

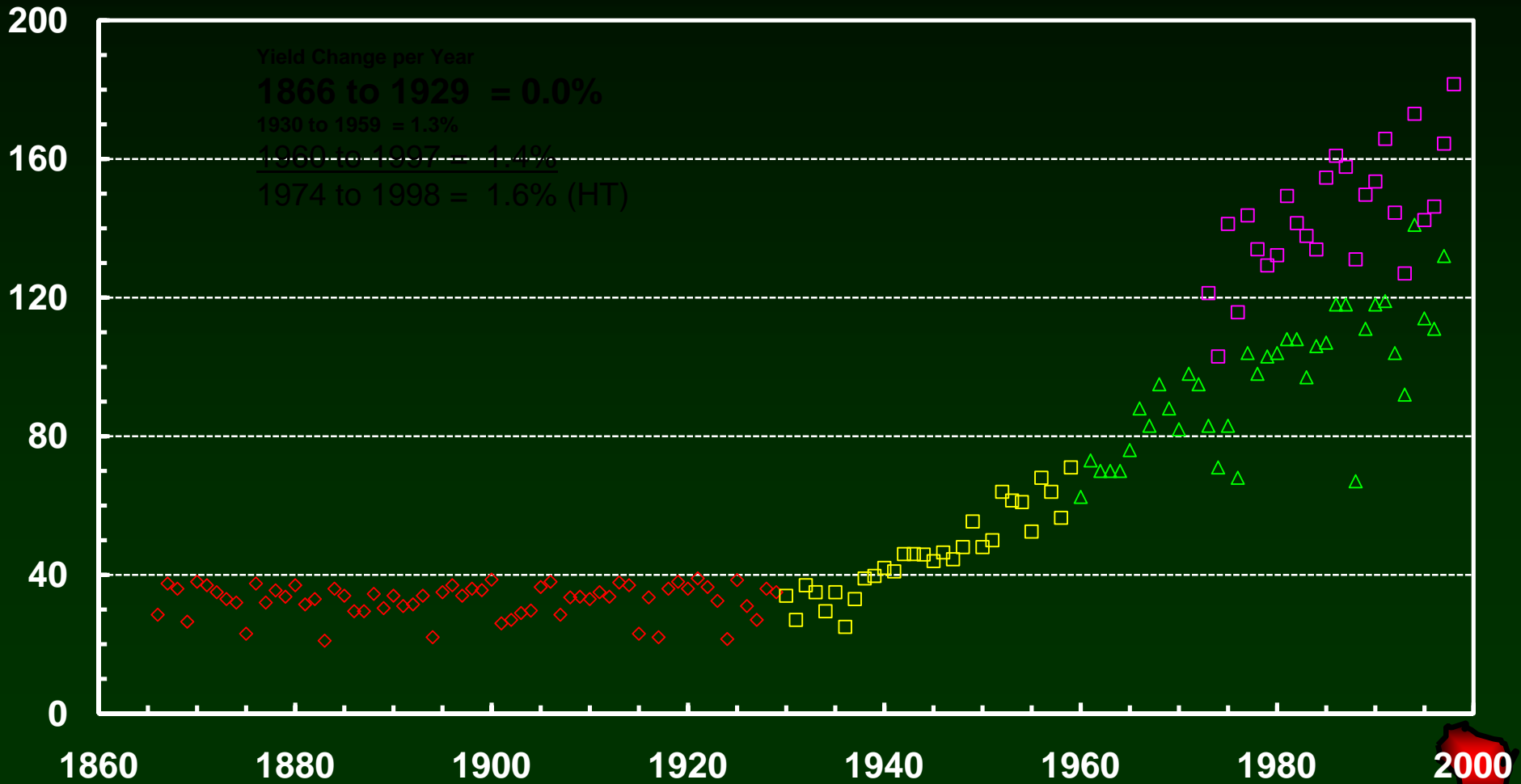
# 1999 Regional Corn Conferences

**Grain Hybrid Trials  
Risk Management  
Wisconsin CRM  
Reducing Production Inputs**

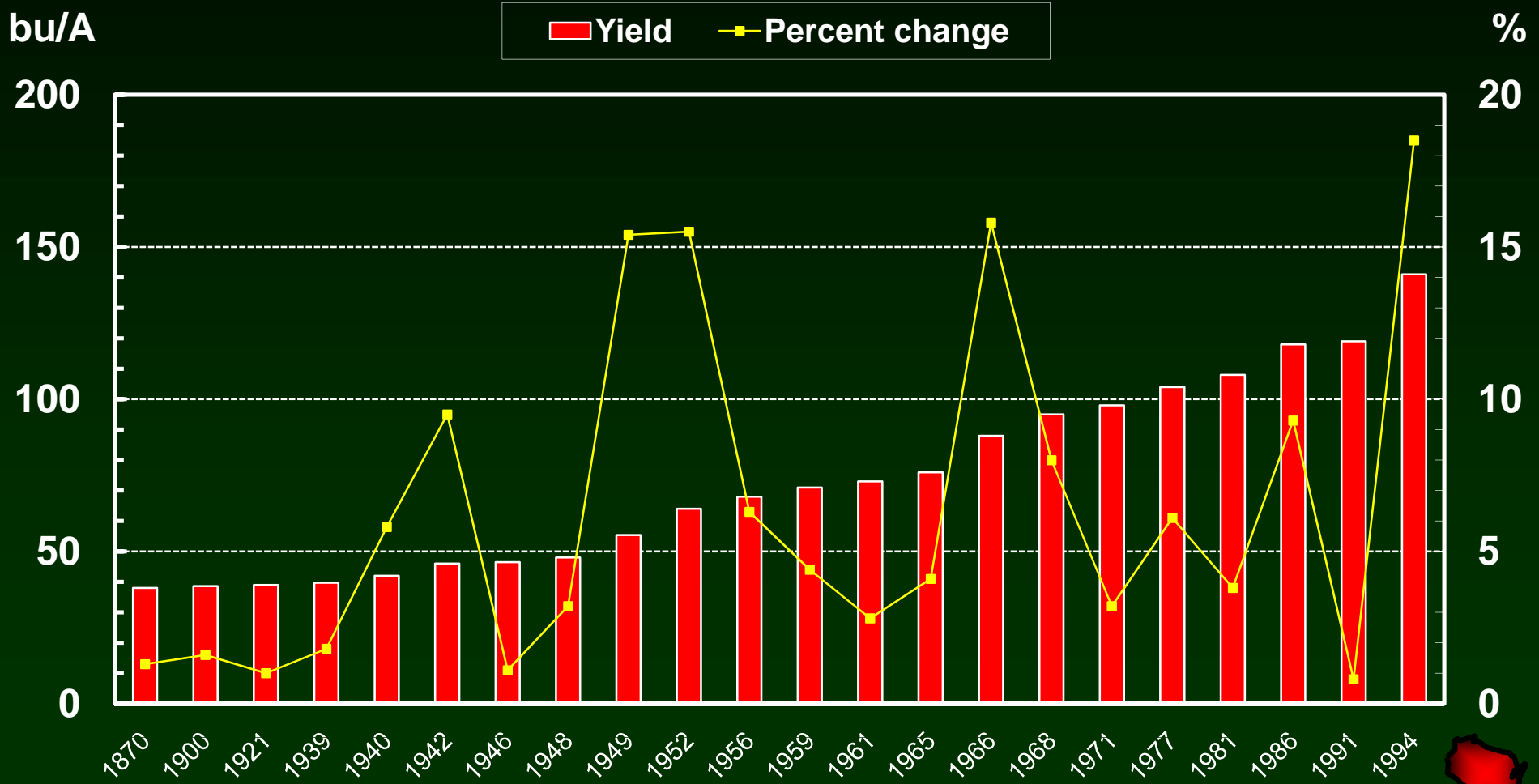
**Joe Lauer**  
*Corn Agronomist*



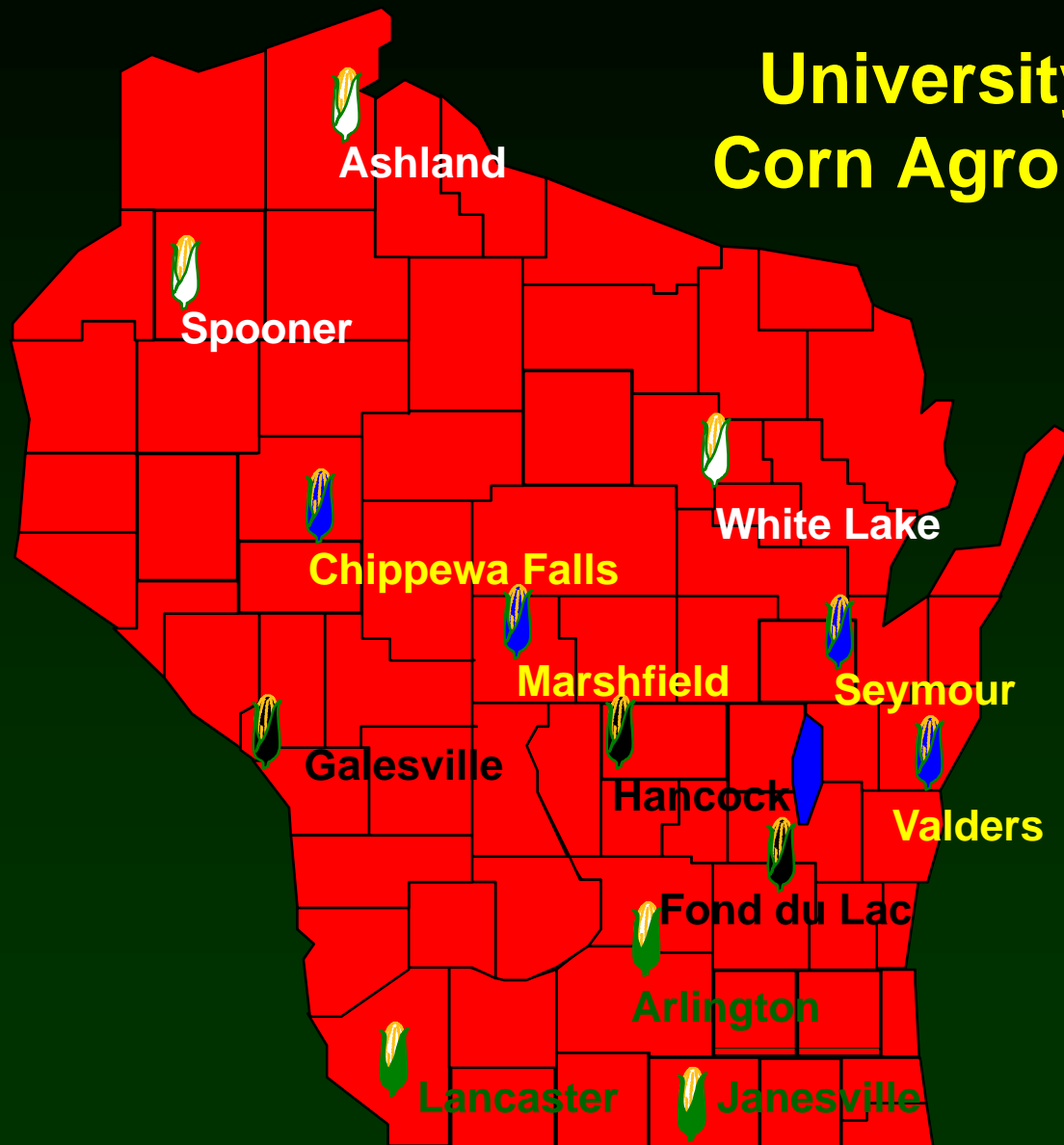
# Corn Yields (Bu/a) in Wisconsin Since 1866



# Years of Record Corn Yield and the Percent Increase Over the Previous Record Year



# University of Wisconsin Corn Agronomy Program



## Wisconsin Corn Performance Trials - Grain Summary

Location	1988-1997		1998		Percent Change
	N	Yield	N	Yield	
Arlington	1724	175	169	248	+42
Janesville	1724	171	169	208	+22
Lancaster	1724	155	169	224	+46
Fond du Lac	1532	151	145	195	+29
Galesville	1532	153	145	199	+30
Hancock	1532	176	144	221	+26
Chippewa Falls	1117	154	159	94	-39
Marshfield	957	129	159	159	+23
Seymour	889	144	159	157	+9
Valders	1241	138	159	192	+39
Ashland	110	127	19	139	+9
Spoooner	1807	118	210	145	+23
White Lake	570	83	70	113	+36

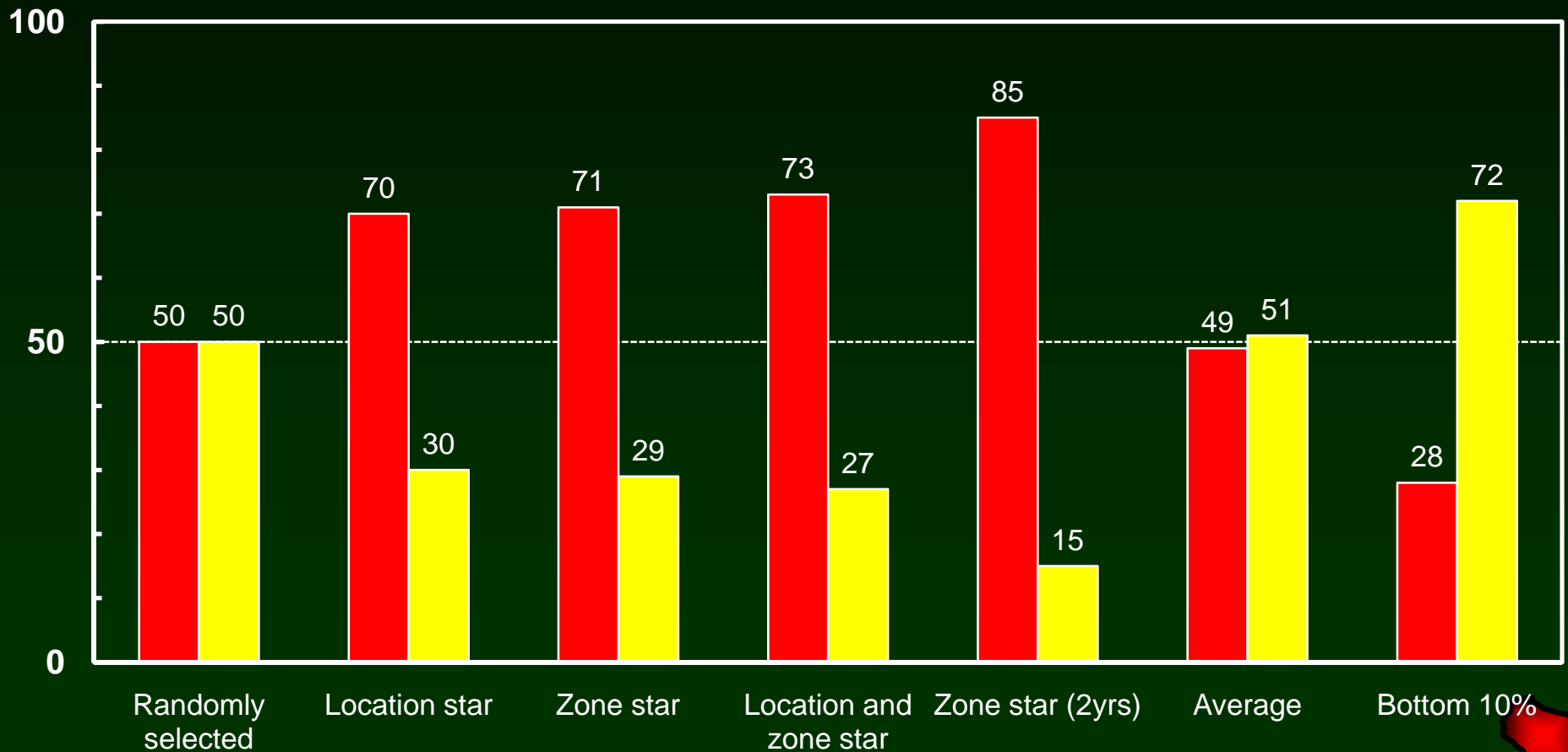
Note: Seymour average includes New London 1988-1992.



# Picking Top Corn Hybrids Using Wisconsin Results 1977 to 1995

Frequency (%)

■ Above trial average   ■ Below trial average



## The Economic Consequences of Corn Hybrid Selection Schemes (1977 to 1995)

Selection scheme	Hybrids selected	Grain yield difference bu/A	Relative yield percent	Grower return difference \$/A
One location	Top 10%	6	4	14
Z & 3L	Top 10%	11	7	24
Z & 3L: 2 yrs	Top 10%	13	8	31
One location	Average	0	0	-1
One location	Bottom 10%	-9	-7	-21

Grower return difference = grower return of selected hybrids - trial average



# Grower Return Over Time for Corn Hybrid Selection Schemes (1977 to 1995)

Selection scheme	Hybrids selected	Previous years		Selected year	Future years			
		-2	-1	0	1	2	3	4
<b>dollars per acre difference</b>								
One location	Top 10%	23	20	52	14	10	10	6
Z & 3L	Top 10%	38	37	51	24	23	14	18
Z & 3L: 2 yrs	Top 10%	44	48	50	31	25	15	21
One location	Average	11	9	0	-1	-2	-3	-4
One location	Bottom 10%	-5	-9	-60	-21	-20	-23	-23

Dollars per acre difference = grower return of selected hybrids - trial average





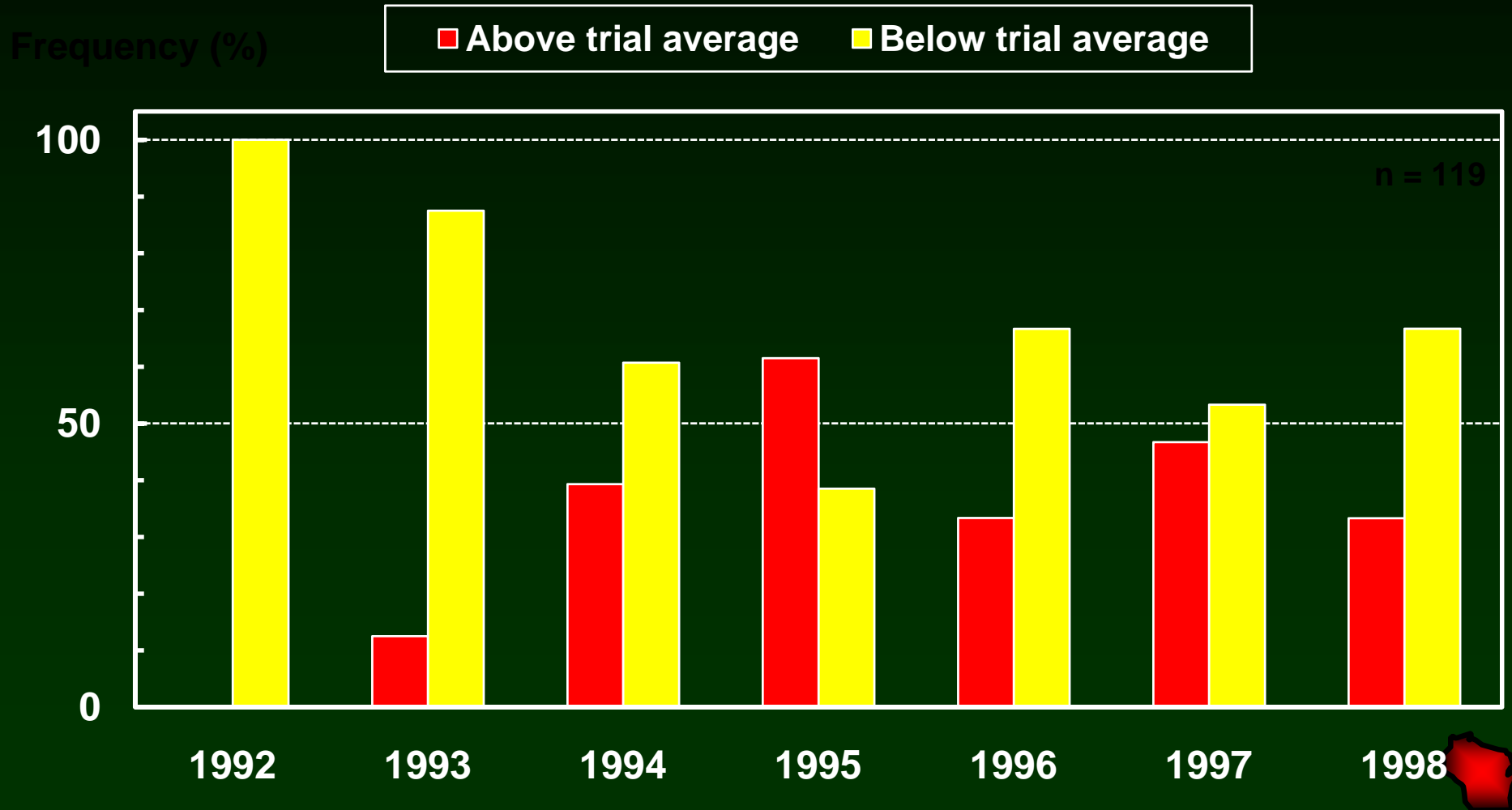
# SELECT 98

A program for  
choosing crop varieties

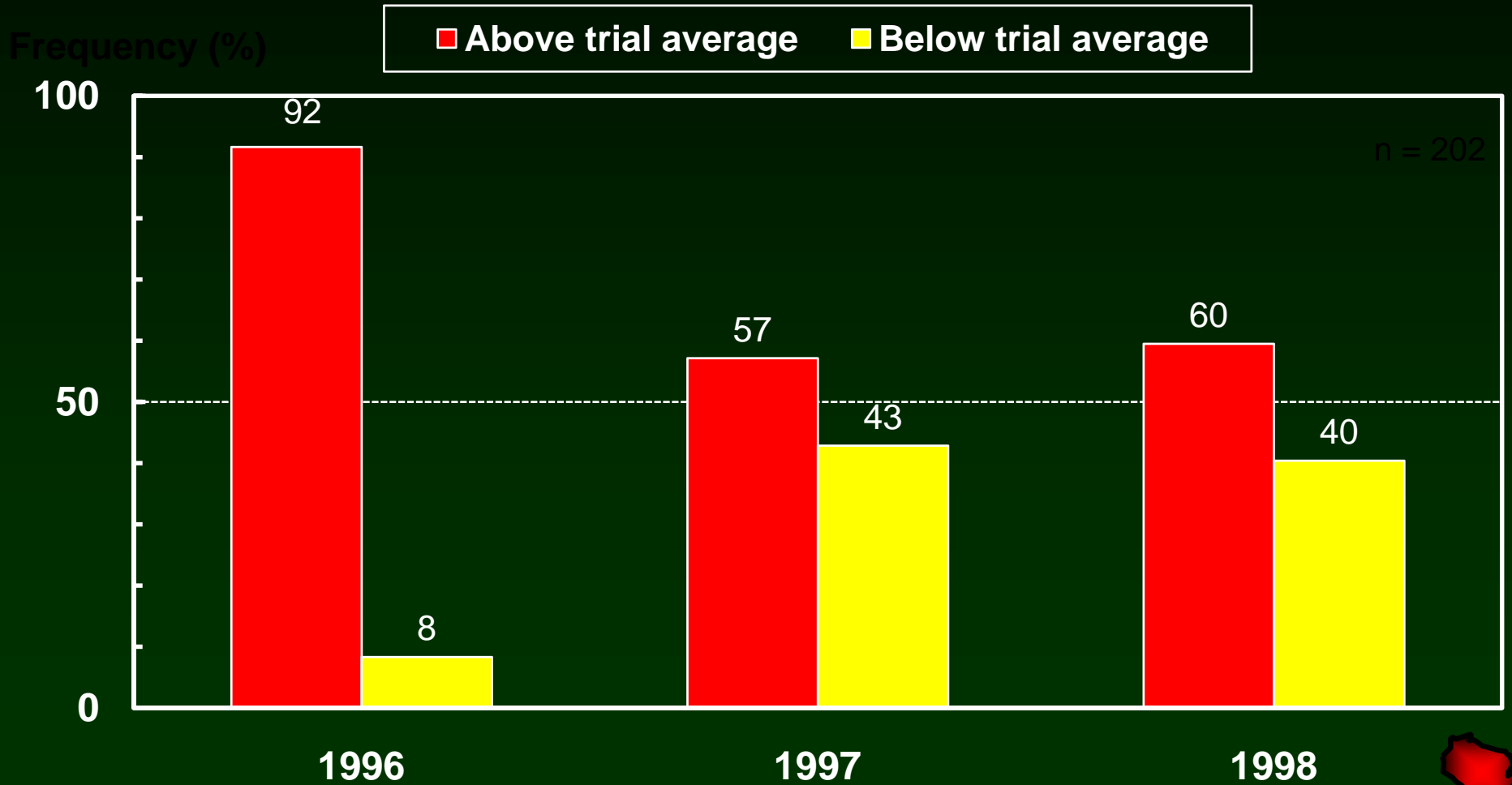
<http://corn.agronomy.wisc.edu>  
*updated on 31 December 1998*



# Yield of "IMI" Hybrids in Relation to the Average of All Hybrids in a Wisconsin Trial



# Yield of "BT" Hybrids in Relation to the Average of All Hybrids in a Wisconsin Trial



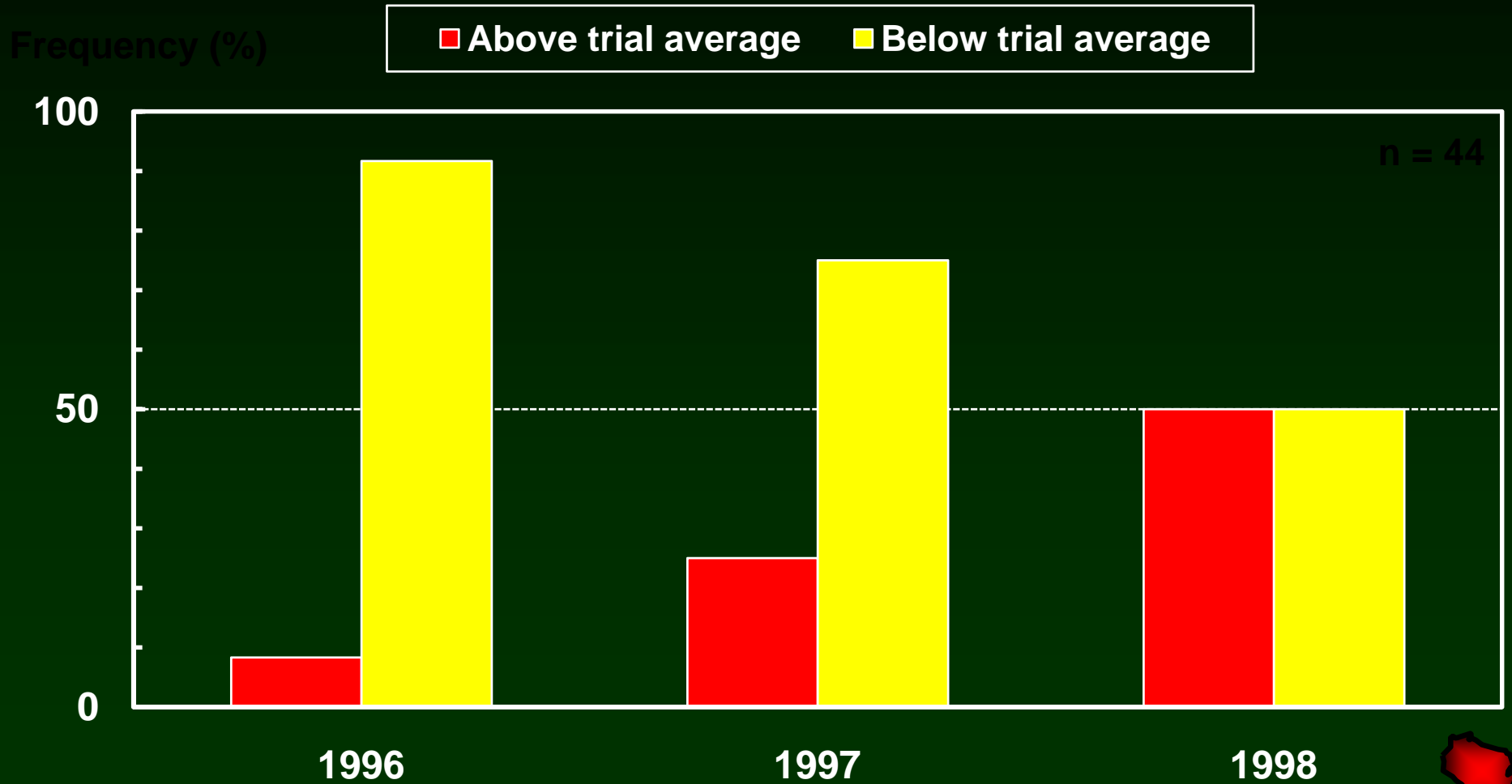
## Bt corn registrations as of December, 1998

Company	Event	Protein	Brand	1 <sup>st</sup> ECB	2 <sup>nd</sup> ECB	Refugia
Novartis	176	CryIA(b)	Knockout / Maximizer	Yes	No	Suggested
Mycogen	176	CryIA(b)	NatureGard	Yes	No	Suggested
Monsanto	Bt11	CryIA(b)	YieldGard	Yes	Yes	Suggested
Monsanto	MON810	CryIA(b)	YieldGard *	Yes	Yes	Agreement 5% acres
DeKalb	DBT418	CryIA(c)	Bt-Xtra	Yes	Limited	5% acres
PGS/AgrEvo	CBH351	Cry9(c)	StarLink	Yes	Yes	5% acres

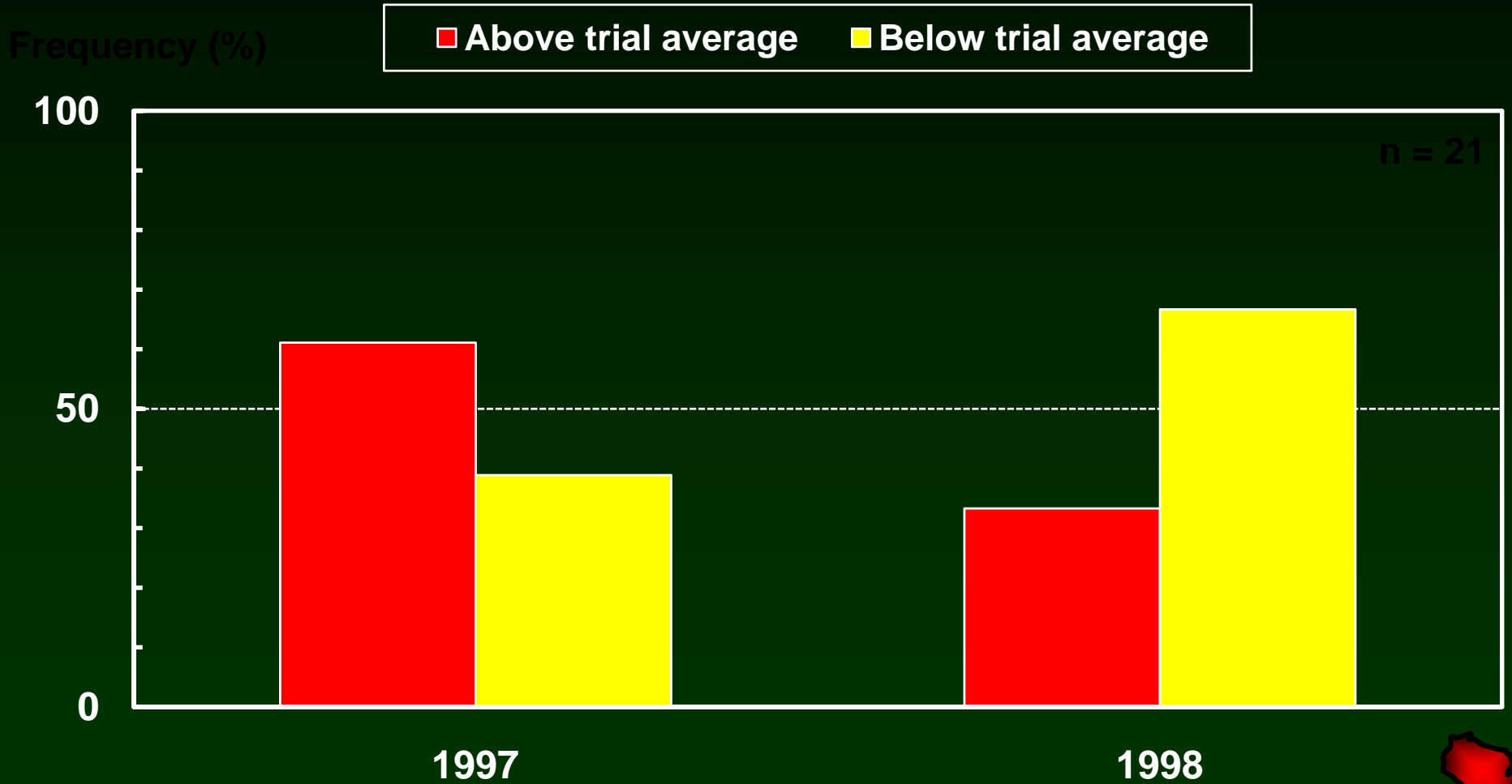
\* Supplemental distributors: Cargill, DeKalb, Golden Harvest, ICI/Garst, Pioneer



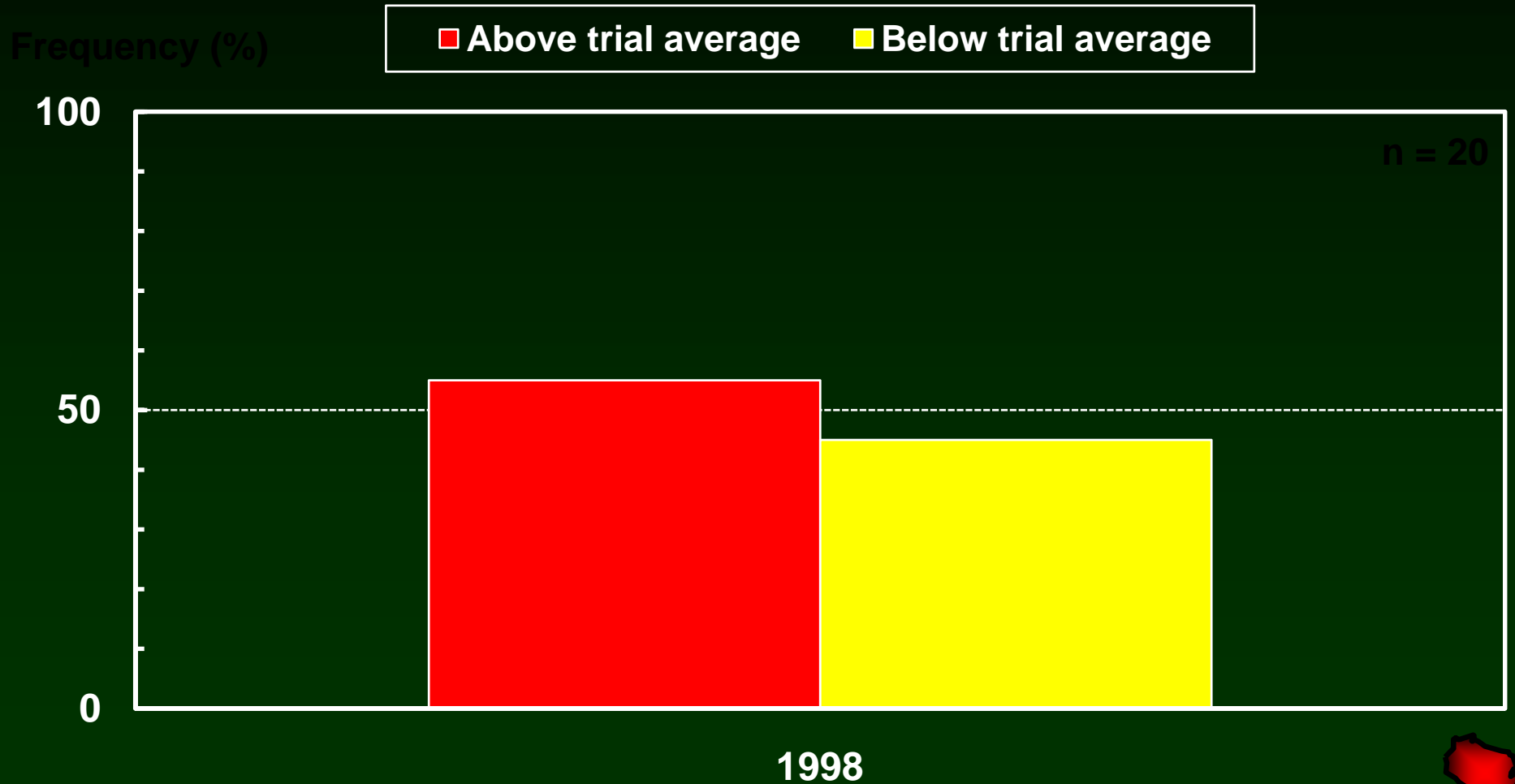
# Yield of "SR" Hybrids in Relation to the Average of All Hybrids in a Wisconsin Trial



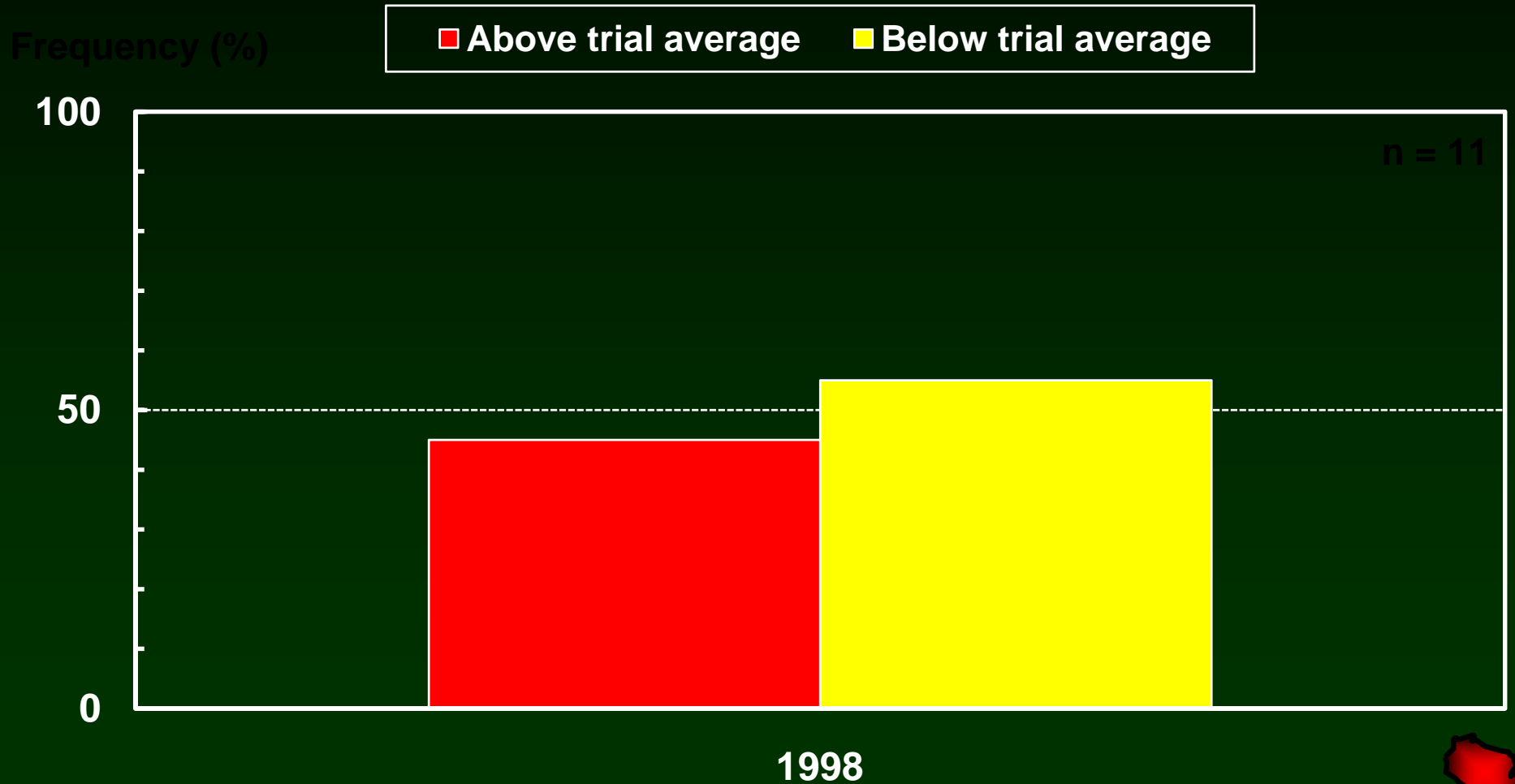
# Yield of “Liberty Link” Hybrids in Relation to the Average of All Hybrids in a Wisconsin Trial



# Yield of “Round-up Ready” Hybrids in Relation to the Average of All Hybrids in a Wisconsin Trial

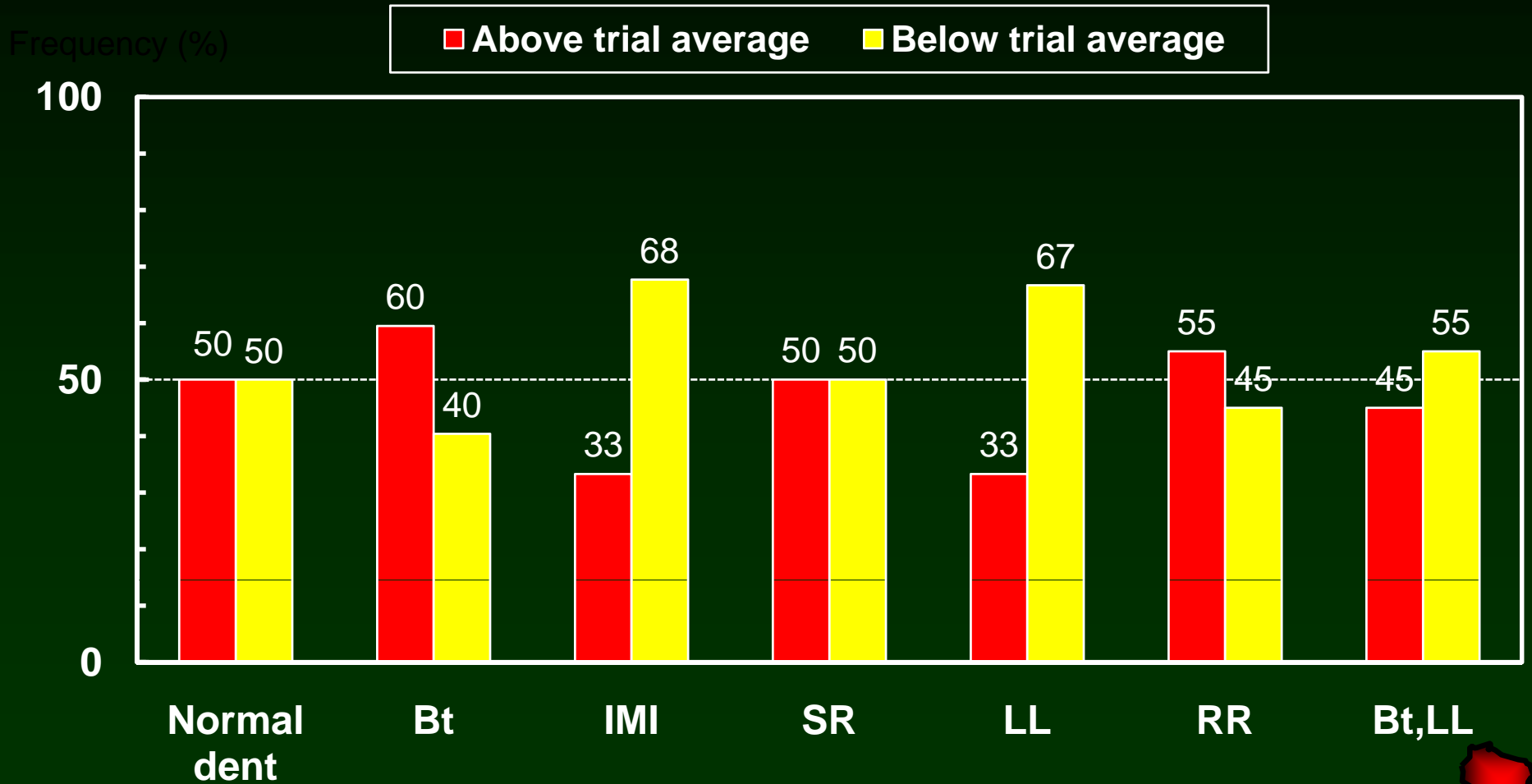


# Yield of “Gene Stacked” - (Bt,LL) Hybrids in Relation to the Average of All Hybrids in a Wisconsin Trial





# Yield of Specialty Hybrids in Relation to the Average of All Hybrids in the 1998 Wisconsin Hybrid Trials



# Using Wisconsin Corn Hybrid Performance Trial Results

- Use multi-environment average data
  - *Begin with trials in zone(s) nearest you*
  - *Compare hybrids with similar maturities*
  - *Use many years and locations*
- Evaluate consistency of performance
  - *Check performance in other zones and locations*
  - *Check other reliable unbiased trials*
  - *Be wary of inconsistent performance.*
- SELECT at <http://corn.agronomy.wisc.edu>

*You are taking a tremendous gamble if basing your hybrid selection decisions on 1 or 2 local test plots*



# Hybrid Maturity Risk Management

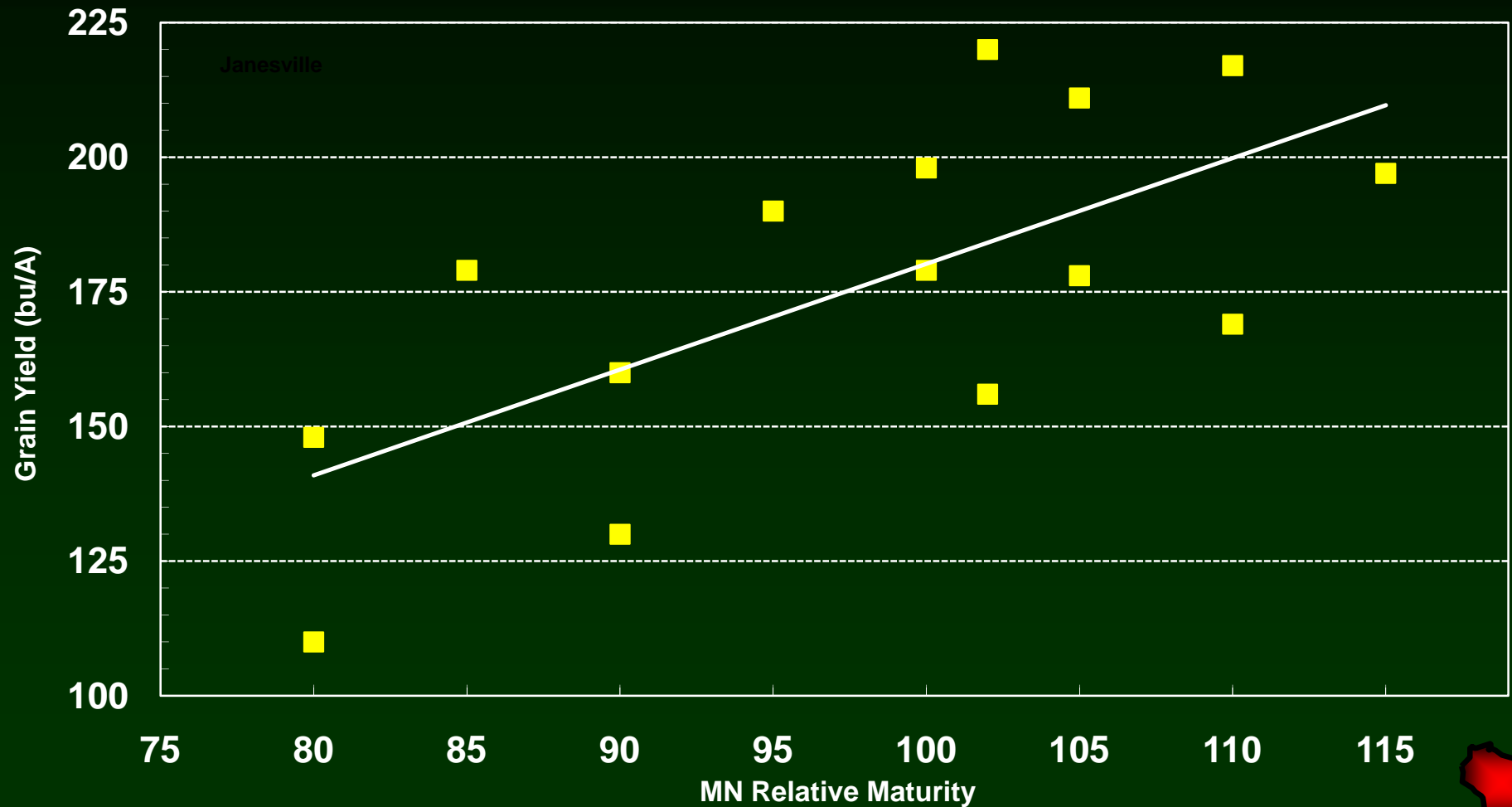


# Materials and Methods

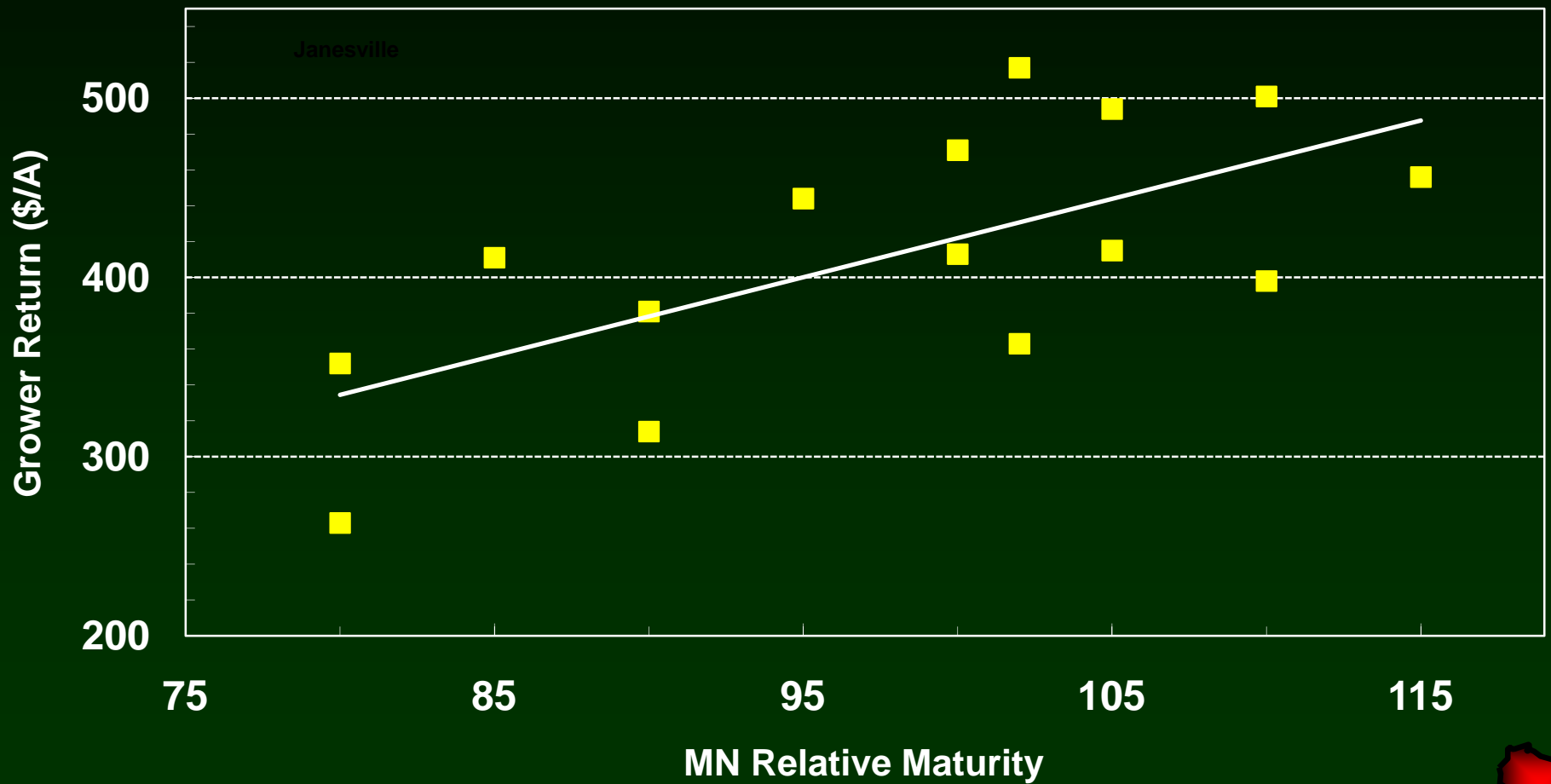
- **Data set**
  - *All hybrid trials conducted between 1973 and 1997 (25 years)*
  - *Used only hybrids that had been tested in MN Relative Maturity rating program*
  - *Optimum management: field selection, planting date, harvest*
- **Corn Price: \$2.00, 2.50, and 3.00**
- **Three corn production systems (drying costs)**
  - *Livestock feeding system (HMC) = \$0.00*
  - *On-Farm drying system = \$0.015 per point bushel*
  - *Commercial elevator drying system = \$0.03 per point bushel*
- **Grower return = (Yield \* Price) - Drying costs**



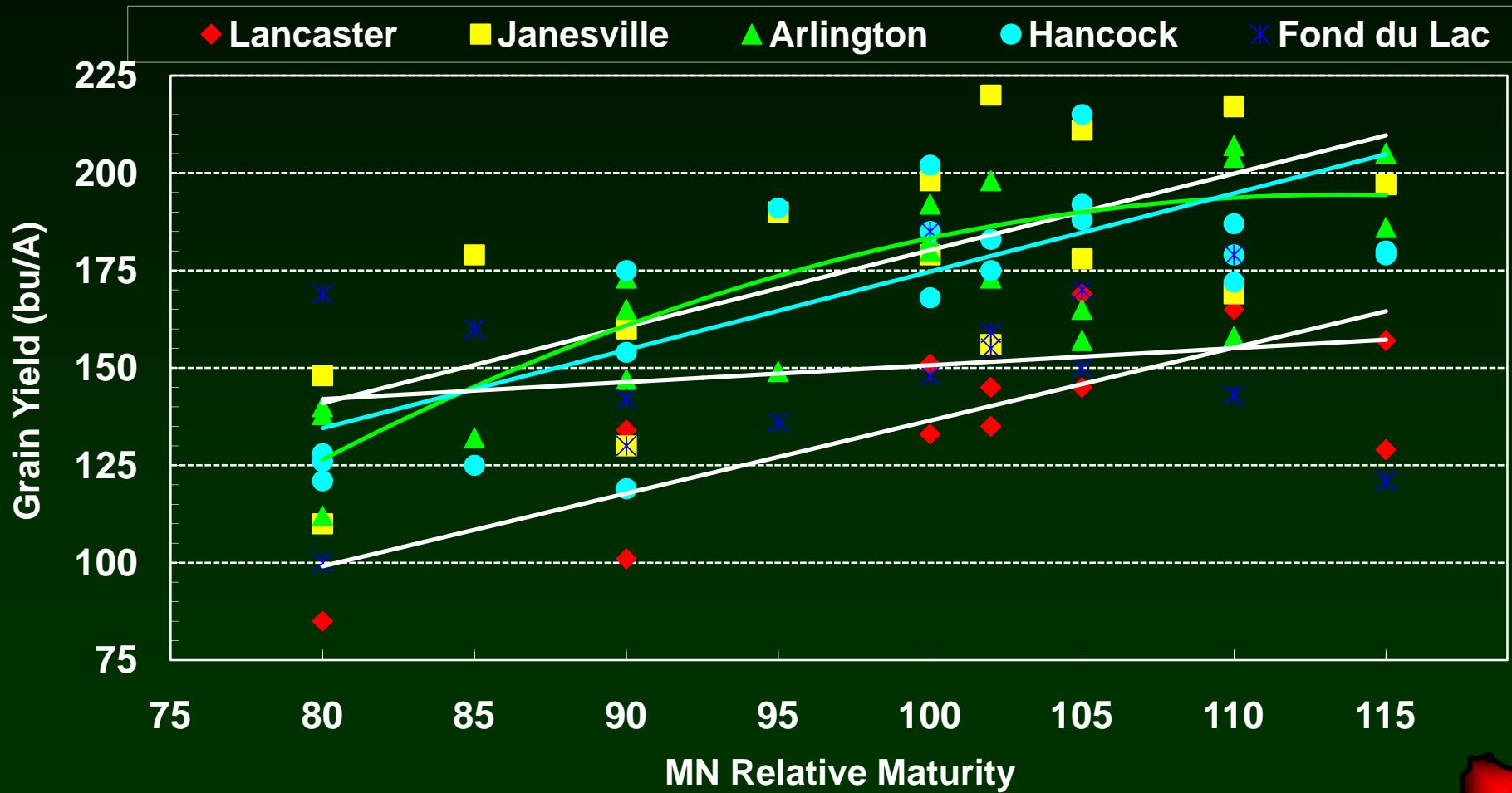
# Relationship Between Corn Grain Yield and Minnesota Relative Maturity Rating (1995-1997)



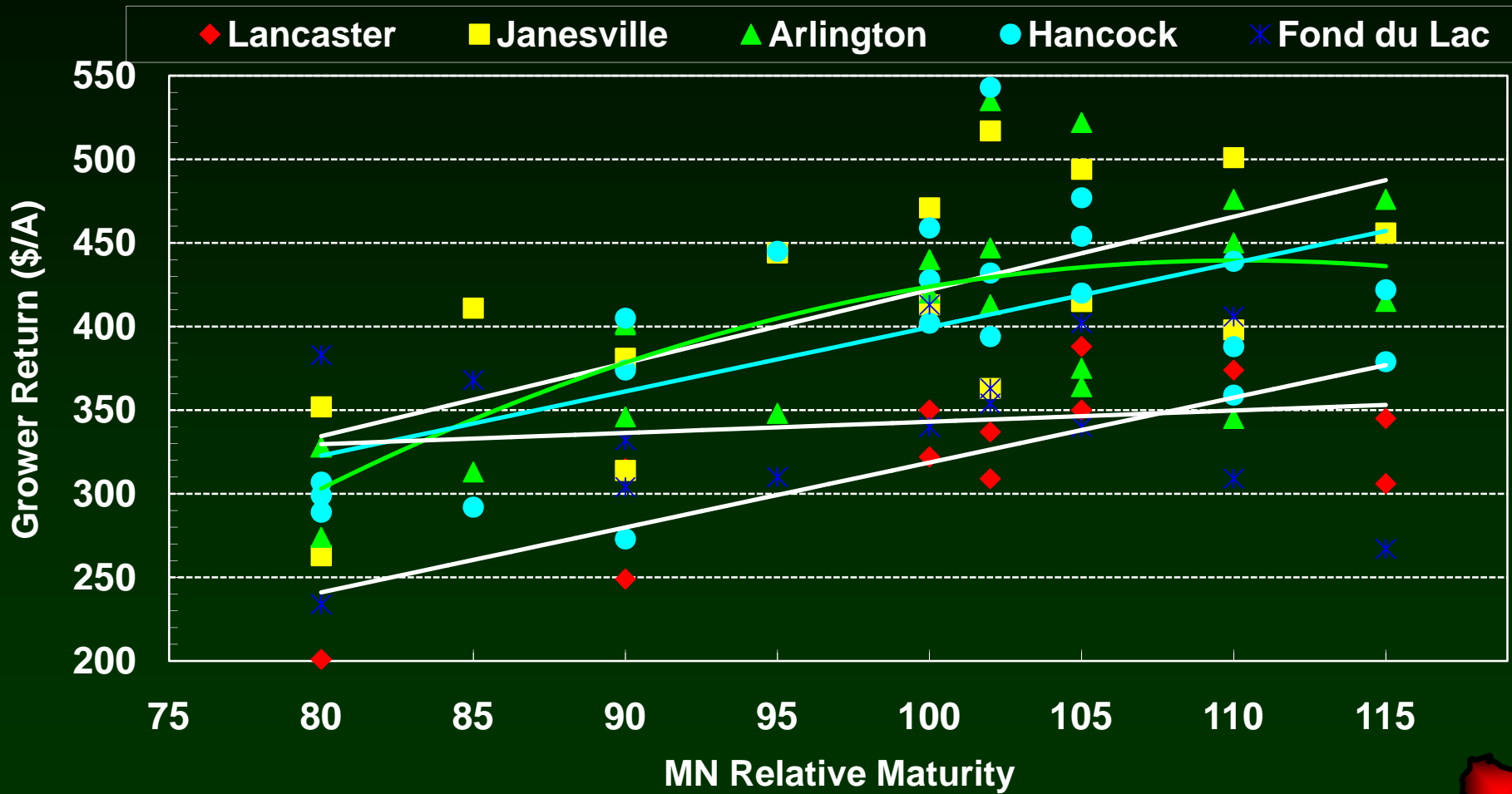
# Relationship Between Corn Grower Return and Minnesota Relative Maturity Rating (1995-1997)



# Relationship Between Corn Grain Yield and Minnesota Relative Maturity Rating (1995-1997)

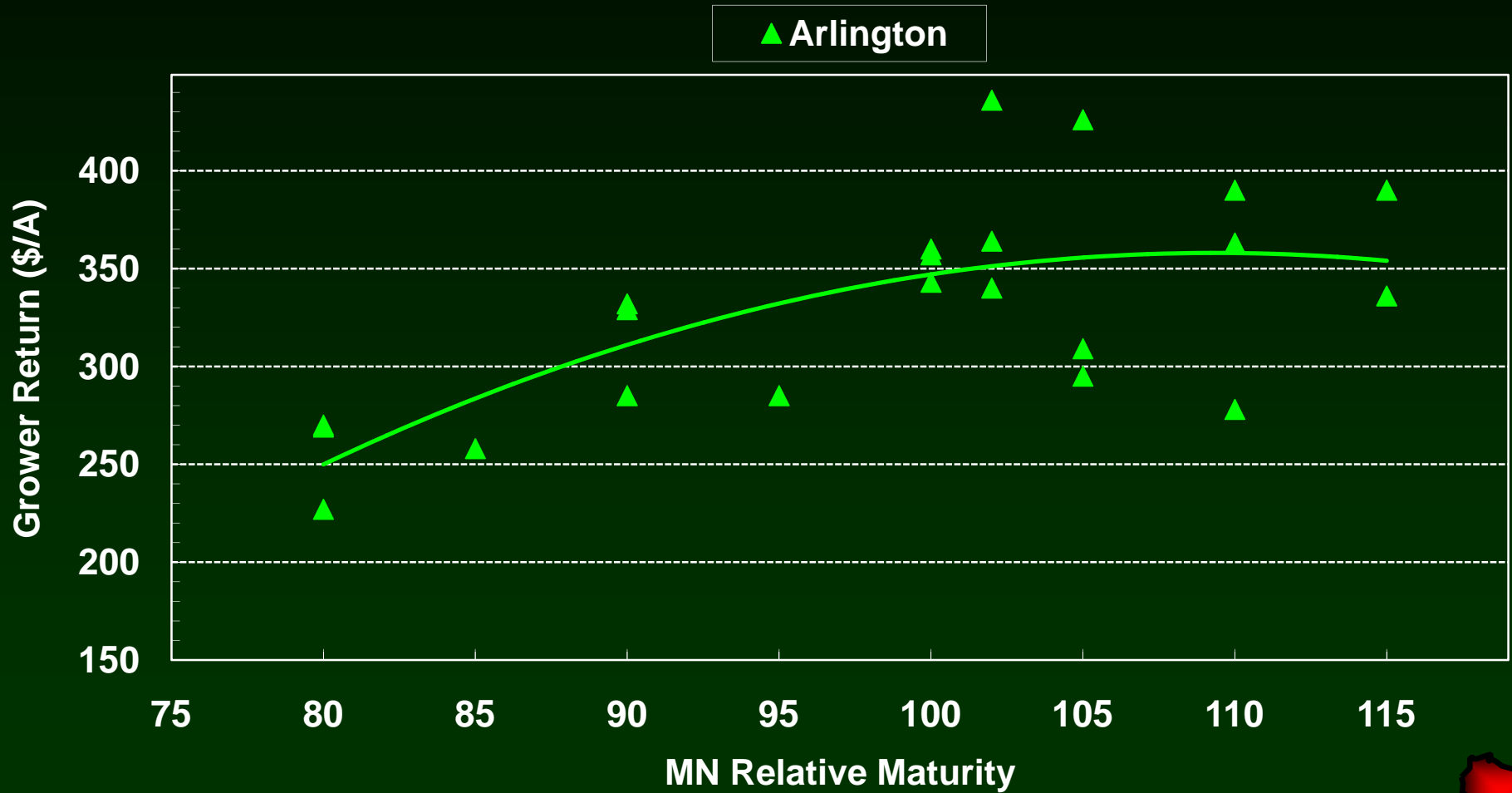


# Relationship Between Corn Grower Return and Minnesota Relative Maturity Rating (1995-1997)





# Relationship Between Corn Grower Return and Minnesota Relative Maturity Rating (1995-1997)



## Optimum corn hybrid MN Relative Maturity (days) for corn production systems in Wisconsin.

1973-1997	Livestock system			On-Farm drying			Commercial elevator		
Region	2.00	2.50	3.00	2.00	2.50	3.00	2.00	2.50	3.00
Southern	120	120	120	111	114	116	99	103	107
South central	112	112	112	105	106	107	100	102	104
North central	103	103	103	95	96	97	89	91	93
North	89	89	89	87	88	88	85	86	87



## Grower return (\$/A) of optimum maturity corn hybrids for corn production systems in WI

1973-1997	Livestock system			On-Farm drying			Commercial elevator		
Region	2.00	2.50	3.00	2.00	2.50	3.00	2.00	2.50	3.00
Southern	385	482	578	337	432	528	299	392	485
South central	321	401	481	291	370	450	266	344	423
North central	300	375	450	278	352	427	261	334	408
North	268	335	402	244	311	378	221	287	354



## Grower risk ( $\pm$ \$/A) of optimum maturity corn hybrids for corn production systems in Wisconsin

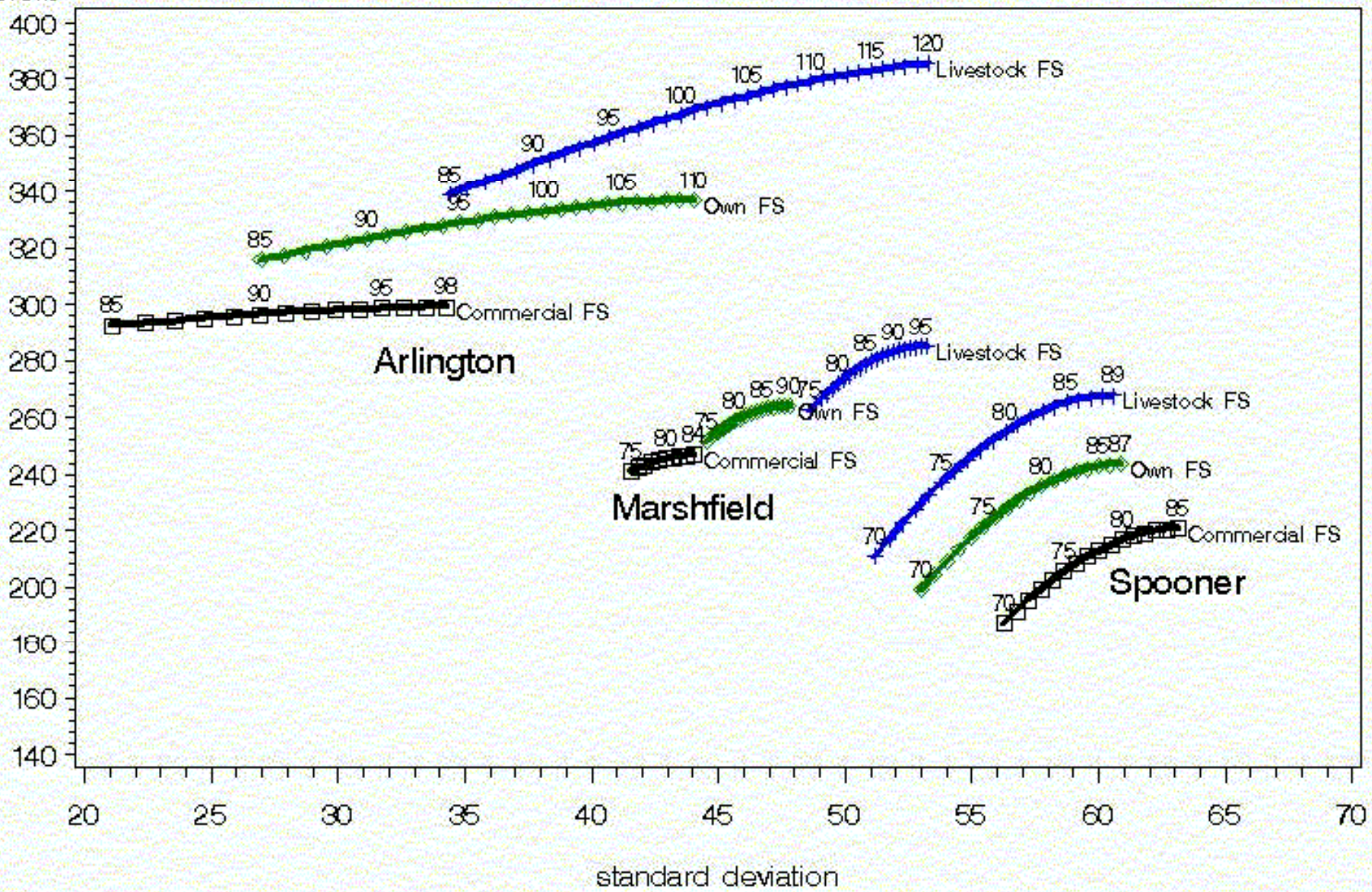
1973-1997	Livestock system			On-Farm drying			Commercial elevator		
Region	2.00	2.50	3.00	2.00	2.50	3.00	2.00	2.50	3.00
Southern	56	70	84	45	58	72	35	48	62
South central	64	80	96	60	75	91	58	73	88
North central	57	71	86	55	69	83	54	68	81
North	61	76	91	61	76	91	63	78	92





# Expected Profit—Standard Deviation Frontier by Location

expected profit



## Corn relative maturity effect on profitability and risk for corn production systems in southern WI.

1973-1997	Livestock system			On-Farm drying			Commercial elevator		
	2.00	2.50	3.00	2.00	2.50	3.00	2.00	2.50	3.00
Optimum RM (days)	120	120	120	111	114	116	99	103	107
Profit (\$/A)	385	482	578	337	432	528	299	392	485
Risk ( $\pm$ \$/A)	56	70	84	45	58	72	35	48	62
RM Range (days)	21	21	21	23	24	24	21	21	22

RM Range is the difference between optimum RM and RM at 95% yield.





## Corn relative maturity effect on profitability and risk for corn production systems in south central WI.

1973-1997	Livestock system			On-Farm drying			Commercial elevator		
	2.00	2.50	3.00	2.00	2.50	3.00	2.00	2.50	3.00
Optimum RM (days)	112	112	112	105	107	107	100	102	104
Profit (\$/A)	321	401	481	291	370	450	266	344	423
Risk ( $\pm$ \$/A)	64	80	96	60	75	91	58	73	88
RM Range (days)	15	15	15	13	14	14	12	13	13

RM Range is the difference between optimum RM and RM at 95% yield.



## Corn relative maturity effect on profitability and risk for corn production systems in north central WI.

1973-1997	Livestock system			On-Farm drying			Commercial elevator		
	2.00	2.50	3.00	2.00	2.50	3.00	2.00	2.50	3.00
Optimum RM (days)	103	103	103	95	96	97	89	91	93
Profit (\$/A)	300	375	450	278	352	427	261	334	408
Risk ( $\pm$ \$/A)	57	71	86	55	69	83	54	68	81
RM Range (days)	18	18	18	16	16	15	14	14	15

RM Range is the difference between optimum RM and RM at 95% yield.





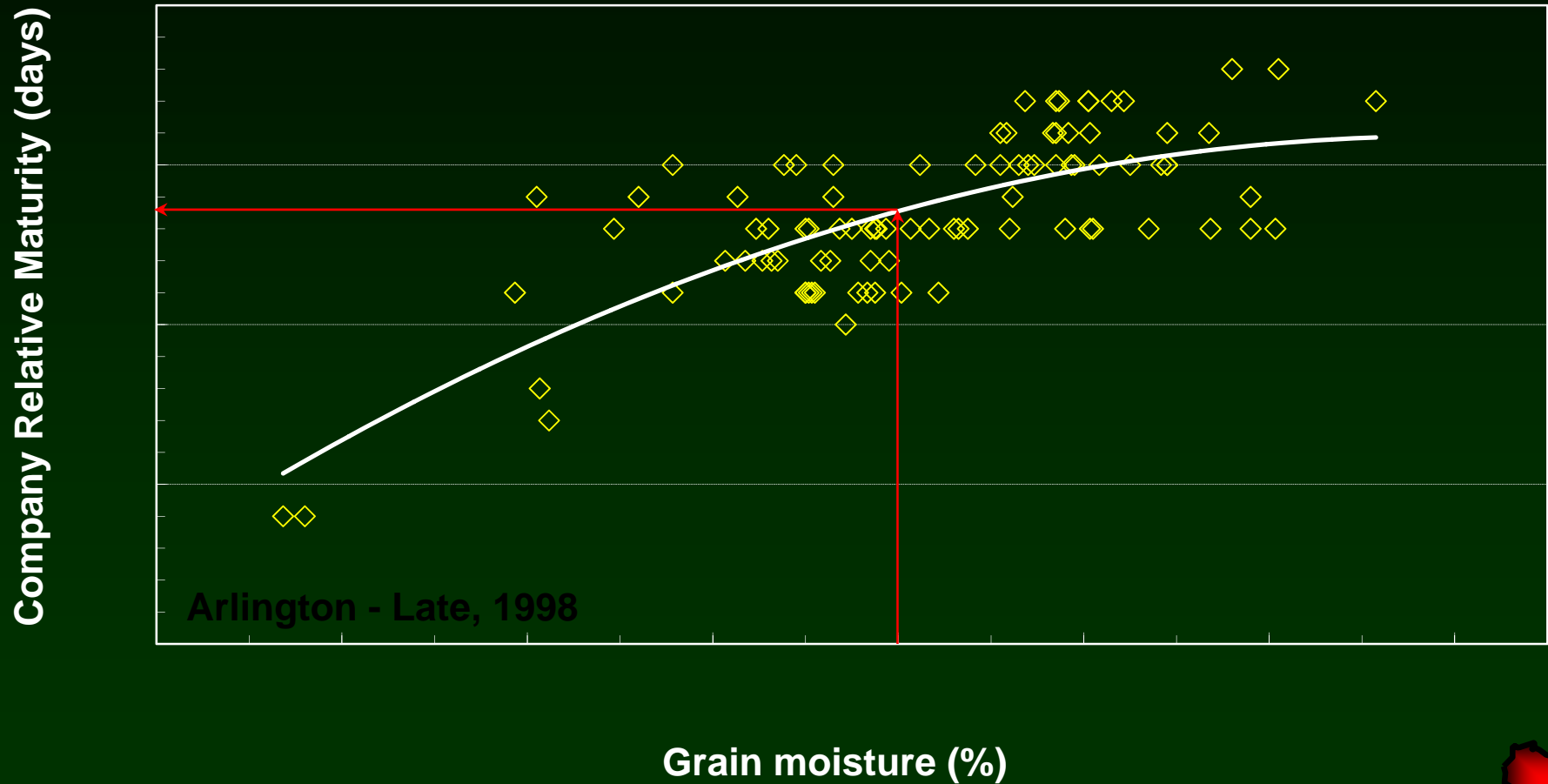
## Corn relative maturity effect on profitability and risk for corn production systems in northern WI.

1973-1997	Livestock system			On-Farm drying			Commercial elevator		
	2.00	2.50	3.00	2.00	2.50	3.00	2.00	2.50	3.00
Optimum RM (days)	89	89	89	87	88	88	85	86	87
Profit (\$/A)	268	335	402	244	311	378	221	287	354
Risk ( $\pm$ \$/A)	61	76	91	61	76	91	63	78	92
RM Range (days)	9	9	9	9	9	9	9	9	9

RM Range is the difference between optimum RM and RM at 95% yield.



# Method for determining Wisconsin comparative relative maturity - WI CRM (n=92)



## Examples of hybrid CRM ratings (based on MN RM) using WI Corn Hybrid Performance Trial data

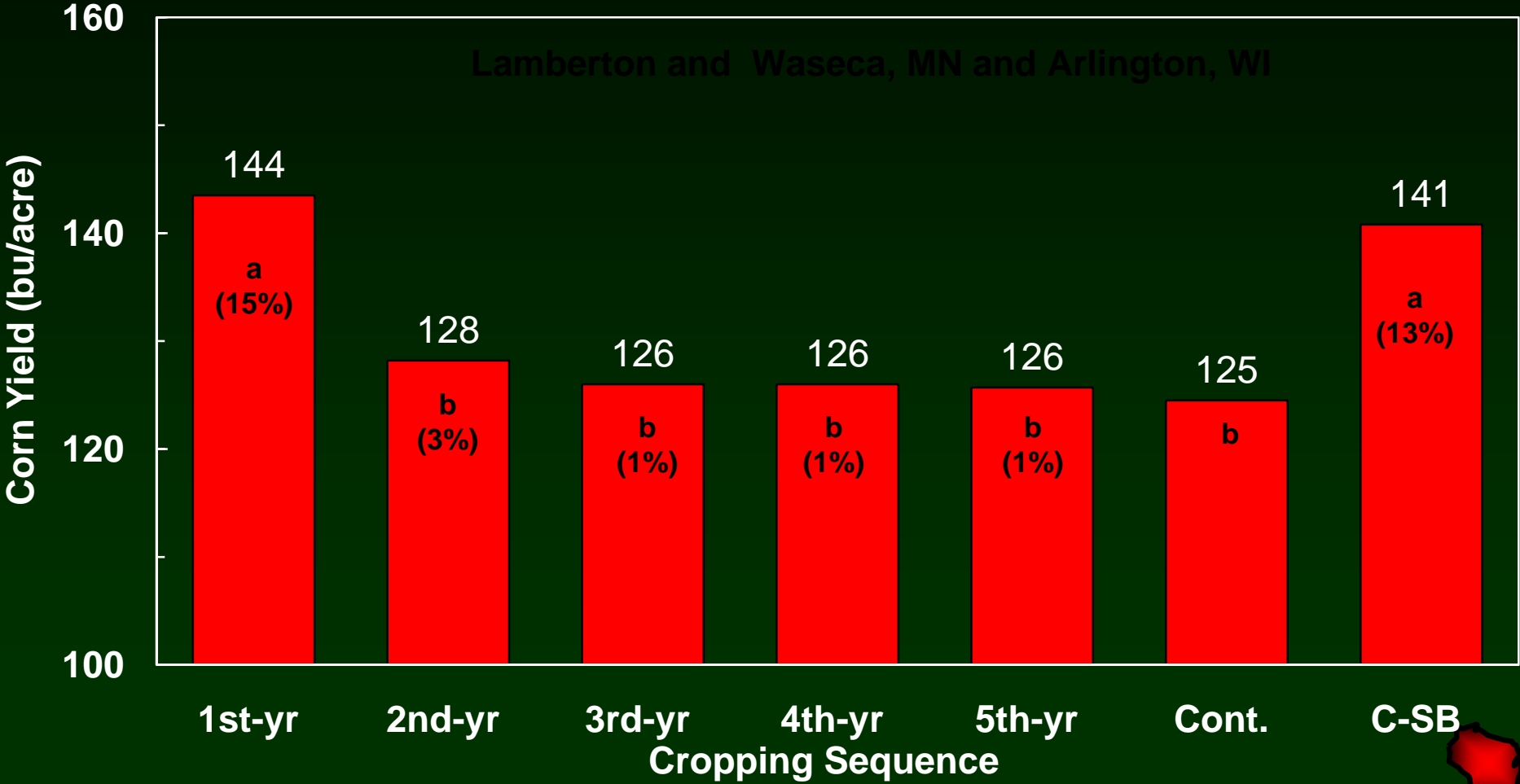
Year	Pioneer 3751	Nk Brand N4242	Jung 2496	Golden Harvest H2441	Dekalb DK493
1989	97		98		
1990	97		101		
1991	99	99	100		
1992	100	101	101	104	
1993	99	99	100	105	99
1994		99	99	105	99
1995		101	100	107	100
1996		99		105	101
1997		99		105	101
1998	97				98



# Management

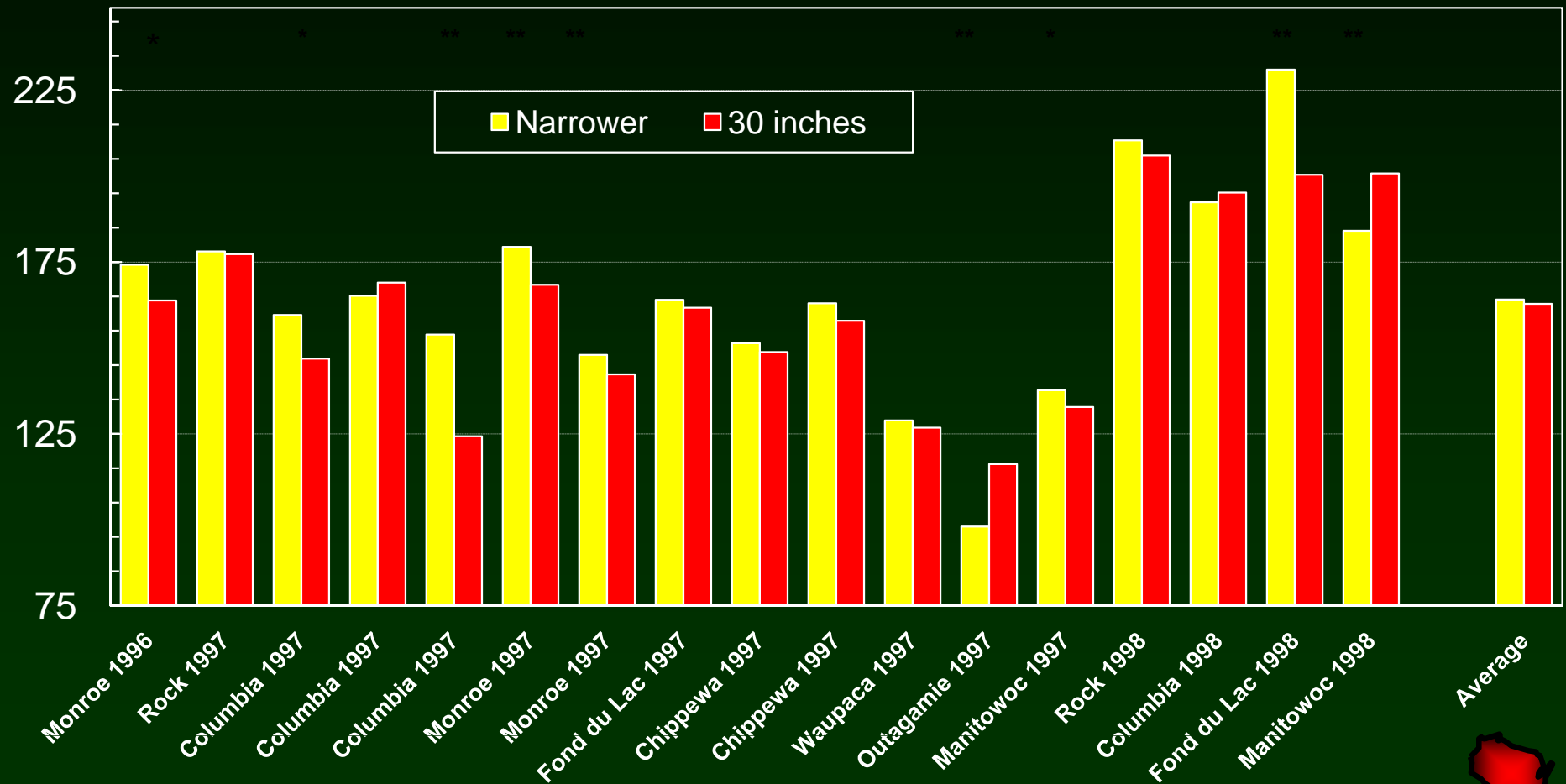


# Corn Yield Response Following Five Years of Soybean and in a Soybean Rotation

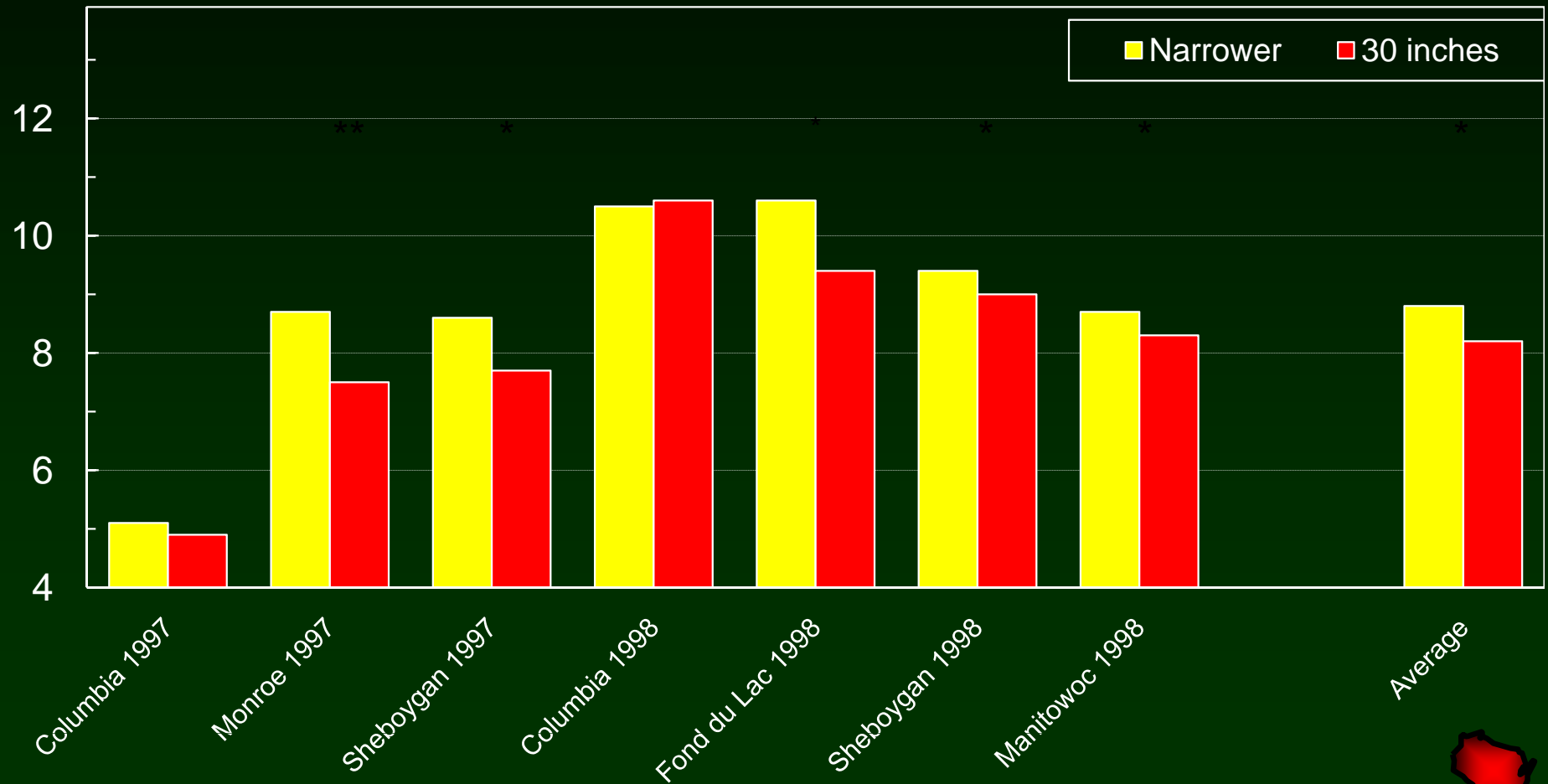




# Corn Grain Yield (bu/A) Response to Row Spacing in Wisconsin



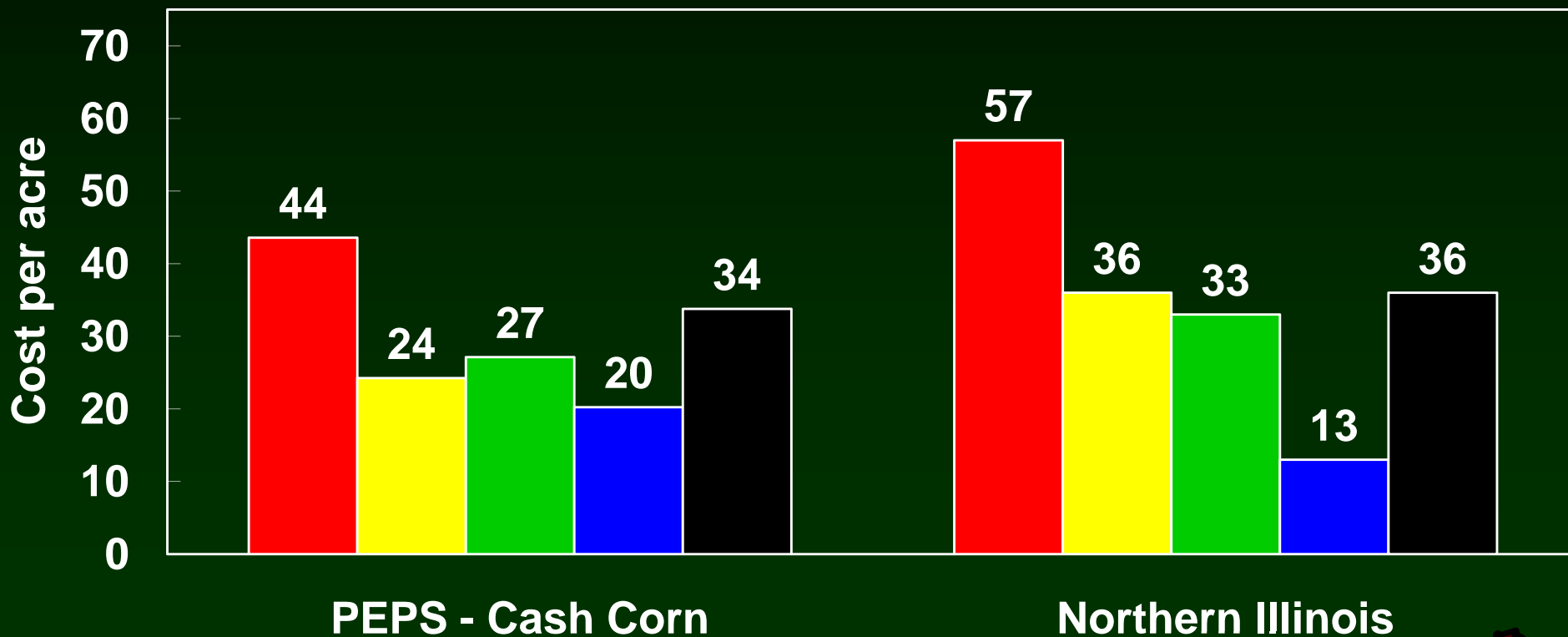
# Corn Silage Yield (T/A) Response to Row Spacing in Wisconsin





# Input costs for Wisconsin and Illinois farms ...

Fertility Pesticides Seed Drying Machinery



Source: AE-4566, Univ. of Illinois

