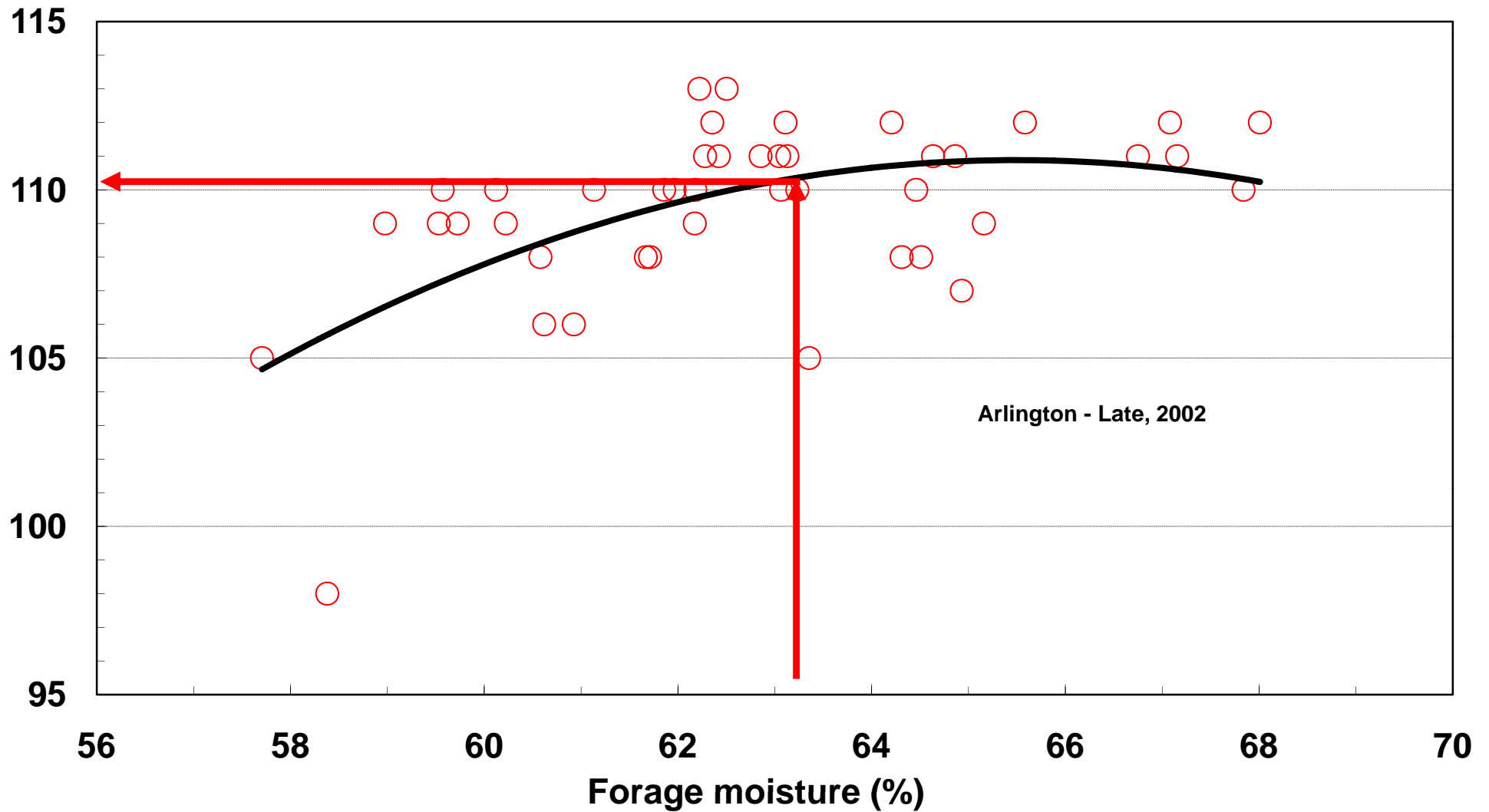
\* Hybrids that performed statistically similar to the highest hybrid in the trial.

Shaded results provide the best estimate of relative hybrid performance.



# Method for Determining Wisconsin Silage Relative Maturity - WI SRM (n=44)

Company Relative Maturity (days)



# Relative Maturity

## Company RM, Minnesota RM, GRM, SRM

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- In tables, harvest grain moisture of a hybrid is compared to the moisture of standard hybrids rated using the Minnesota RM rating.
  - ✓ Hybrids with **lower** moisture than a particular maturity average are likely **earlier** than that maturity.
  - ✓ Hybrids with **higher** grain moisture are most likely **later** in relative maturity.
- In index, Company RM, MN RM, GRM and SRM are listed. GRM and SRM are calculated using grain or silage moisture at harvest compared to average company ratings.

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# How Does Hail Affect Corn Silage Yield?

# Objective

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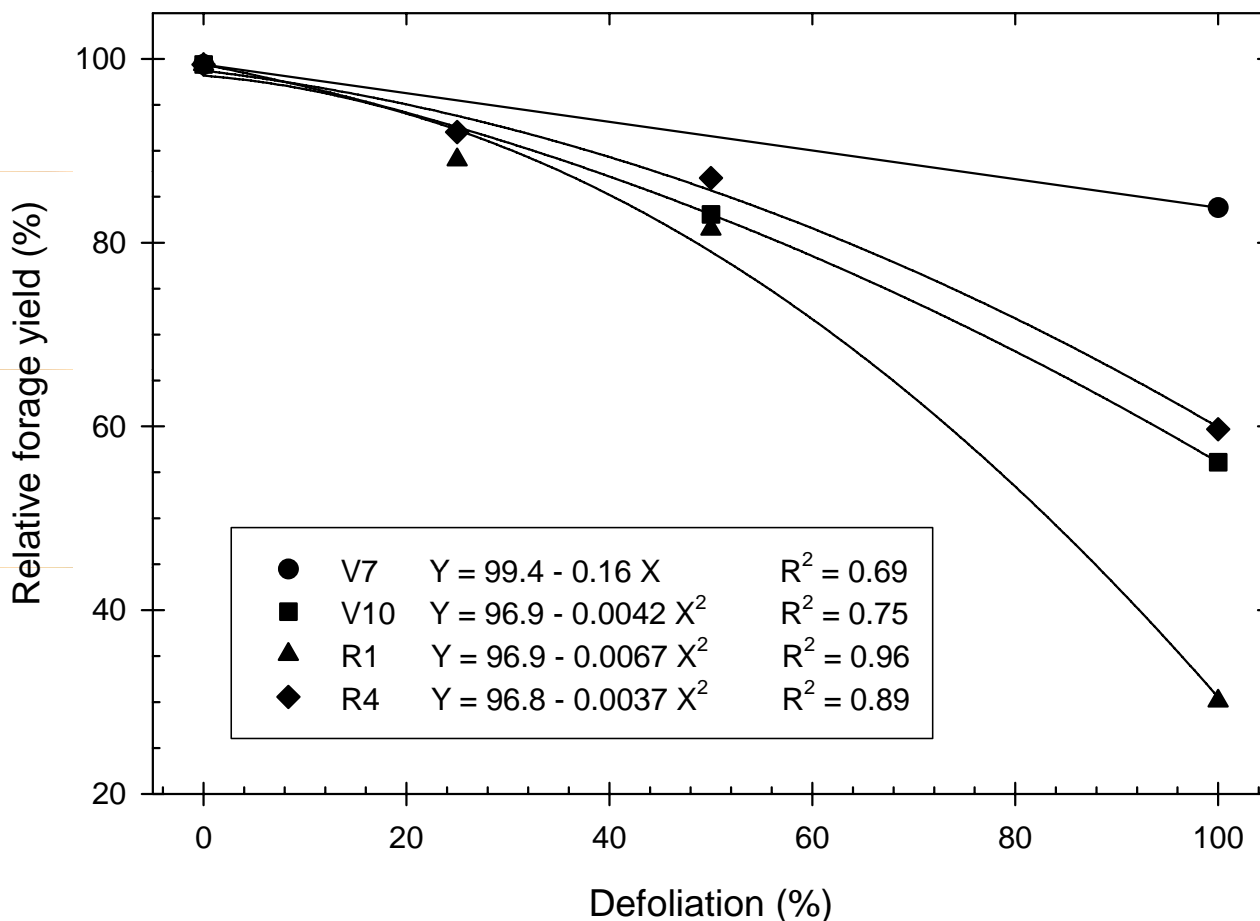
- To evaluate defoliation of corn grown for forage production under a range of production conditions.
- To evaluate corn forage yield loss and whole plant moisture due to defoliation at various development stages and intensities.

# Materials and Methods

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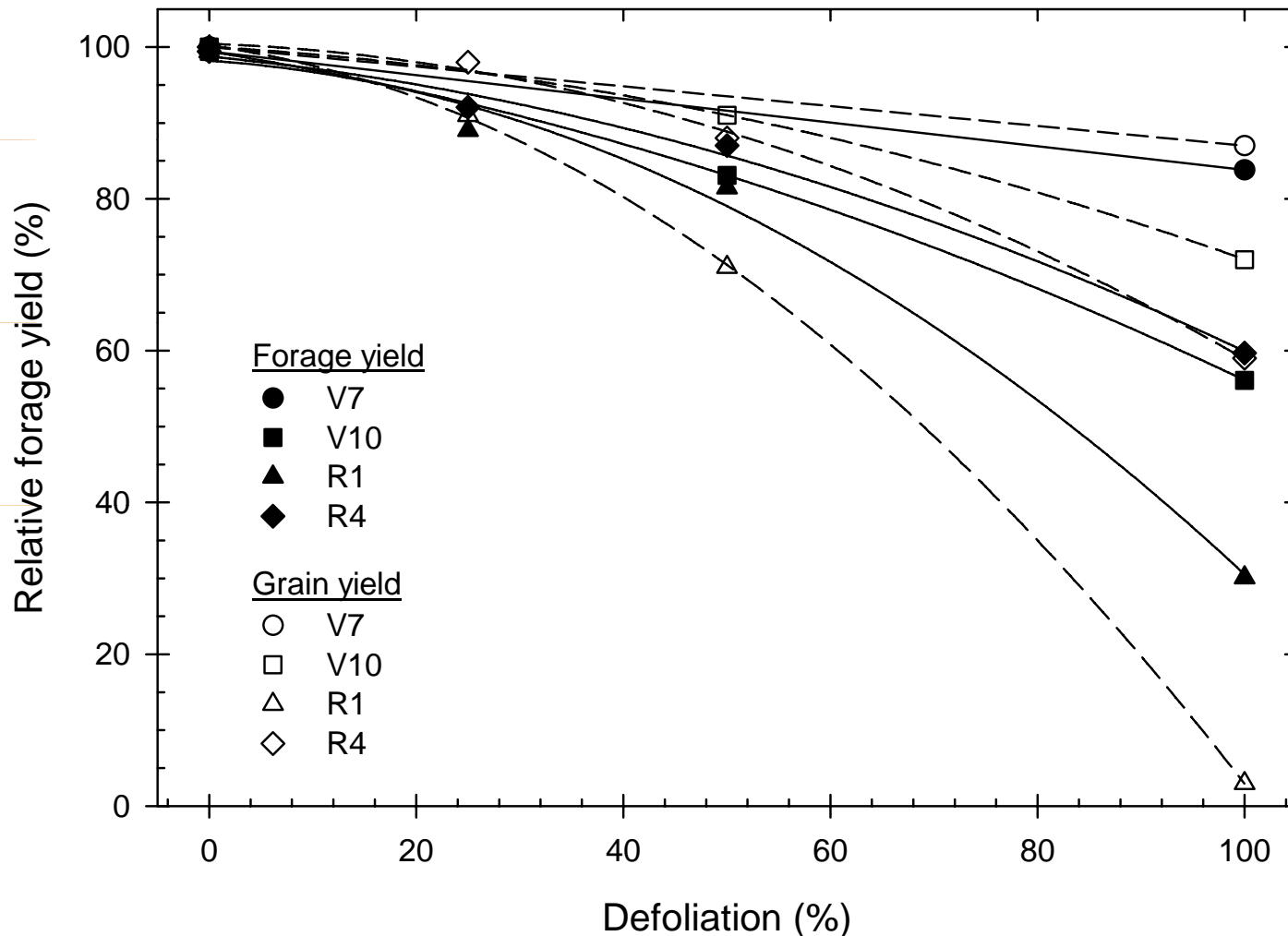
- Years: 2000, 2001, and 2002
- Locations:
  - ✓ Arlington, WI
  - ✓ Marshfield, WI
  - ✓ State College, PA
- Pioneer 34G82 and Pioneer 37J99
- Development stages: V7, V10, R1, R4
- Defoliation intensities: 0, 25, 50, 100%

# Corn Forage Yield Response to Defoliation



- Silking (R1) is the most sensitive stage to defoliation
- Corn response to defoliation is similar at V10 and R4.
- Using these equations, agronomists can estimate the impact of hail on forage yield.

# Corn forage yield response to defoliation compared to grain yield response (NCIS)



- Forage yield decreases more than grain yield when defoliation occurs at V10, but
- Grain yield decreases more than forage yield when defoliation occurs at silking (R1).
- Other stages (V7 and R4) have similar relative responses.

# Summary

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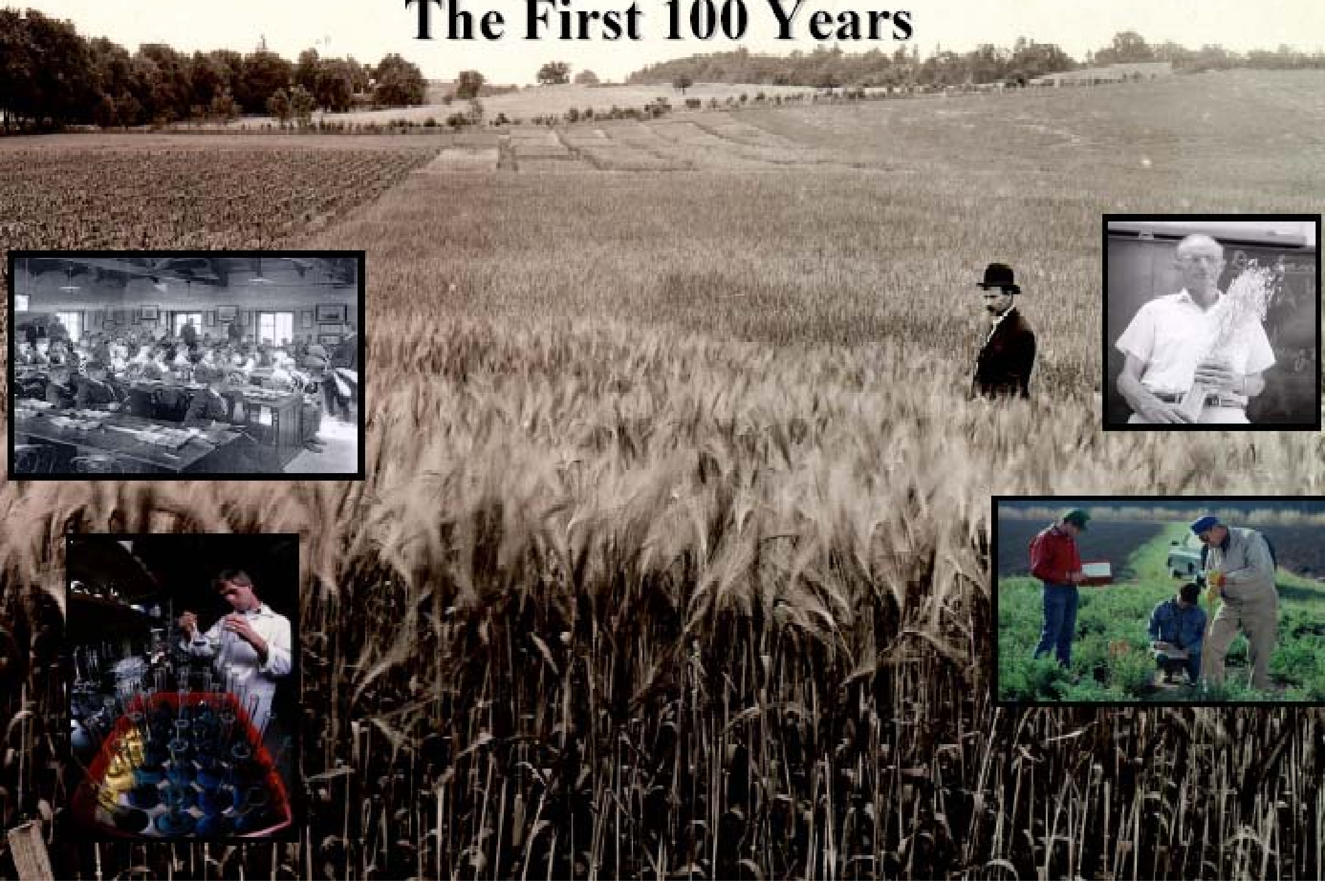
- Like grain yield, forage yield response to defoliation varies according to growth stage.
- Corn forage yield is most sensitive to hail at the silking stage.
- Defoliation at:
  - ✓ V7 → Forage yield response is similar to grain yield
  - ✓ V10 → Forage yield decreases more than grain yield
  - ✓ R1 → Grain yield decreases more than forage yield
  - ✓ R4 → Forage yield response is similar to grain yield
- 100% defoliation decreases forage yield:
  - ✓ 16% at V7
  - ✓ 43% at V10
  - ✓ 70% at R1
  - ✓ 40% at R4

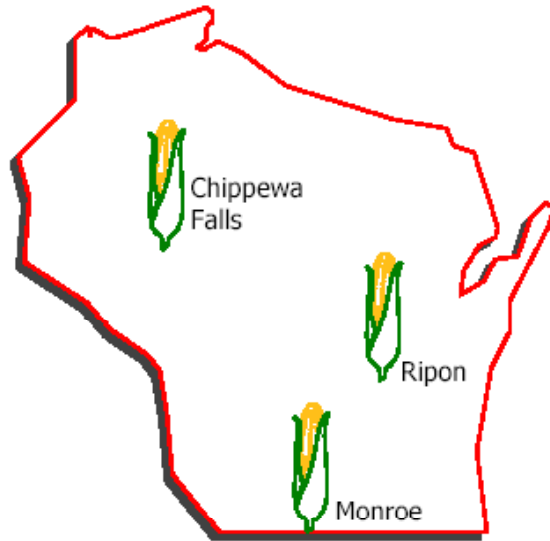




# University of Wisconsin Agronomy Department

## The First 100 Years





## 2004 Wisconsin Corn Conferences

- ☞ Tillage
- ☞ Crop Systems
- ☞ Hybrids
- ☞ Marketing
- ☞ Residue Mangmt.
- ☞ Populations
- ☞ PEPS
- ☞ Fertilizer
- ☞ Ethanol Plant Tours

### **January 26 – Monroe**

Ludlow Mansion – 1421 Mansion Drive.  
From Hwy. 11/81, Exit S. on 18<sup>th</sup> St., Turn W. on  
Mansion Dr.

### **January 29 – Chippewa Falls**

Park Inn – 1009 West Park Ave.  
Hwy. 124 and Cty. J (second J or 1 mile N of Farm  
and Fleet)

### **January 30 – Ripon**

Royal Ridges – 1 Westgate Drive, Hwy 23 W.

#### **Sponsored by:**

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Wisconsin Corn Growers Association

## 2004 WISCONSIN *Corn/Soy* EXPO

February 3-4  
In Conjunction with Ag Day at the Capitol

Alliant Energy Center  
Madison, Wisconsin

Sponsored by  
Wisconsin Corn Growers Association  
Wisconsin Soybean Association