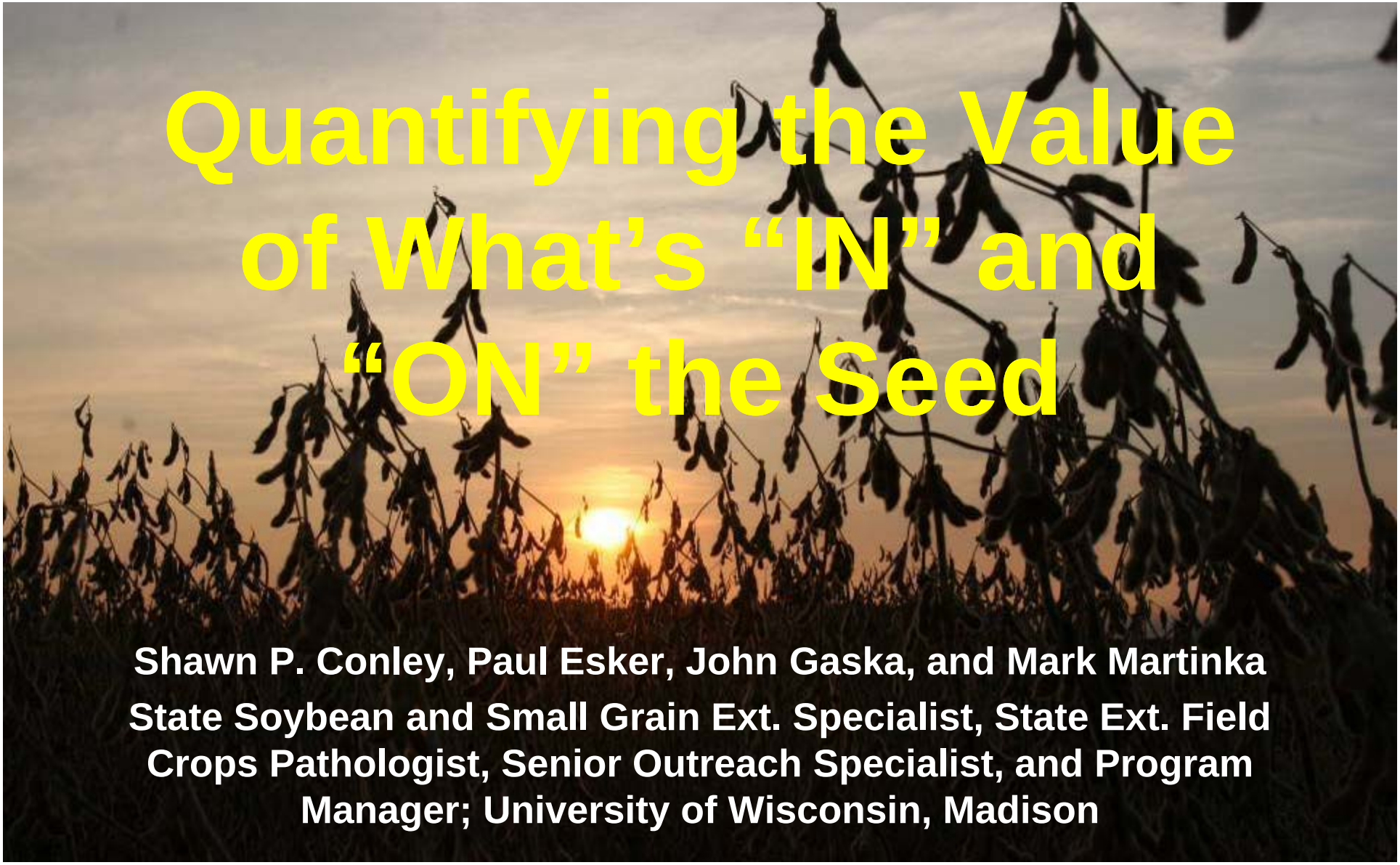


Quantifying the Value of What's "IN" and "ON" the Seed

Shawn P. Conley, Paul Esker, John Gaska, and Mark Martinka

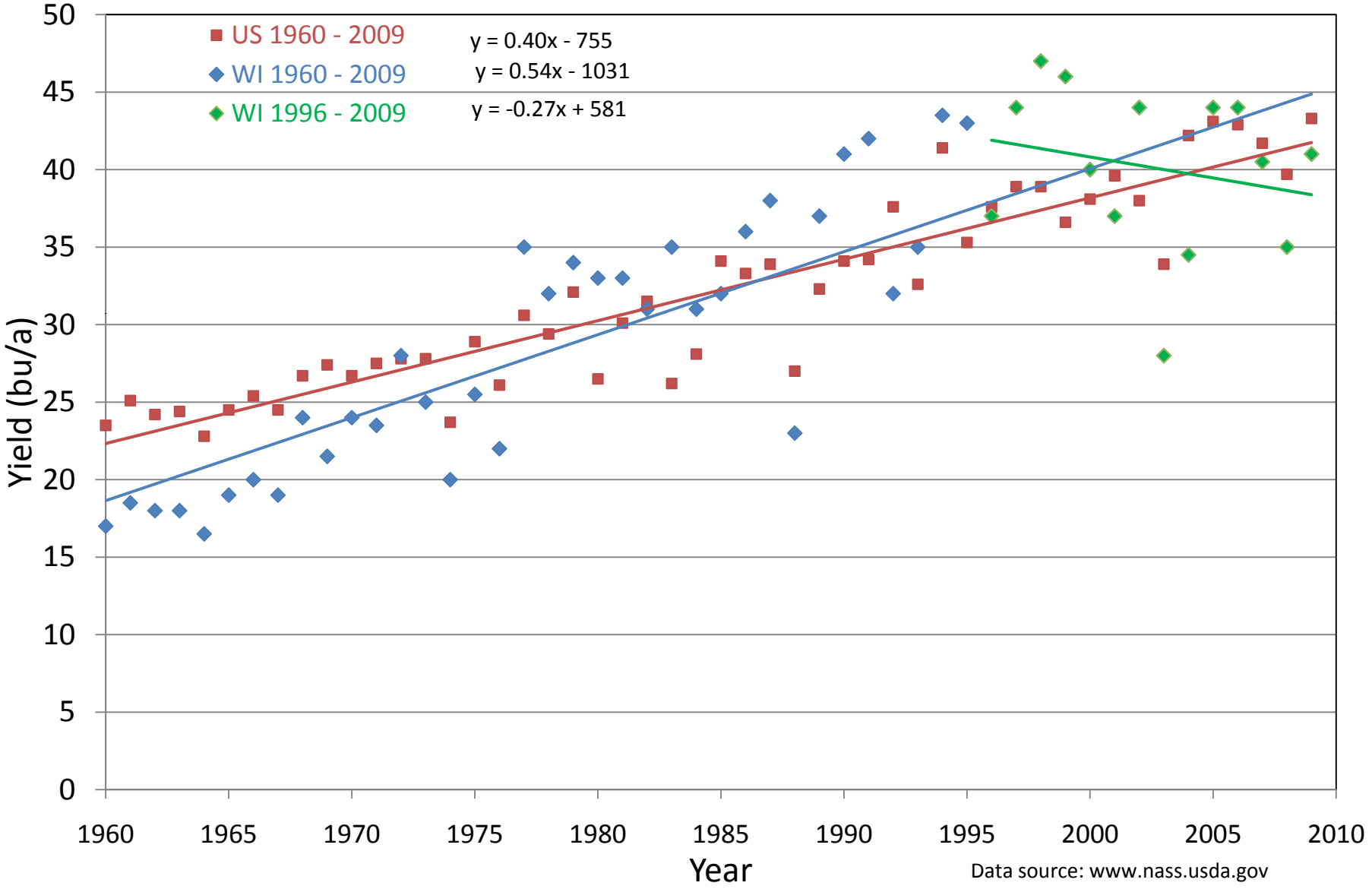
State Soybean and Small Grain Ext. Specialist, State Ext. Field Crops Pathologist, Senior Outreach Specialist, and Program Manager; University of Wisconsin, Madison

THE UNIVERSITY of WISCONSIN MADISON

UW Extension

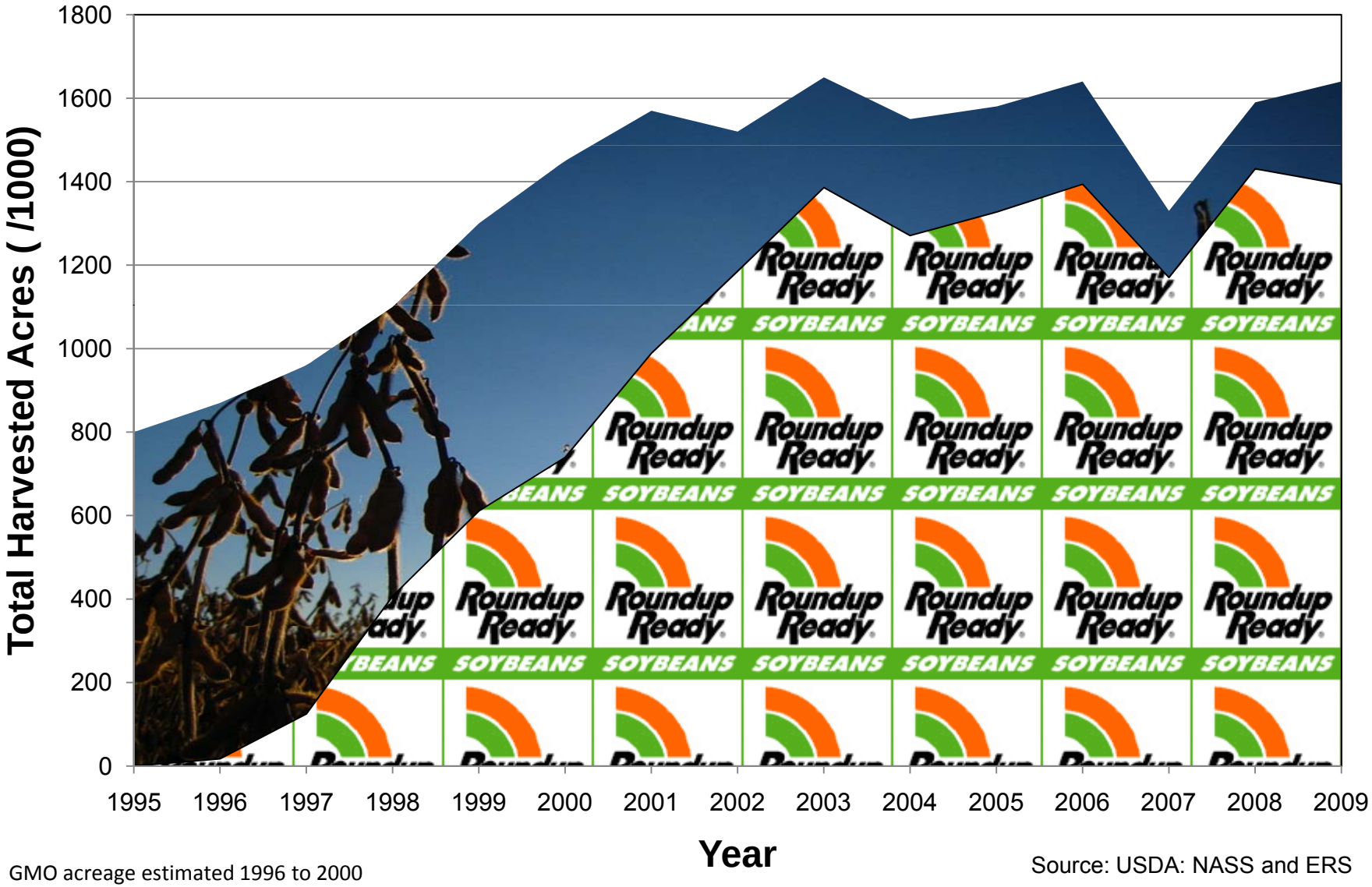
Soybean Yields

United States and Wisconsin, 1960 to 2010



Herbicide resistant soybean variety use- WI

1996 to 2009



GMO acreage estimated 1996 to 2000

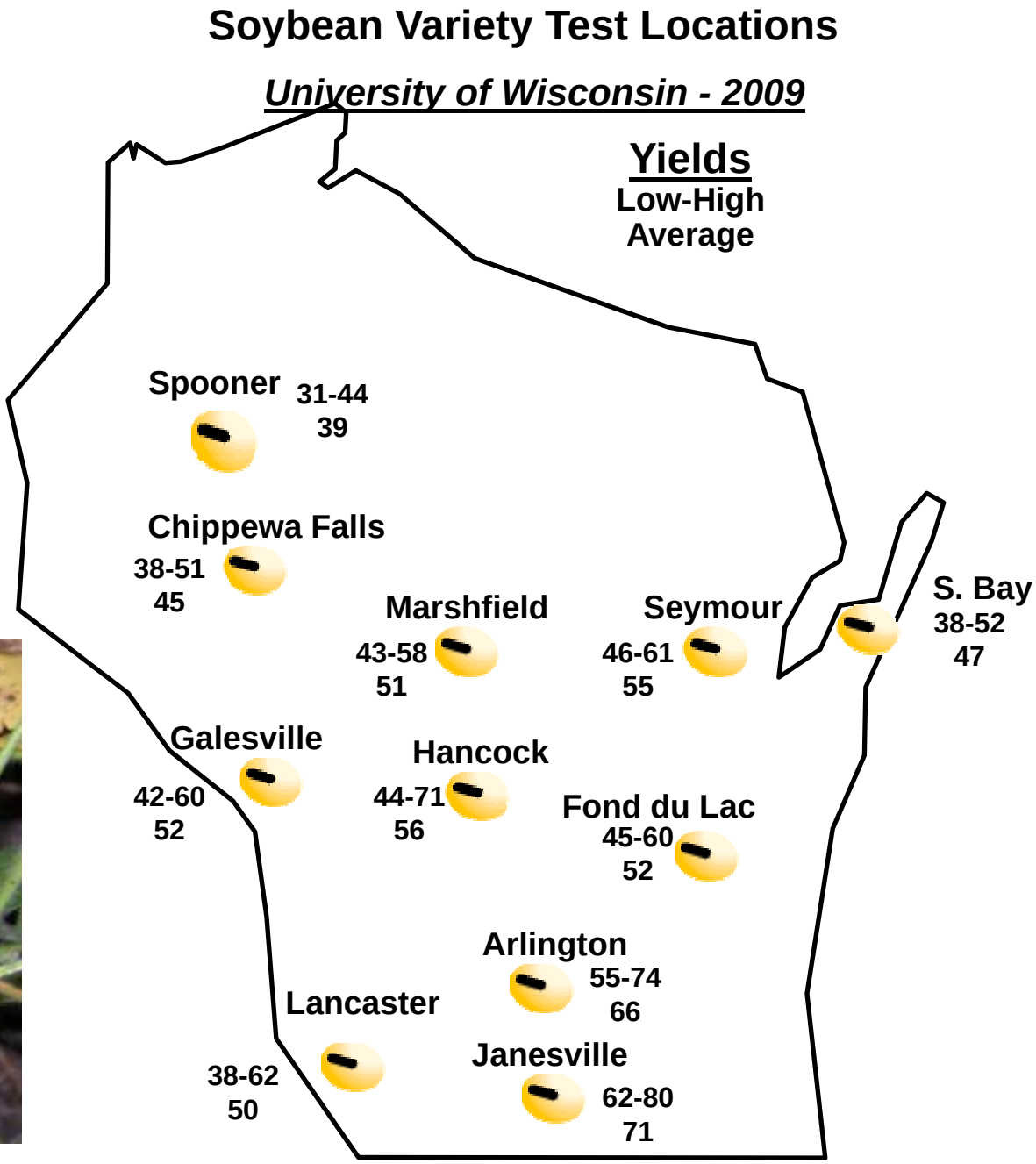
Source: USDA: NASS and ERS

Soybean Yield is a Function of:

- Genetic potential
  - Variety selection
  - Traits and yield drag/lag
- Agronomic management
  - Planting date, seed treatments, soil fertility, pest management, traits, etc.
- Environment
  - Water, temperature, climate change, etc.

2009 Issues

- Decreased GDU's
- Delayed harvest
- Mid-season drought
- Soybean aphid
- White mold



Data available in our tables

Companies sorted alphabetically Varieties sorted by RM

Company supplied RM

Single year multi-location yields

Maturity dates taken at R8

Protein and oil composition from NIRT

White mold disease incidence evaluated at R6

Previous years' results

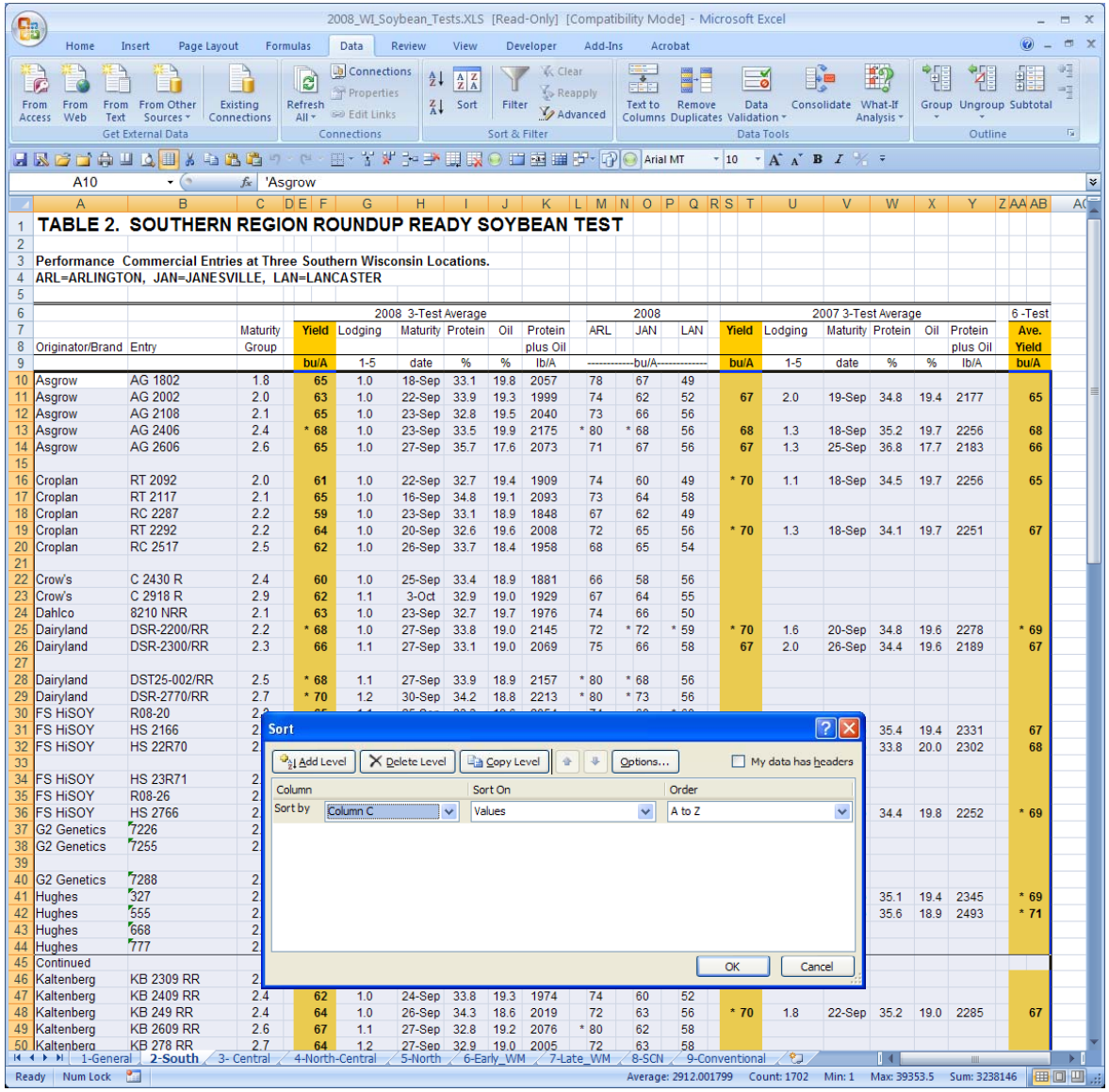
2 year, 3 location results, most reliable prediction of future yields

TABLE 2. SOUTHERN REGION ROUNDUP READY SOYBEAN TEST (Page 1 of 3)

Performance Commercial Entries at Three Southern Wisconsin Locations.
ARL=ARLINGTON, JAN=JANESVILLE, LAN=LANCASTER

			2009 3-Test Average						2009					2008 3-Test Average					6 -Test
									ARL		JAN								
Originator/Brand	Entry	Maturity Group	Yield	Lodging	Maturity	Protein	Oil	Protein plus Oil	Yield	WM[1]	Yield	WM[1]	LAN[2]	Yield	Maturity	Protein	Oil	Protein plus Oil	Ave. Yield
			bu/A	1-5	date	%	%	lb/A	bu/A	%	bu/A	%	bu/A	bu/A	date	%	%	lb/A	bu/A
Asgrow	AG 2002	2.0	* 63	1.2	25-Sep	34.7	18.8	2027	* 70	11	* 75	8	45	63	22-Sep	33.9	19.3	1999	63
Asgrow	AG 2108	2.1	* 64	1.0	23-Sep	34.9	18.8	2072	* 73	1	71	13	49	65	23-Sep	32.8	19.5	2040	65
Asgrow	RY 2409	2.4	* 64	1.1	25-Sep	34.2	18.8	2031	* 74	11	66	22	51						
Asgrow	AG 2521V	2.5	62	1.1	30-Sep	34.6	19.2	1997	66	1	71	4	49						
Asgrow	AG 2606	2.6	60	1.6	29-Sep	37.1	17.2	1946	57	23	73	8	49	65	27-Sep	35.7	17.6	2073	62
Asgrow	AG 2939	2.9	* 67	1.3	7-Oct	35.0	18.5	2158	* 68	16	70	23	* 62						
Channel	2351R Brand	2.3	61	1.3	5-Oct	35.3	18.4	1966	62	8	69	9	53						
Channel	2400R2 Brand	2.4	* 63	1.1	2-Oct	35.2	18.4	2032	67	13	72	10	51						
Channel	2551R Brand	2.5	60	1.0	1-Oct	34.0	18.7	1903	61	10	67	19	52						
Croplan	R2C 2139	2.1	61	1.1	24-Sep	34.1	19.2	1965	* 73	3	68	3	43						

Download Excel file to use Excel's functions to group, sort, print, etc.



Importance of Variety Selection

- Rank the importance of the following factors in selecting a soybean variety? (1 to 5)

Factor	Importance
Yield potential	1.4
Disease resistance	1.5
RR trait (+ or -)	1.7
Dealer recommendations	2.1
Personnel relationship w/company	2.7
Seed price	**2.7**
Grain quality trait	3.3
Specialty market	3.8

- Average number of soybean varieties planted: 2.3
- Average number of corn hybrids planted: 4.6

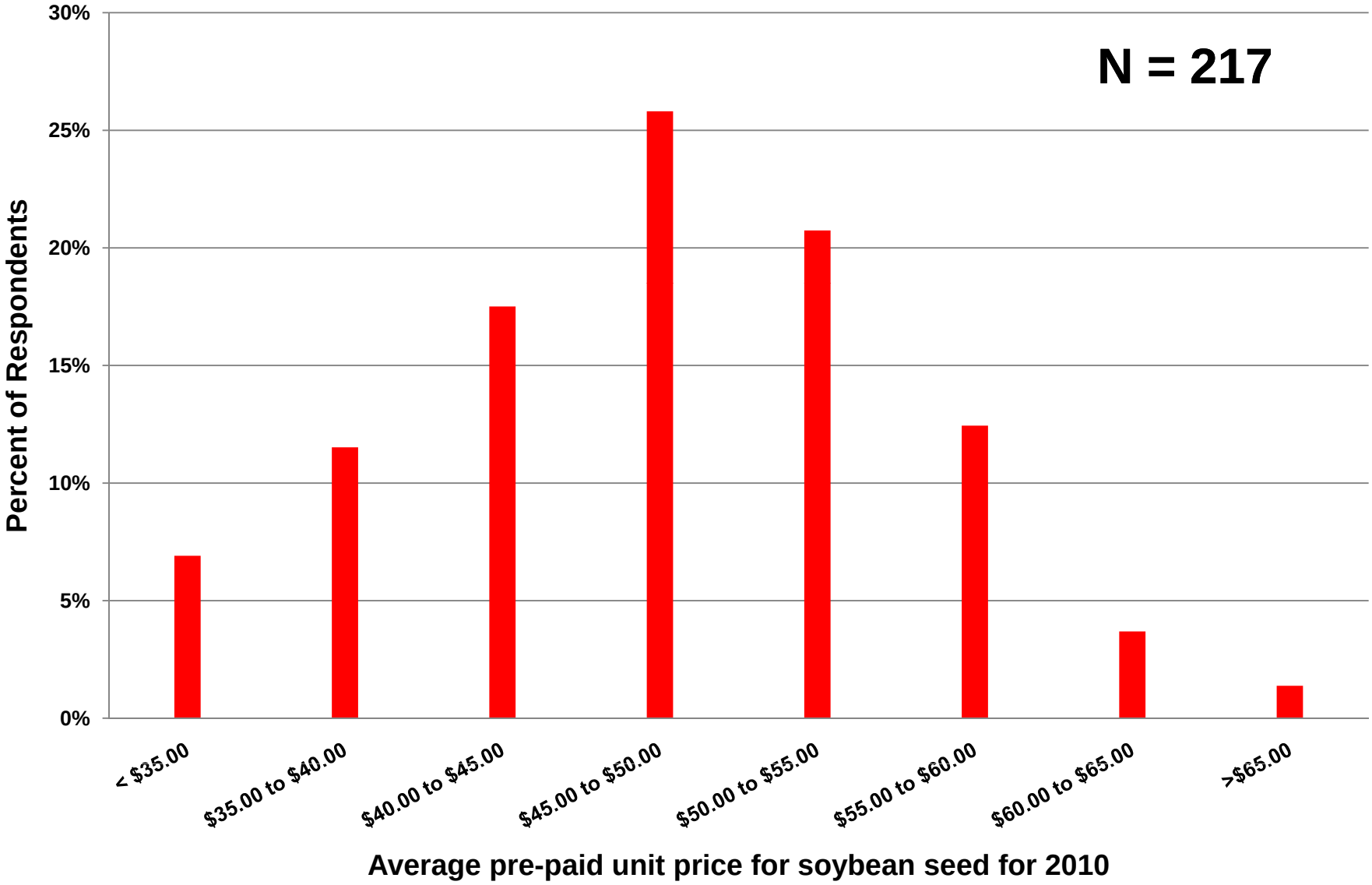
WISCONSIN SOYBEAN MARKETING BOARD

Comparison of Conventional vs. Traited Soybeans

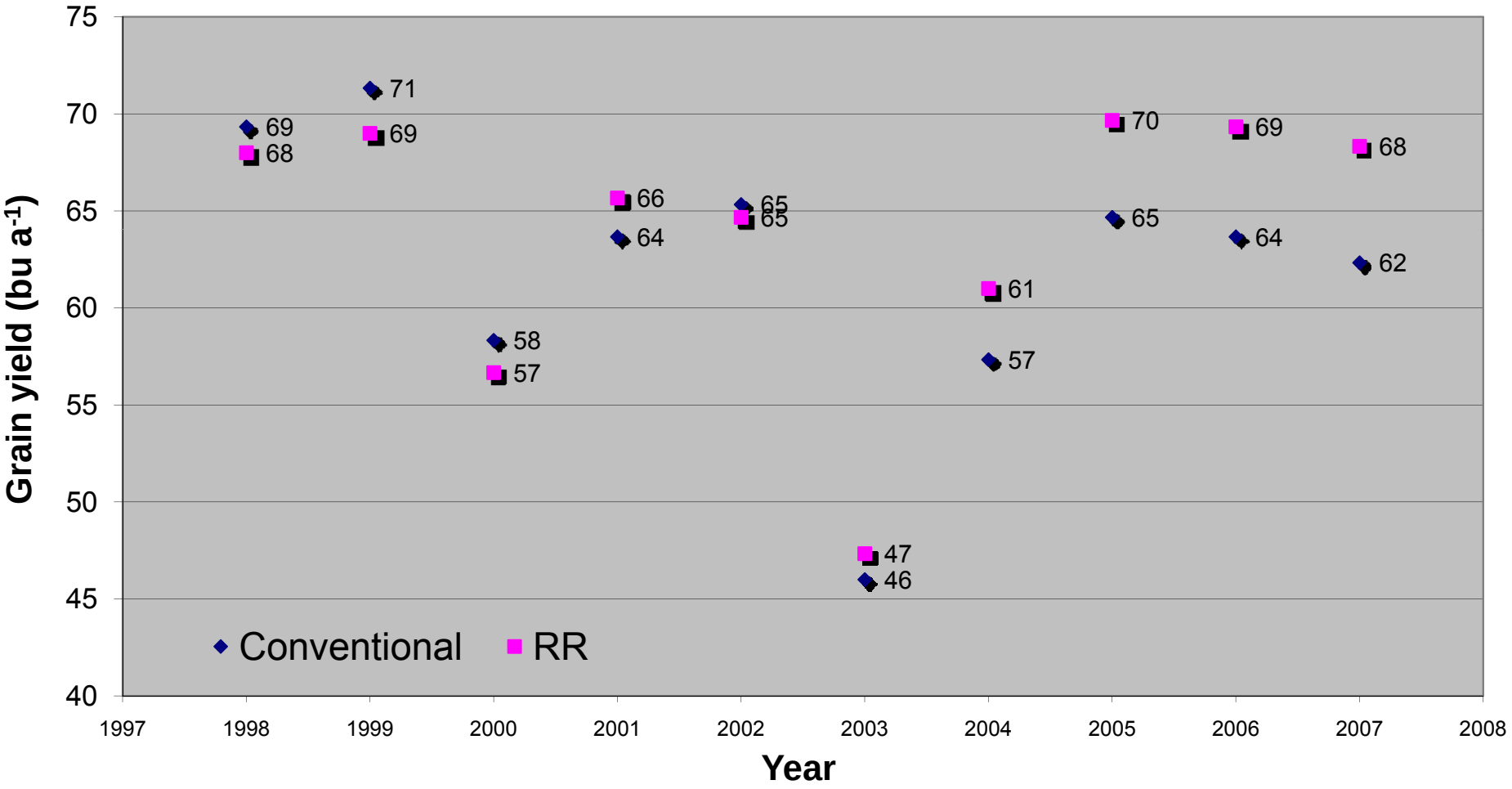
Comparison of Conventional vs. Traited Soybeans

- Seed price will be a large driver of seed sales in 2010.
  - Preliminary quotes on base seed price (quoted prices before discounts and programs) have ranged from the high $30's (conventional) to the mid-$70's (RR2Y®) on a per bag basis.
- Since 2003, we have seen a divergence in yield potential between conventional and Roundup Ready (RR®).
- To further characterize these yield differences and test the yield potential of LL® soybean, we added several high yielding RR® and LL® soybean varieties as checks into our conventional trials in 2009
- Our RR® trials also had several RR2Y® varieties entered in 2009 to allow for this new trait comparison.

2010 Soybean Seed Price Distribution

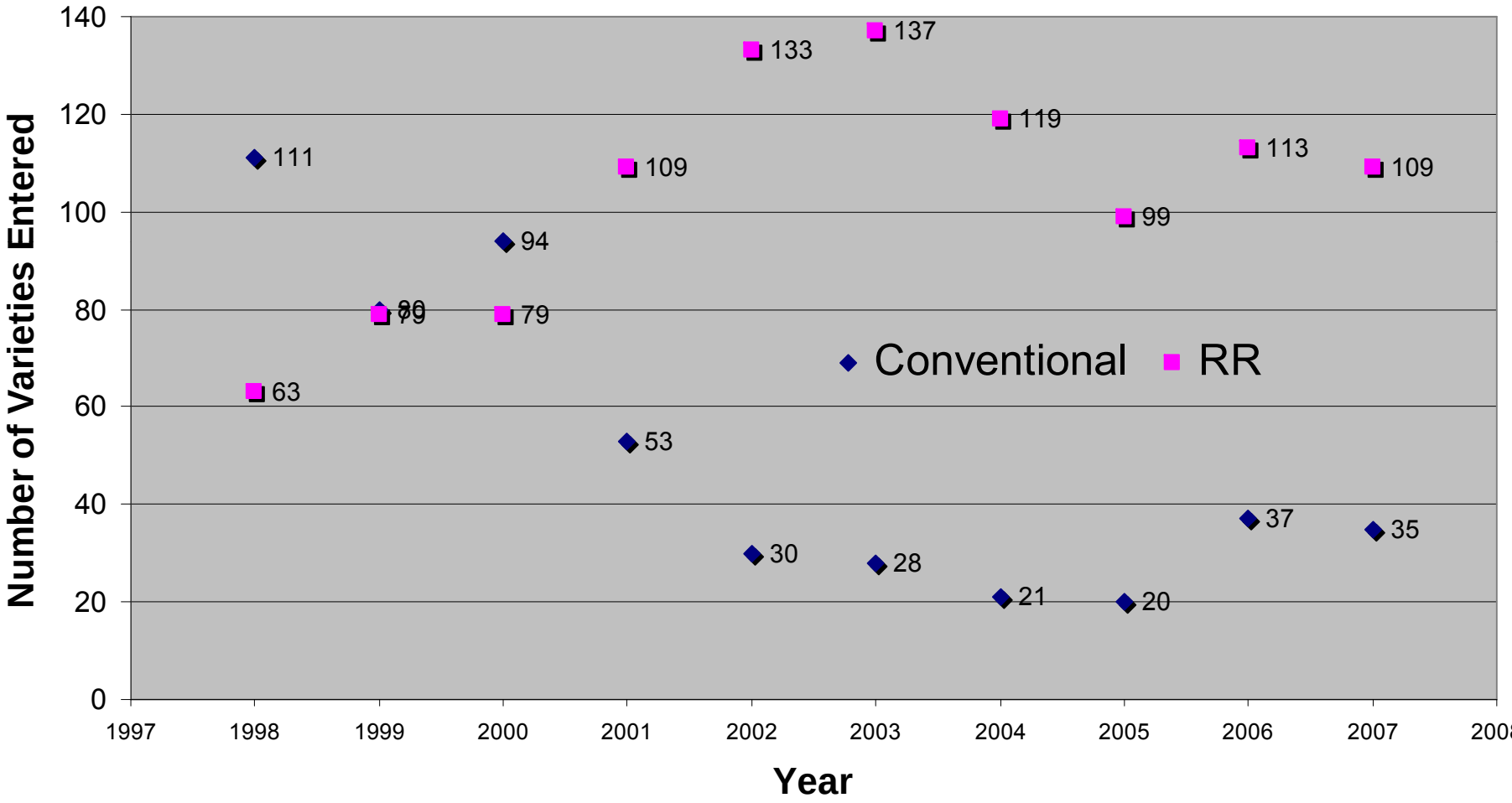


Conventional vs. RR Yields 1998 - 2007



UW S. Variety Test

Conventional vs. RR Varieties 1998 - 2007



UW S. Variety Test

SOUTHERN CONVENTIONAL AND TRAITED HERBICIDE SOYBEAN TEST (TABLE 9. page 19.)

				2009 2-Test Average						2009		
		Maturity	Herb.[1]	Yield	Lodging	Maturity	Protein	Oil	Protein	ARL		LAN[3]
Originator/Brand	Entry	Group	Toler.						plus Oil	Yield	WM[2]	
				bu/A	1-5	date	%	%	lb/A	bu/A	%	bu/A
Public	MN 0302	0.3	CN	38	1.5	9-Sep	36.4	18.4	1234	60	0	16
Public	Hamlin	0.9	CN	46	1.8	19-Sep	38.0	17.4	1528	63	4	29
Public	Surge	0.9	CN	46	2.3	15-Sep	37.9	17.7	1509	62	13	29
Public	MN 1005	1.0	CN	43	3.0	19-Sep	35.1	18.6	1354	54	6	31
Public	SD 02-833	1.1	CN	46	3.0	19-Sep	35.7	18.3	1474	56	9	35
Public	MN 1410	1.4	CN	* 50	2.3	23-Sep	36.1	18.4	1633	* 66	9	34
Public	IA 1006	1.6	CN	45	2.6	26-Sep	35.0	18.1	1444	58	15	32
Public	MN 1701 CN	1.7	CN	* 48	2.5	28-Sep	35.7	18.2	1562	58	14	38
Public	IA 1008 BC	1.9	CN	45	1.4	25-Sep	36.0	18.0	1457	61	6	28
Public	IA 1022	1.9	CN	47	2.0	24-Sep	33.8	19.5	1513	59	8	35
Public	IA 2076	2.0	CN	* 54	2.4	30-Sep	35.5	18.0	1712	65	14	42
Public	SD 02-22	2.2	CN	* 51	2.1	27-Sep	35.1	17.5	1616	60	25	42
Asgrow	AG 2108	2.1	RR	* 58	2.0	1-Oct	34.4	18.4	1815	65	15	50
Blue River	2A12	2.1	CN	* 53	2.3	24-Sep	36.1	17.8	1708	64	5	41
Blue River	2A71	2.7	CN	* 55	2.9	9-Oct	35.6	17.7	1748	52	5	* 57
Dairyland	DSR-2118	2.1	CN	* 50	1.4	1-Oct	35.1	19.1	1603	58	4	41
Dairyland	DSR-2200/RR	2.2	RR	* 56	2.0	6-Oct	35.0	18.1	1754	58	5	* 53
Dairyland	DSR-2215	2.2	CN	* 50	1.8	4-Oct	34.9	18.2	1591	60	14	39
FS HiSOY	L 09-23	2.3	LL	* 58	1.6	7-Oct	36.2	17.7	1887	* 66	14	50
FS HiSOY	HS 25L80	2.6	LL	* 59	2.3	7-Oct	33.6	18.7	1837	62	5	* 56
NK Brand	S21-N6 Brand	2.1	RR	* 56	1.6	28-Sep	34.1	19.1	1764	* 72	4	39
O'Brien	O'Soy 108C	1.8	CN	46	2.3	24-Sep	34.2	19.3	1477	59	10	33
O'Brien	O'Soy 183LL	1.8	LL	46	1.8	25-Sep	35.3	18.4	1475	61	10	30
Renk	RS 230NLL	2.3	LL	* 60	1.8	7-Oct	36.1	17.7	1936	* 69	9	51
Viking	O.1692	1.6	CN	* 51	1.9	22-Sep	34.6	18.1	1608	* 68	10	34
Viking	O.1706N	1.7	CN	* 55	1.5	19-Sep	35.0	18.3	1743	* 66	19	43
Viking	2020N	2.0	CN	46	2.4	22-Sep	35.2	18.2	1454	59	18	32
Viking	O.2078N	2.0	CN	* 51	1.4	25-Sep	35.8	17.8	1624	57	16	44
Viking	O.2265	2.2	CN	* 54	2.0	29-Sep	35.0	18.2	1707	* 67	11	40
Mean				50	2.1	26-Sep	35.4	18.2	1613	62	10	39
LSD(0.10)				12	1.1	7	1.1	0.9	390	6	ns	5

NORTH-CENTRAL CONVENTIONAL AND TRAITED HERBICIDE SOYBEAN TEST (TABLE 10. page 20.)

Originator/Brand	Entry	Maturity Group	Herb.[1] Toler.	2009 Yield	Lodging	Maturity	Protein	Oil	Protein plus Oil
				bu/A	1-5	date	%	%	lb/A
Public	MN 0302	0.3	CN	34	1.0	17-Sep	34.6	18.5	1086
Public	MN 1005	1.0	CN	47	1.0	27-Sep	34.0	18.6	1496
Public	Surge	0.9	CN	49	1.0	24-Sep	36.2	17.9	1571
Public	Hamlin	0.9	CN	45	1.0	24-Sep	37.2	17.3	1469
Public	MN 1410	1.4	CN	* 57	1.0	29-Sep	35.2	18.5	1848
Public	MN 1701 CN	1.7	CN	* 54	1.0	6-Oct	35.5	17.5	1721
Public	SD 02-833	1.1	CN	53	1.0	30-Sep	35.2	17.5	1668
Public	IA 1006	1.6	CN	* 58	1.0	3-Oct	34.2	17.9	1818
Public	IA 1022	1.9	CN	50	1.0	4-Oct	32.5	18.9	1544
Asgrow	AG 1506	1.5	RR	50	1.0	3-Oct	33.3	18.5	1543
Blue River	10F8	1.0	CN	42	1.0	27-Sep	34.5	18.6	1337
Blue River	1A24	1.2	CN	46	1.0	13-Oct	35.4	16.7	1433
Blue River	15K9	1.5	CN	44	1.0	6-Oct	36.4	17.6	1433
Blue River	16A7	1.6	CN	45	1.0	27-Sep	34.1	17.5	1400
Dairyland	DSR-1302/RRSTS	1.3	RR/STS	50	1.0	4-Oct	34.6	17.2	1559
NK Brand	S12-P4 Brand	1.2	RR	51	1.0	3-Oct	34.8	17.4	1597
O'Brien	O'Soy 183LL	1.8	LL	47	1.0	18-Oct	34.2	17.7	1464
O'Brien	O'Soy 108C	1.8	CN	51	1.0	5-Oct	32.8	19.0	1591
Renk	RS 170LL	1.7	LL	52	1.0	17-Oct	35.7	16.8	1638
Mean				49	1.0	2-Oct	34.7	17.9	1538
LSD(0.10)				4	ns		0.4	0.3	136

Economics: LL® soybean vs. RR®

Hybrid / Variety	LL	RR1	difference
Seed Price ($/bag)	$48.00	$62.00	-$14.00
Kernels/Seeds per bag (no./bag)	140,000	140,000	0
Seed Population (number/acre)	165,000	165,000	0
Potential plant death (%)	10	10	0
Acres per bag (acres/bag)	0.77	0.77	0.00
Seed Cost ($/acre)	$62.23	$80.38	-$18.15
Herbicide Cost ($/acre)	$25.00	$10.20	$14.80
Insecticide Cost ($/acre)	$0.00	$0.00	$0.00
Fungicide Cost ($/acre)	$0.00	$0.00	$0.00
Insurance Cost ($/acre)	$0.00	$0.00	$0.00
Harvest Moisture (%)	20.0	20.0	0.0
Drying ($/point*bushel)	$0.06	$0.06	$0.00
Drying Cost ($/bushel)	$0.27	$0.27	$0.00
Handling Cost ($/bushel)	$0.02	$0.02	$0.00
Hauling Cost ($/bushel)	$0.04	$0.04	$0.00
Trucking Cost ($/bushel)	$0.11	$0.11	$0.00
Storage Cost ($/bushel)	$0.12	$0.12	$0.00
Yield adjustment ($/bushel)	$0.56	$0.56	$0.00
Yield adjustment ($/acre)	$33.60	$33.60	$0.00
Total Input Cost ($/acre)	$120.83	$124.18	$3.35

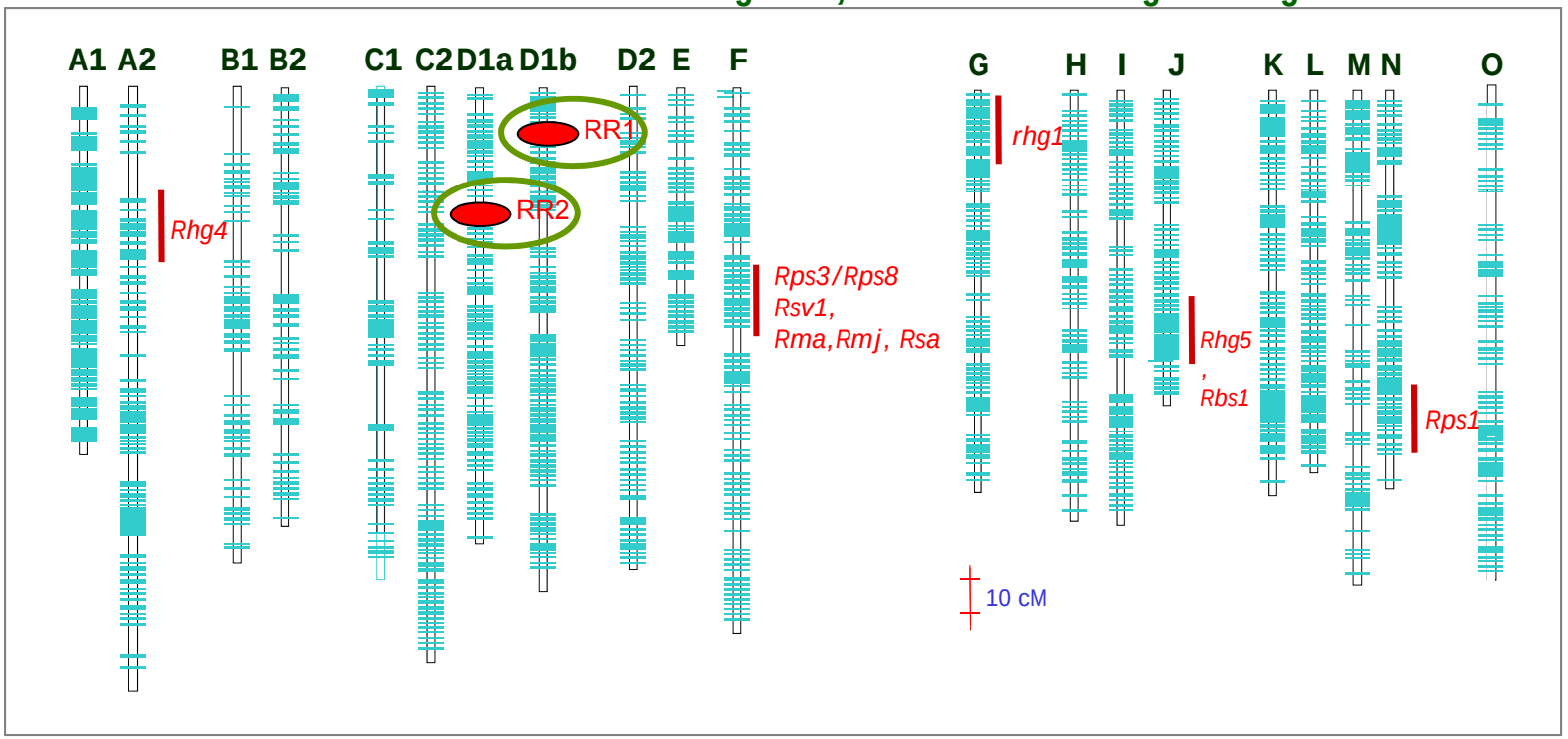
Economic advantage ($/acre) of LL or RR1. Seed price difference = $14 per bag: A = $48, RR1 = $62.

Yield advantage bushel/acre		Crop Price ($/bushel) $5.00	$6.00	$7.00	$8.00	$9.00	$10.00	$11.00
	7	$32	$39	$46	$53	$60	$67	$74
	6	$27	$33	$39	$45	$51	$57	$63
LL	5	$22	$27	$32	$37	$42	$47	$52
yields less than	4	$17	$21	$25	$29	$33	$37	$41
RR1	3	$12	$15	$18	$21	$24	$27	$30
	2	$7	$9	$11	$13	$15	$17	$19
	1	$2	$3	$4	$5	$6	$7	$8
LL = RR1	0	$3	$3	$3	$3	$3	$3	$3
	1	$8	$9	$10	$11	$12	$13	$14
	2	$13	$15	$17	$19	$21	$23	$25
LL	3	$18	$21	$24	$27	$30	$33	$36
yields more than	4	$23	$27	$31	$35	$39	$43	$47
RR1	5	$28	$33	$38	$43	$48	$53	$58
	6	$33	$39	$45	$51	$57	$63	$69
	7	$38	$45	$52	$59	$66	$73	$80

Glyphosate @ $12 per gal, 32 oz. + Payoff Plus @ 2lbs; x 2
Boundary 6.5 @ $75.04 per gal 1.5 pts fb Ignite @ $ 64.26 per gal, 22 oz.

Roundup Ready 2 Yield® Soybeans

STRATEGY: Use of extensive gene mapping to identify genes that control key agronomic traits; use new breeding procedures and advanced insertion and selection technologies were used to select for these genes; increase rate of genetic gain.

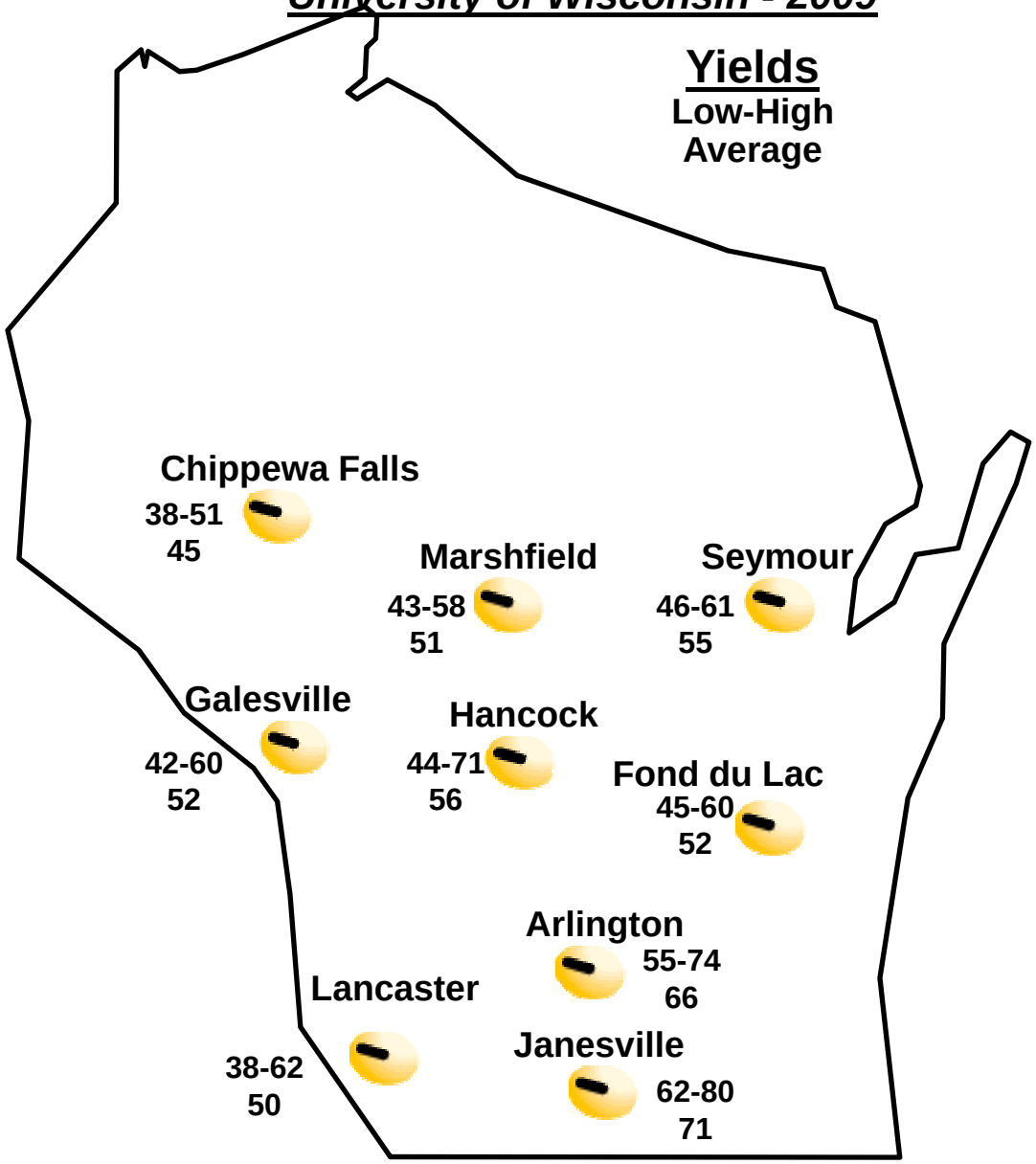


Rhg-**SCN resistance;** *Rps*-**Phytophthora resistance;** *Rsv*-**Soybean virus resistance;** *Rma, Rmj*-**Southern root knot nematode resistance;** *Rsa*-**soybean aphid resistance**

- Regions
  - Southern (81)
    - M.G: 1.7 - 2.9
  - Central (82)
    - M.G: 1.1 - 2.4
  - N. Central (75)
    - M.G: 0.8 - 2.3

RR® vs. RR2Y ® Soybean Variety Test Locations

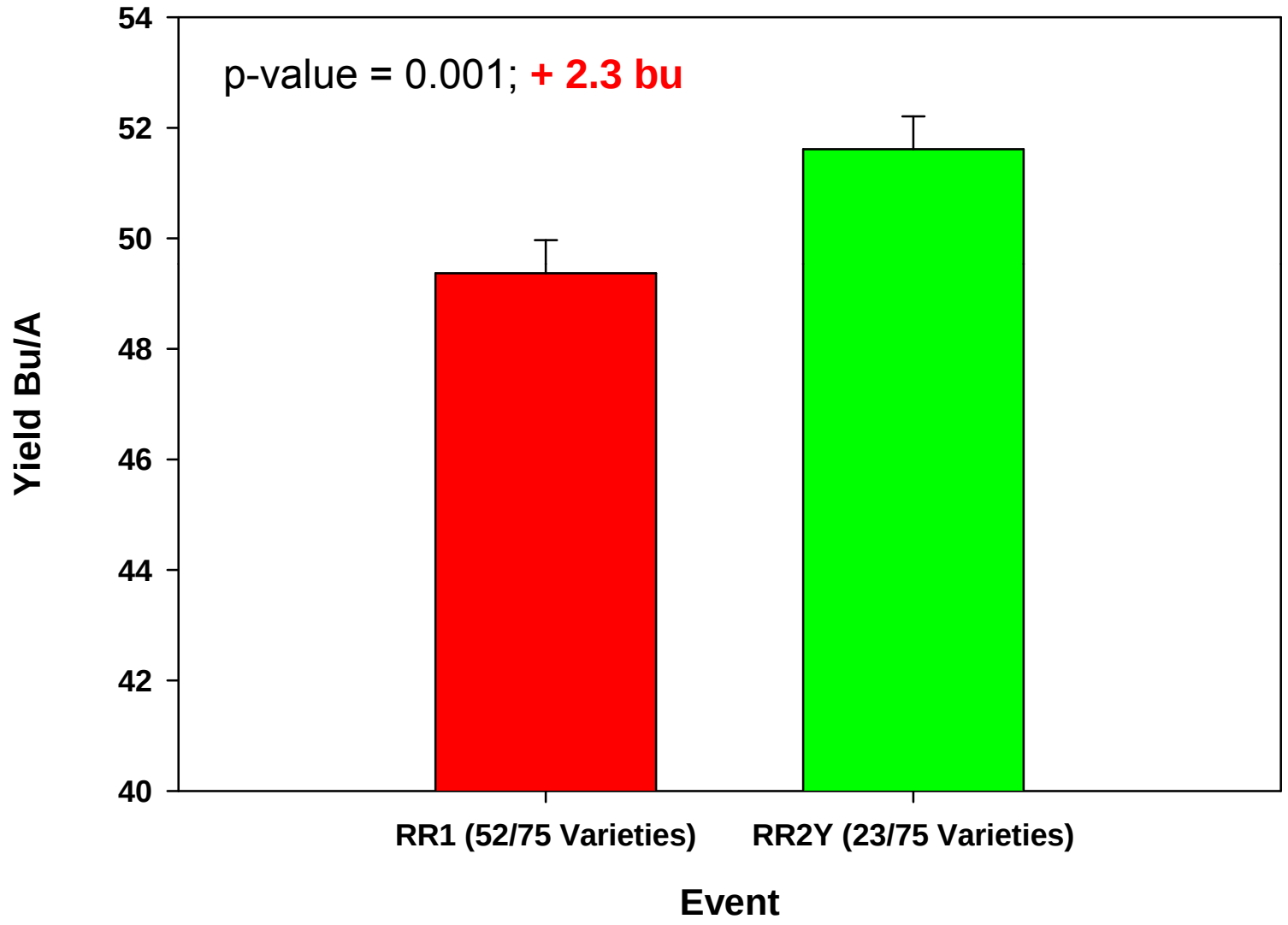
University of Wisconsin - 2009



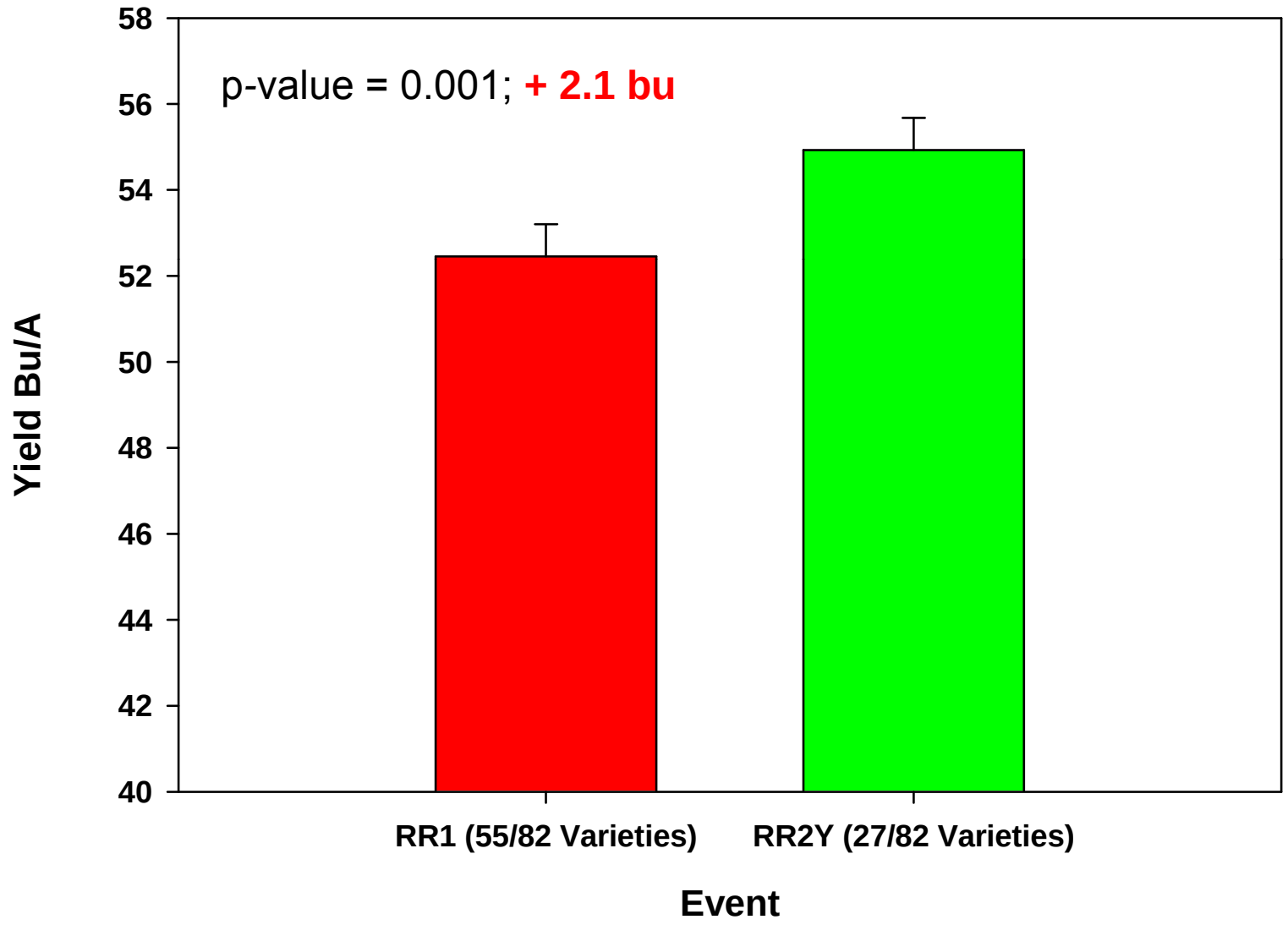
Comparison of RR® vs. RR2Y ® Traits

- Comparing apples to applesauce
  - No access to iso-lines
    - Told they are not being developed
  - Acceleron™ vs. CruiserMaxx in 09 and beyond
    - CruiserMaxx (Thiamethoxam, mefenoxam, fludioxonil)
    - Acceleron 09 (pyraclostrobin and metalaxyl)
    - Acceleron 10 (pyraclostrobin and metalaxyl, harpin alpha beta protein, imidacloprid)
  - UW and F.I.R.S.T. data
- Mixed model analysis with locations random
  - ddfm- Kenward – Rogers (unbalanced data)
  - Multiple varieties over multiple locations

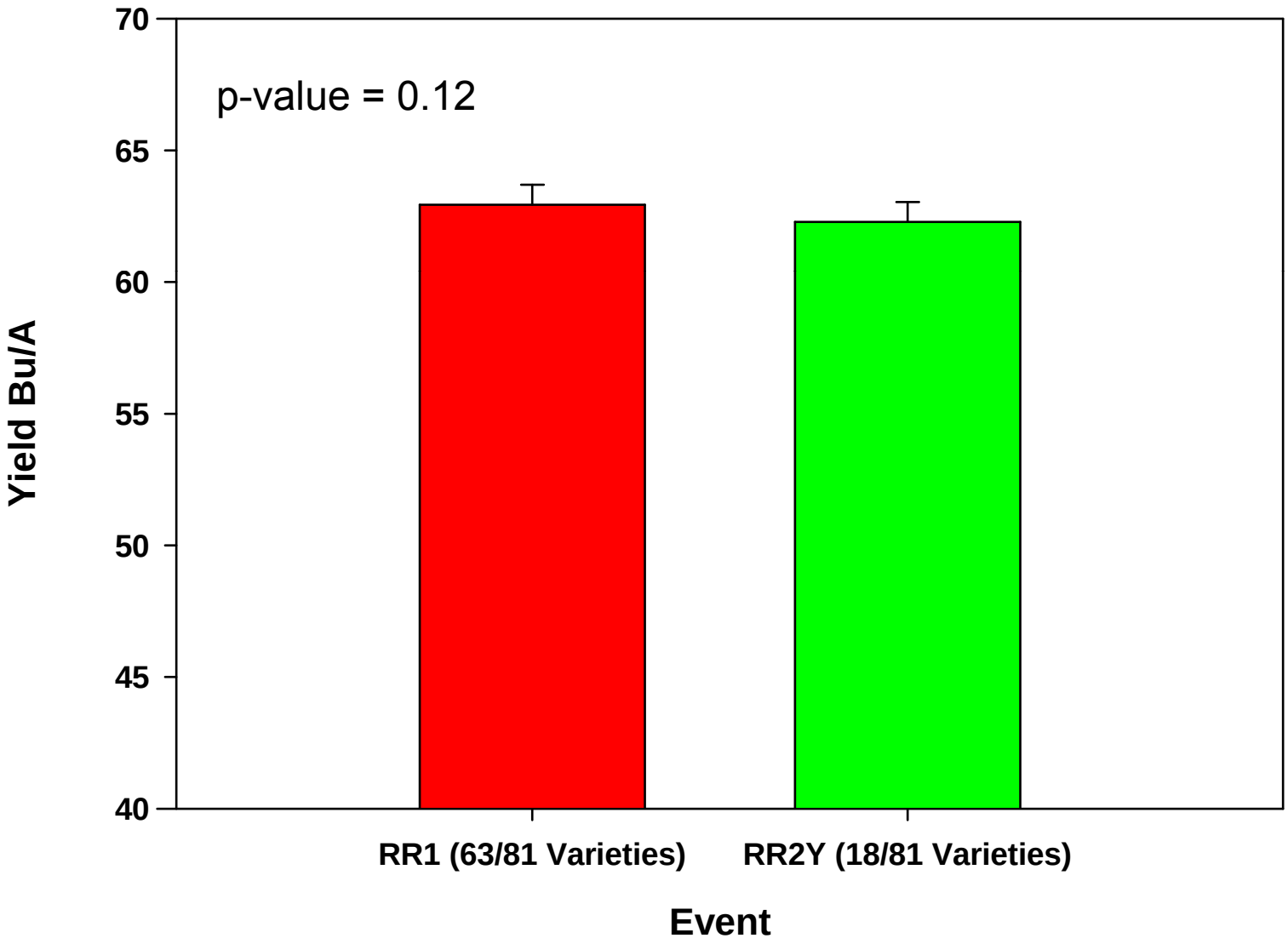
2009 North-Central Region Average Yields



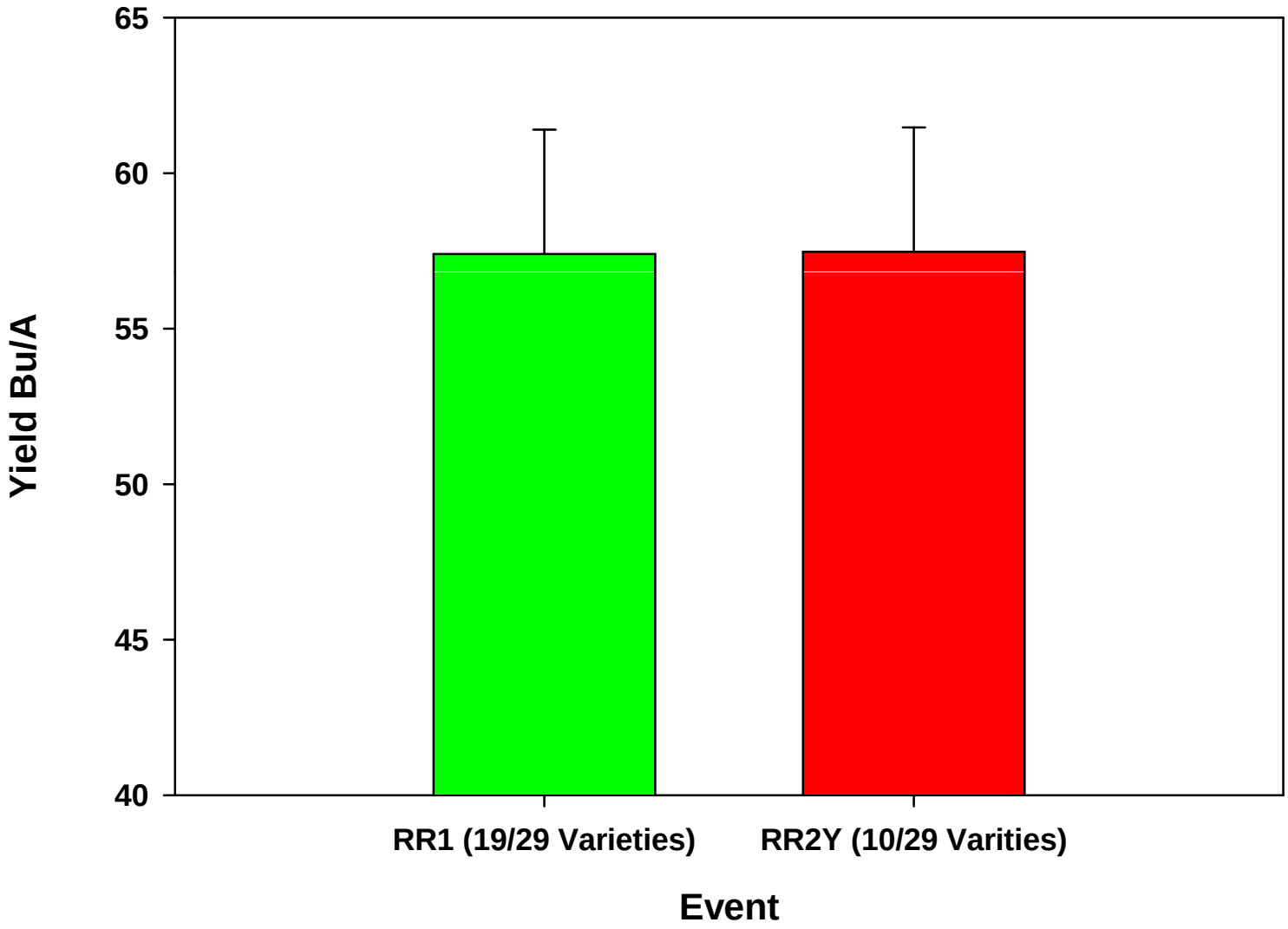
2009 Central Region Average Yields



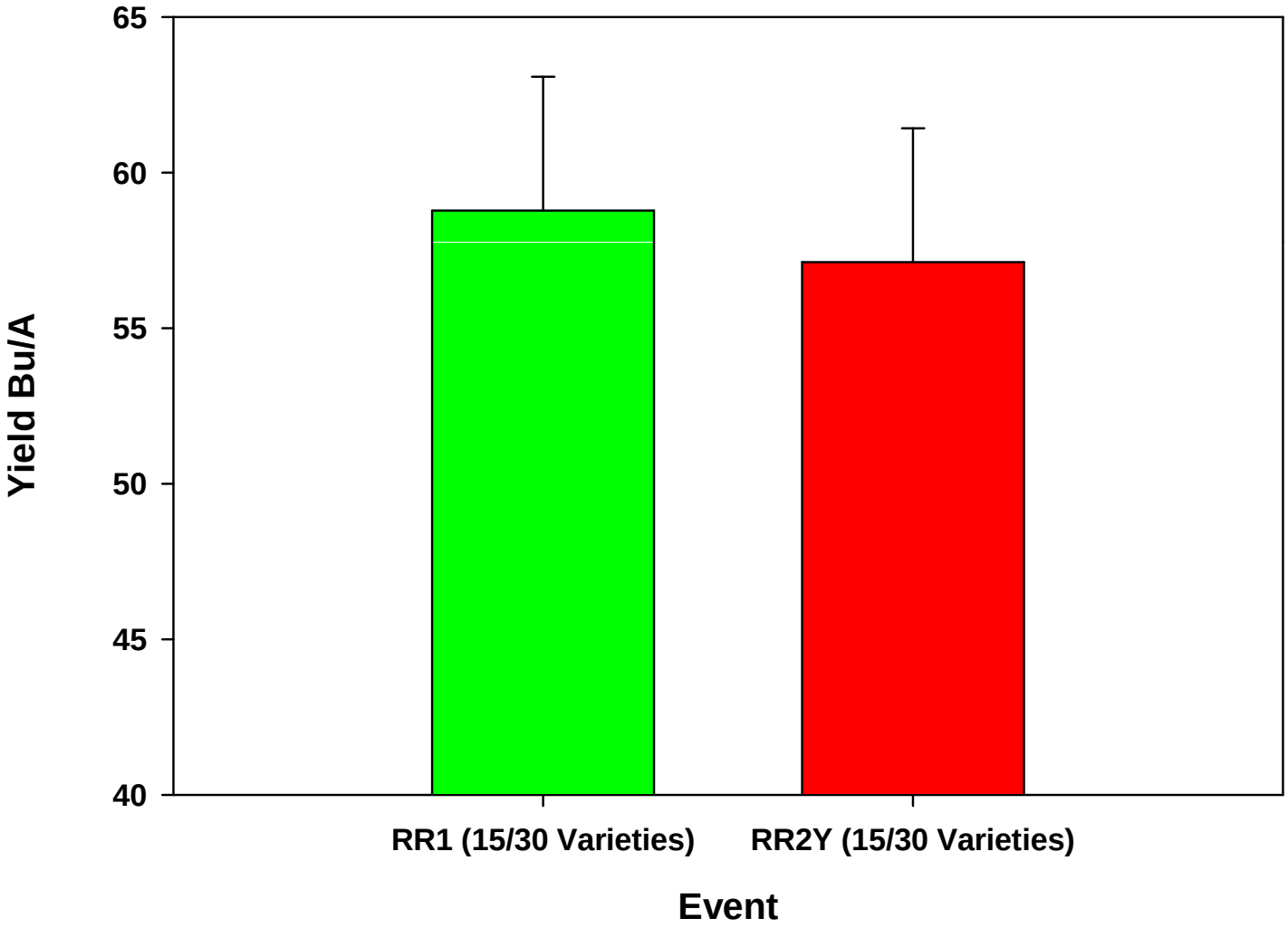
2009 Southern Region Average Yields



2009 F.I.R.S.T. WI South Average Yields



2009 F.I.R.S.T. North Central State Line



Comparison of RR® vs. RR2Y ® Traits

Hybrid / Variety	Variety A	Variety B	Difference
Seed Price ($/bag)	$62.00	$75.00	-$13.00
Kernels/Seeds per bag (no./bag)	140,000	140,000	0
Seed Population (number/acre)	165,000	165,000	0
Potential plant death (%)	10	10	0
Acres per bag (acres/bag)	0.77	0.77	0.00
Seed Cost ($/acre)	$80.38	$97.23	-$16.85
Herbicide Cost ($/acre)	$0.00	$0.00	$0.00
Insecticide Cost ($/acre)	$0.00	$0.00	$0.00
Fungicide Cost ($/acre)	$0.00	$0.00	$0.00
Insurance Cost ($/acre)	$0.00	$0.00	$0.00
Harvest Moisture (%)	20.0	20.0	0.0
Drying ($/point*bushel)	$0.06	$0.06	$0.00
Drying Cost ($/bushel)	$0.27	$0.27	$0.00
Handling Cost ($/bushel)	$0.02	$0.02	$0.00
Hauling Cost ($/bushel)	$0.04	$0.04	$0.00
Trucking Cost ($/bushel)	$0.11	$0.11	$0.00
Storage Cost ($/bushel)	$0.12	$0.12	$0.00
Yield adjustment ($/bushel)	$0.56	$0.56	$0.00
Yield adjustment ($/acre)	$33.60	$33.60	$0.00
Total Input Cost ($/acre)	$113.98	$130.83	$16.85

Economic advantage ($/acre) of Variety A or Variety B. Seed price difference = $13 per bag: A = $62, Variety B = $75.

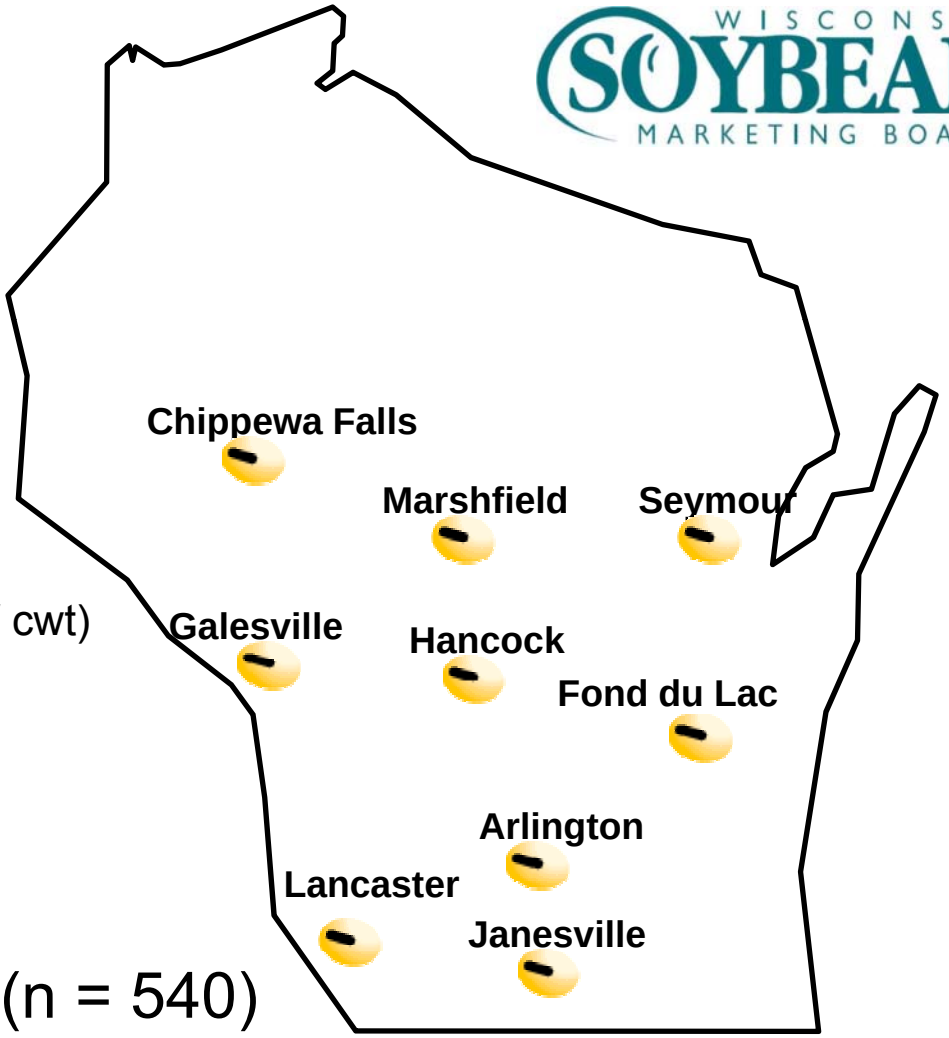
Yield advantage bushel/acre		Crop Price ($/bushel) $5.00	$6.00	$7.00	$8.00	$9.00	$10.00	$11.00
	7	$18	$25	$32	$39	$46	$53	$60
	6	$13	$19	$25	$31	$37	$43	$49
Variety A	5	$8	$13	$18	$23	$28	$33	$38
yields less than	4	$3	$7	$11	$15	$19	$23	$27
Variety B	3	$2	$1	$4	$7	$10	$13	$16
	2	$7	$5	$3	$1	$1	$3	$5
	1	$12	$11	$10	$9	$8	$7	$6
Variety A = Variety B	0	$17	$17	$17	$17	$17	$17	$17
	1	$22	$23	$24	$25	$26	$27	$28
	2	$27	$29	$31	$33	$35	$37	$39
Variety A	3	$32	$35	$38	$41	$44	$47	$50
yields more than	4	$37	$41	$45	$49	$53	$57	$61
Variety B	5	$42	$47	$52	$57	$62	$67	$72
	6	$47	$53	$59	$65	$71	$77	$83
	7	$52	$59	$66	$73	$80	$87	$94

Crop Calculator

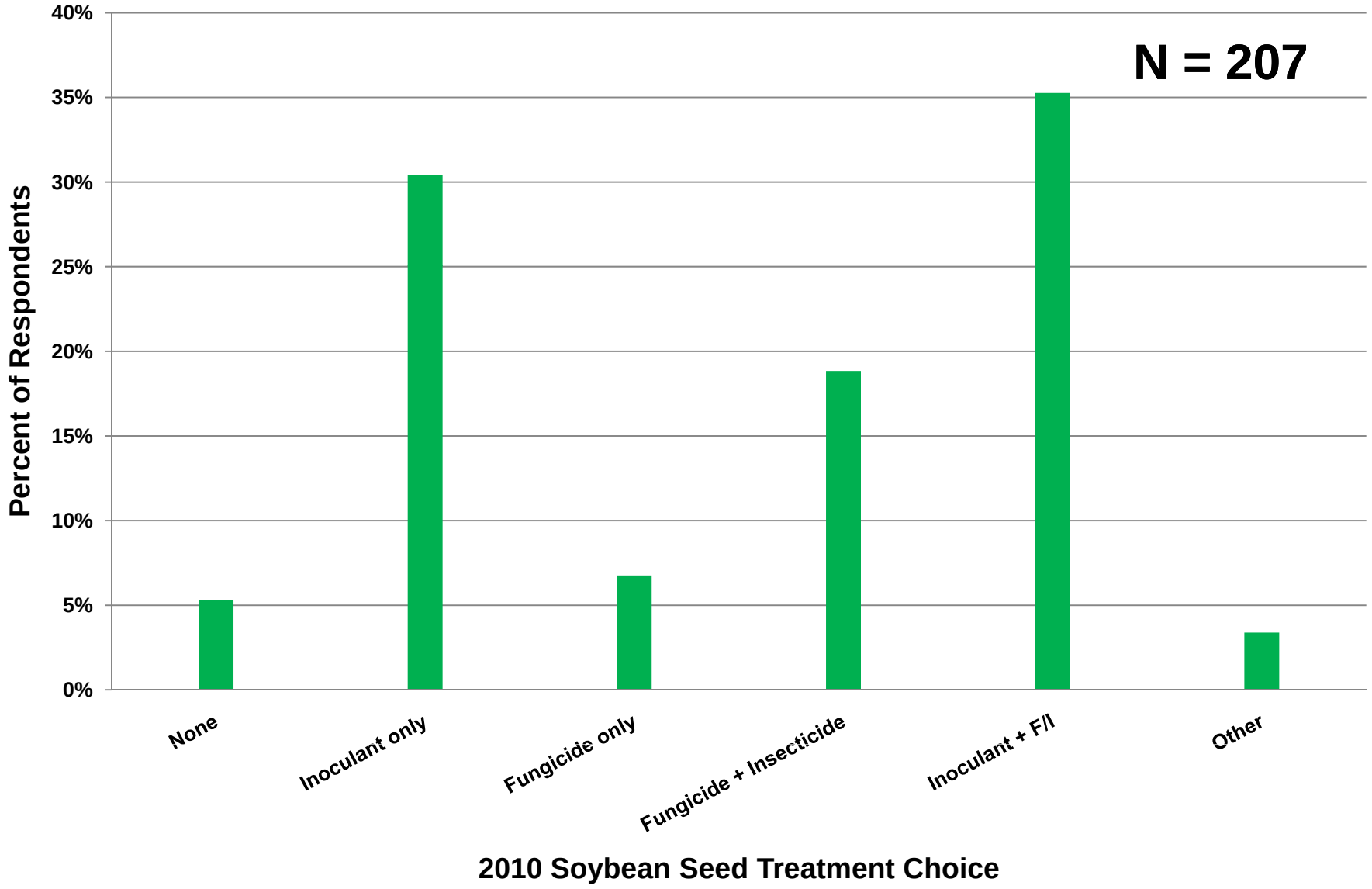
Impact of environment on soybean yield response to inoculants and seed treatments

Experimental Design

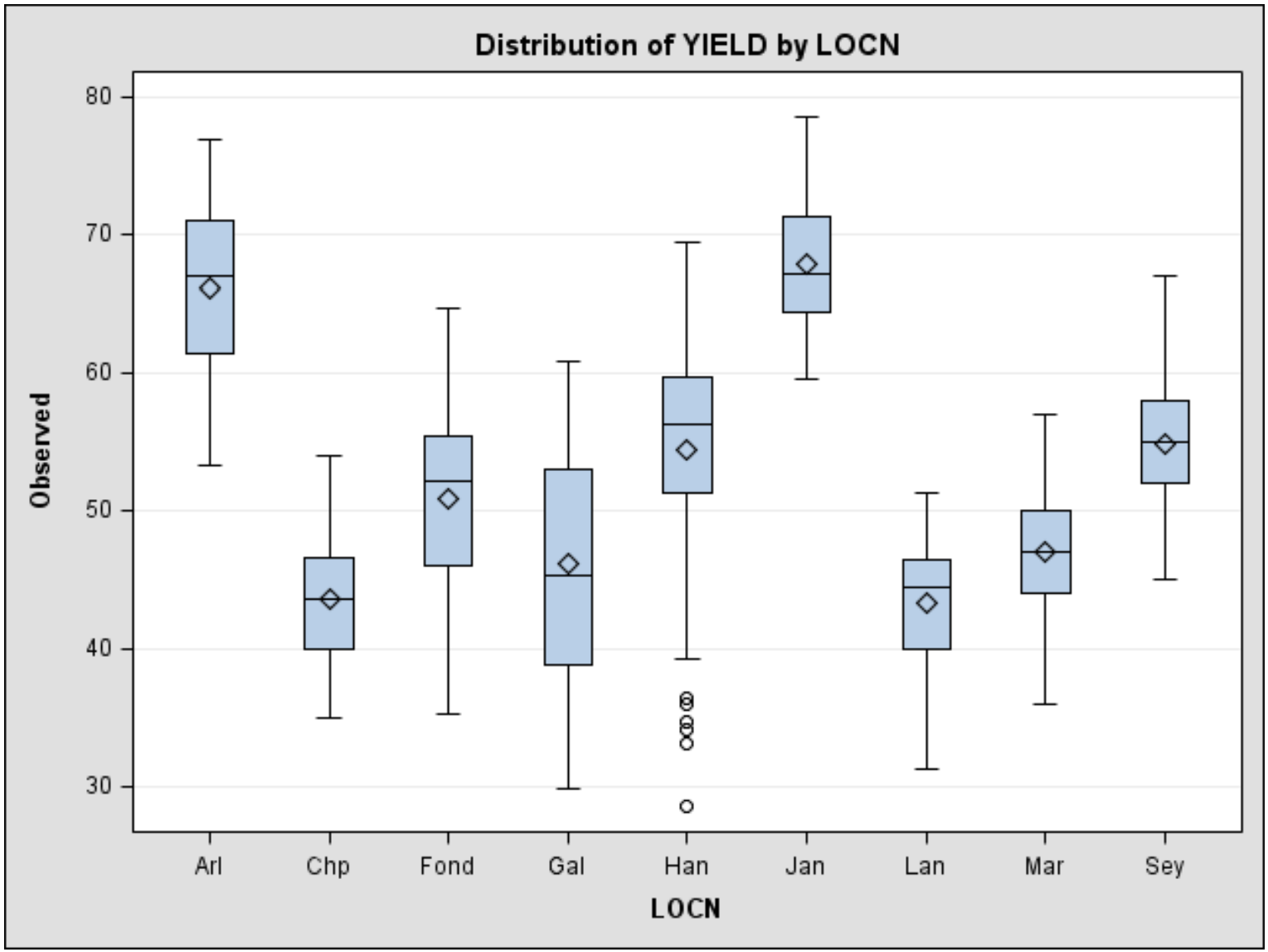
- Three varieties
  - KB 177RR
  - KB 194RR
  - FS 20R80
- 5 seed treatments
  - UTC
  - ApronMaxx RFC (1.5 fl oz/ cwt)
  - CruiserMaxx (3.0 fl oz/cwt)
  - Optimize (4.25 fl oz/cwt)
  - Excalibre (1.2 fl oz/ cwt)
- 171,000 seeds per ace (n = 540)



2010 Seed Treatment Distribution



Soybean yield response to seed treatments: Distribution of yield by location



Probability of achieving a net return (NR) equal to the break-even point or return on investment (ROI) for specific states using two average yields (AY) and two sale prices (SP), averaged across inoculants, from 73 soybean field experiments conducted between 2000 and 2008 in Indiana, Iowa, Nebraska, Minnesota, and Wisconsin.

			Probability of success			
			NR = \$0 bu a^{-1} "break-even point"		NR = ROI of 1 bu a^{-1}	
			AY = 40 bu a^{-1}		AY= 40 bu a^{-1}	AY= 50 bu a^{-1}
State	Relative yield†	*P*-value	SP = \$6.00 bu a^{-1}	SP = \$9.00 bu a^{-1}	SP = \$9.00 bu a^{-1}	SP = \$9.00 bu a^{-1}
Indiana	-0.7	0.747	19.1	24.5	3.8	6.8
Iowa	-1.6	0.251	2.2	4.2	0.0	0.2
Minnesota	0.04	0.969	15.2	25.1	0.3	1.3
Nebraska	1.1	0.393	45.1	58.2	4.2	11.1
Wisconsin	0.5	0.656	21.9	35.6	0.4	1.8

ANOVA	*P*-value
State	0.664

† Calculated relative to an untreated control treatment in each environment

Debruin et al. 2010, Crop Science.

Yield, relative to an untreated control, and probability of achieving a net return (NR) equal to the break-even point or return on investment (ROI) using two average yields (AY) and two sale prices (SP) for ten of the most widely tested of fifty-one soybean inoculant products tested at environments in the states of Indiana, Iowa, Nebraska, Minnesota, and Wisconsin.

State	Environments tested	Relative yield†	*P*-value	Probability of success			
				NR = \$0 bu a^{-1} "break-even point"		NR = ROI of 1 bu a^{-1}	
				AY = 40 bu a^{-1}		AY= 40 bu a^{-1}	AY= 50 bu a^{-1}
				SP = \$6.00 bu a^{-1}	SP = \$9.00 bu a^{-1}	SP = \$9.00 bu a^{-1}	SP = \$9.00 bu a^{-1}
Optimize	41	-1.5	0.315	3.4	6.1	0.1	0.3
Nod+ w/Extender	32	1.5	0.333	57.2	67.2	13.0	23.9
Nod+	27	-1.1	0.493	7.2	11.5	0.3	1.0
Vault	23	1.1	0.563	45.7	54.9	10.6	18.8
Cell Tech SCI	20	2.7	0.193	75.5	81.5	36.9	49.8
Cell Tech 2000	20	0.9	0.763	45.4	51.0	20.9	27.8
Nitragin "S"	13	2.6	0.220	74.1	80.0	37.5	49.6
Cell Tech	12	-0.1	0.980	27.9	34.6	6.5	11.2

† Calculated relative to an untreated control treatment in each environment

Debruin et al. 2010, Crop Science.

Characterizing Soybean Yield Response to Rhizobial Inoculants

- Develop a patentable technique to quickly quantify soil rhizobia populations as well as develop a selection matrix from which growers can accurately assess the probability that an inoculant application will lead to increased yield and profitability.

- Our specific **objectives** are:
  - To develop a fast and reliable quantitative PCR assay to quantify soil rhizobial populations
  - To determine if rhizobial inoculation is necessary after flooding events
  - To quantify the effect of crop rotation and tillage on inoculant efficacy
  - To quantify yield response of inoculants over various environmental conditions

WISCONSIN SOYBEAN MARKETING BOARD

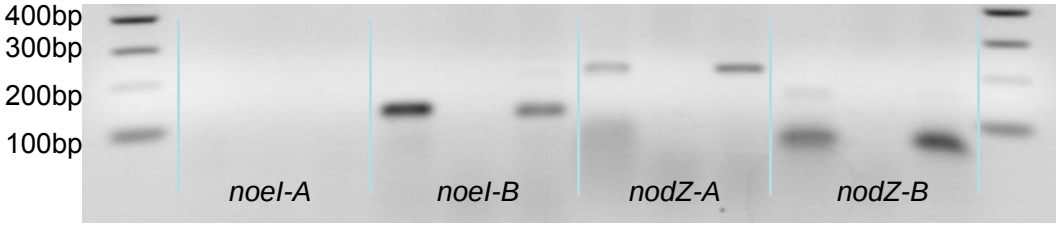
Developing a Rhizobia 'soil test'

- Previous studies suggest that if soybean is frequently grown in a crop rotation, soil rhizobia populations can be sustained without inoculation.
- Current methods for quantifying rhizobia:
  - Most Probable Number (MPN)
  - Plate Counts
- A more efficient method is needed!

WISCONSIN SOYBEAN MARKETING BOARD

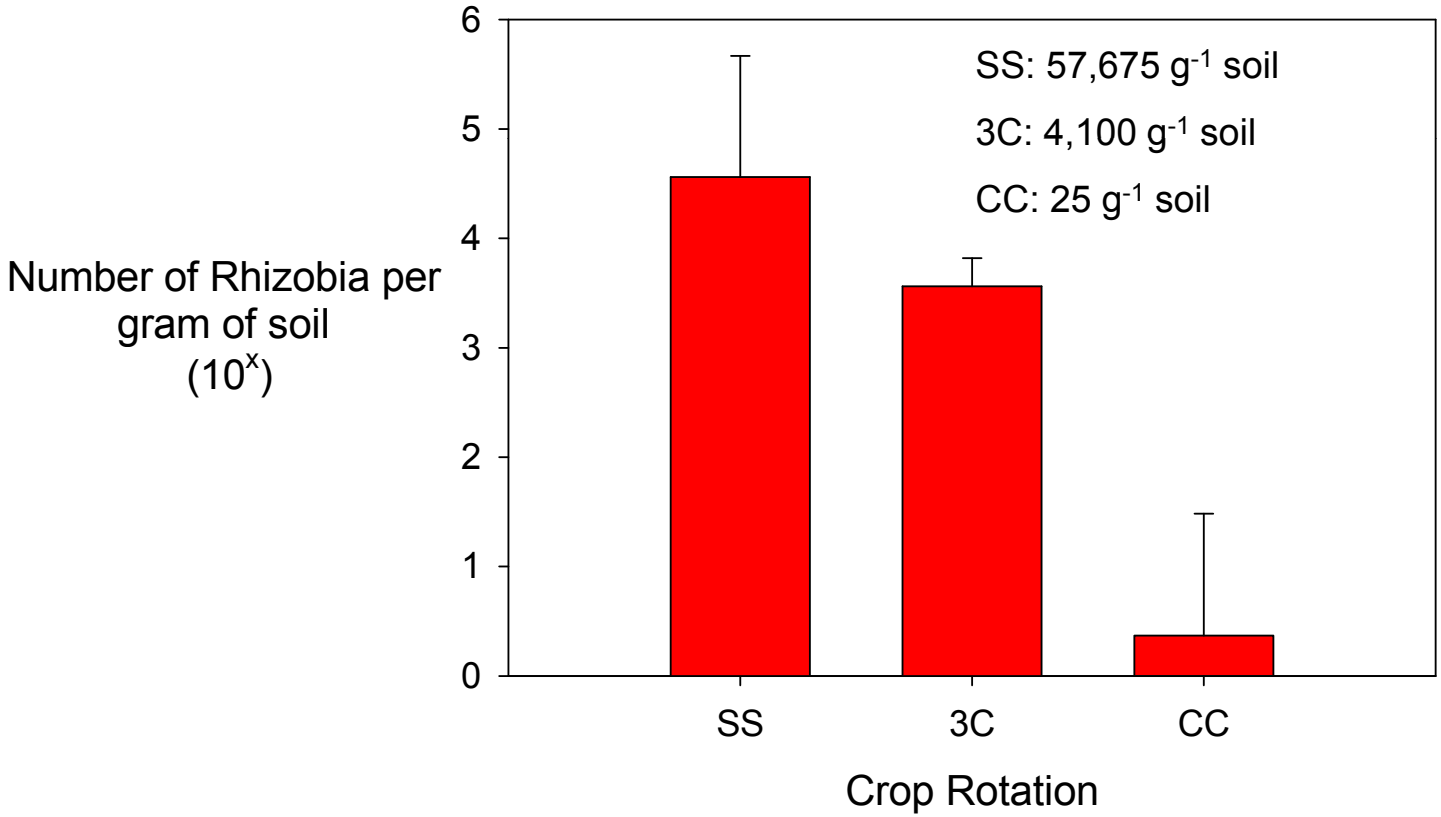
Polymerase Chain Reaction (PCR) and Quantitative Real-Time PCR

- PCR is a technique that multiplies a given sequence of DNA.
- qPCR measures the quantity of DNA as the reaction progresses
- Target genes for qPCR are the *nodZ* and *noeI* specificity genes found *Bradyrhizobium japonicum*, *B. elkanii, Sinorhizobium fredii* and *Rhizobium etli* for the nodulation of soybean.
- Primer sets *noeI-B* and *nodZ-A* perform well with standard PCR, at an annealing temperature of 58°C (see Figure). The length of the amplified DNA is as expected for each primer set.

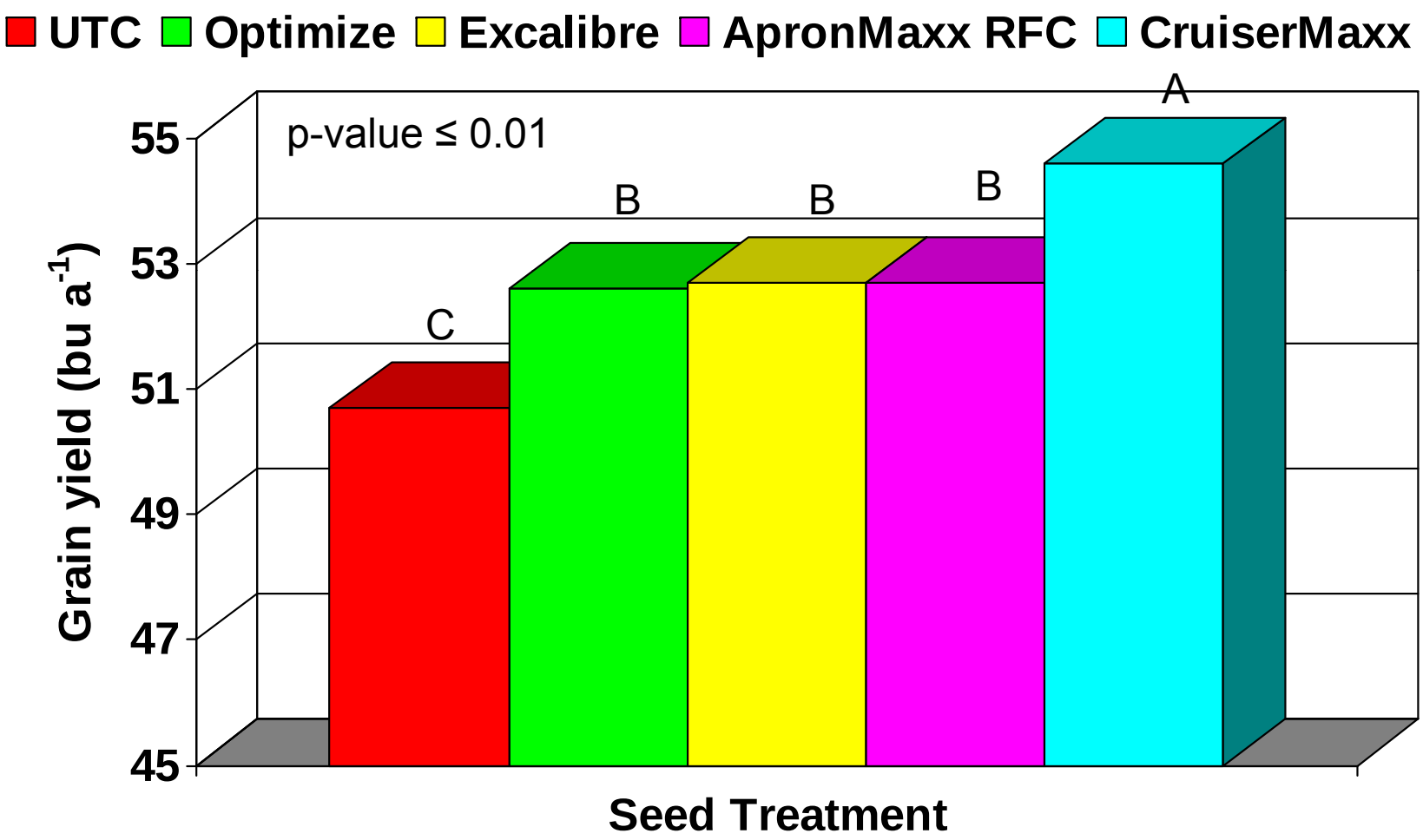


PCR primer test with pure *Bradyrhizobium japonicum* USDA110 and a soybean plot soil sample. 58°C annealing temperature.

Number of soybean-nodulating rhizobia as determined by the MPN method

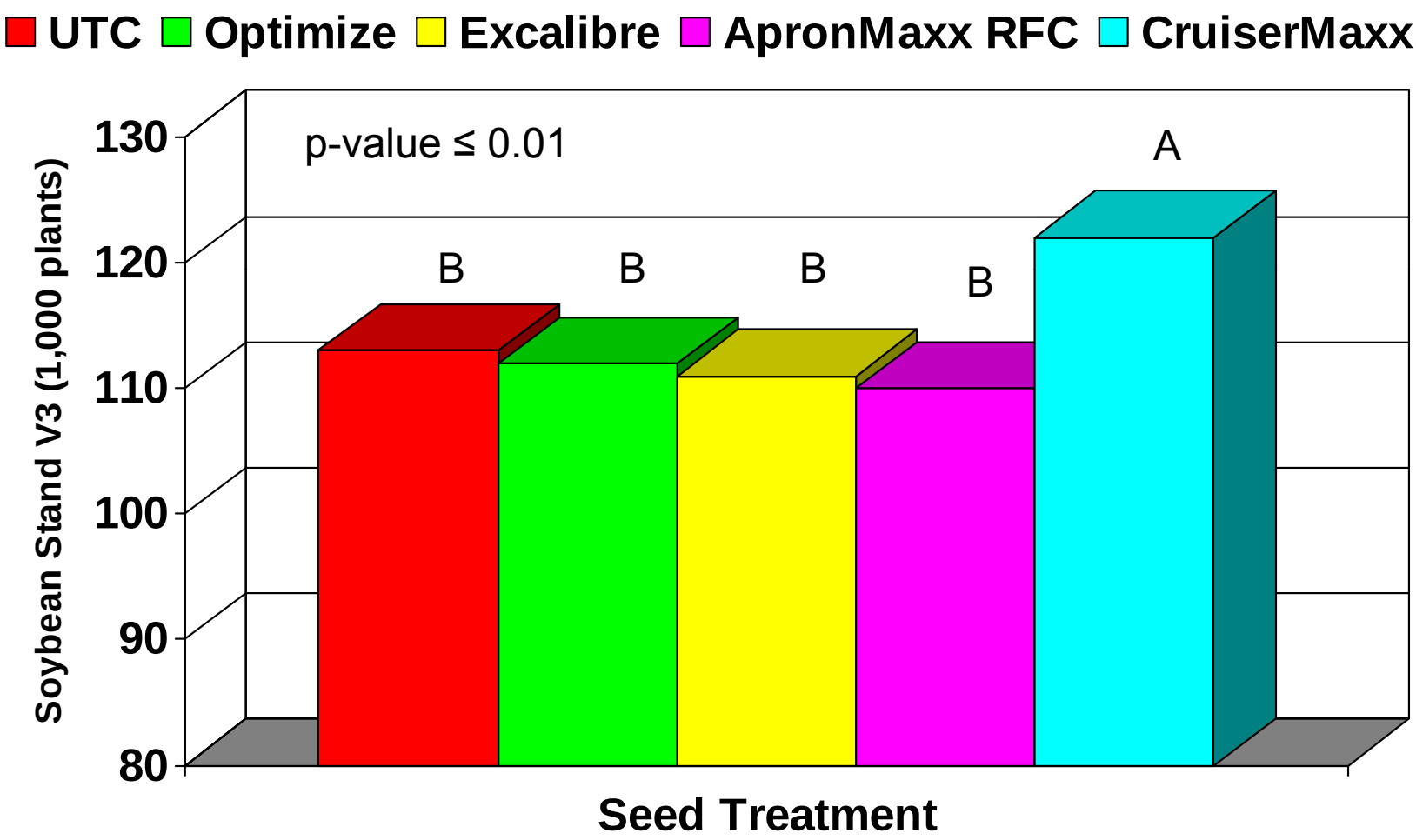


Soybean yield response to seed treatments across regions in 2009



WISCONSIN SOYBEAN MARKETING BOARD

Soybean stand response to seed treatments across regions in 2009



WISCONSIN SOYBEAN MARKETING BOARD

Economics of Seed Treatments

Hybrid / Variety	Variety A	Variety B	difference
Seed Price ($/bag)	$51.50	$62.00	-$10.50
Kernels/Seeds per bag (no./bag)	140,000	140,000	0
Seed Population (number/acre)	190,000	165,000	25,000
Potential plant death (%)	10	10	0
Acres per bag (acres/bag)	0.67	0.77	0.10
Seed Cost ($/acre)	$76.88	$80.38	-$3.50
Herbicide Cost ($/acre)	$0.00	$0.00	$0.00
Insecticide Cost ($/acre)	$0.00	$0.00	$0.00
Fungicide Cost ($/acre)	$0.00	$0.00	$0.00
Insurance Cost ($/acre)	$0.00	$0.00	$0.00
Harvest Moisture (%)	20.0	20.0	0.0
Drying ($/point*bushel)	$0.06	$0.06	$0.00
Drying Cost ($/bushel)	$0.27	$0.27	$0.00
Handling Cost ($/bushel)	$0.02	$0.02	$0.00
Hauling Cost ($/bushel)	$0.04	$0.04	$0.00
Trucking Cost ($/bushel)	$0.11	$0.11	$0.00
Storage Cost ($/bushel)	$0.12	$0.12	$0.00
Yield adjustment ($/bushel)	$0.56	$0.56	$0.00
Yield adjustment ($/acre)	$33.60	$33.60	$0.00
Total Input Cost ($/acre)	$110.48	$113.98	$3.50

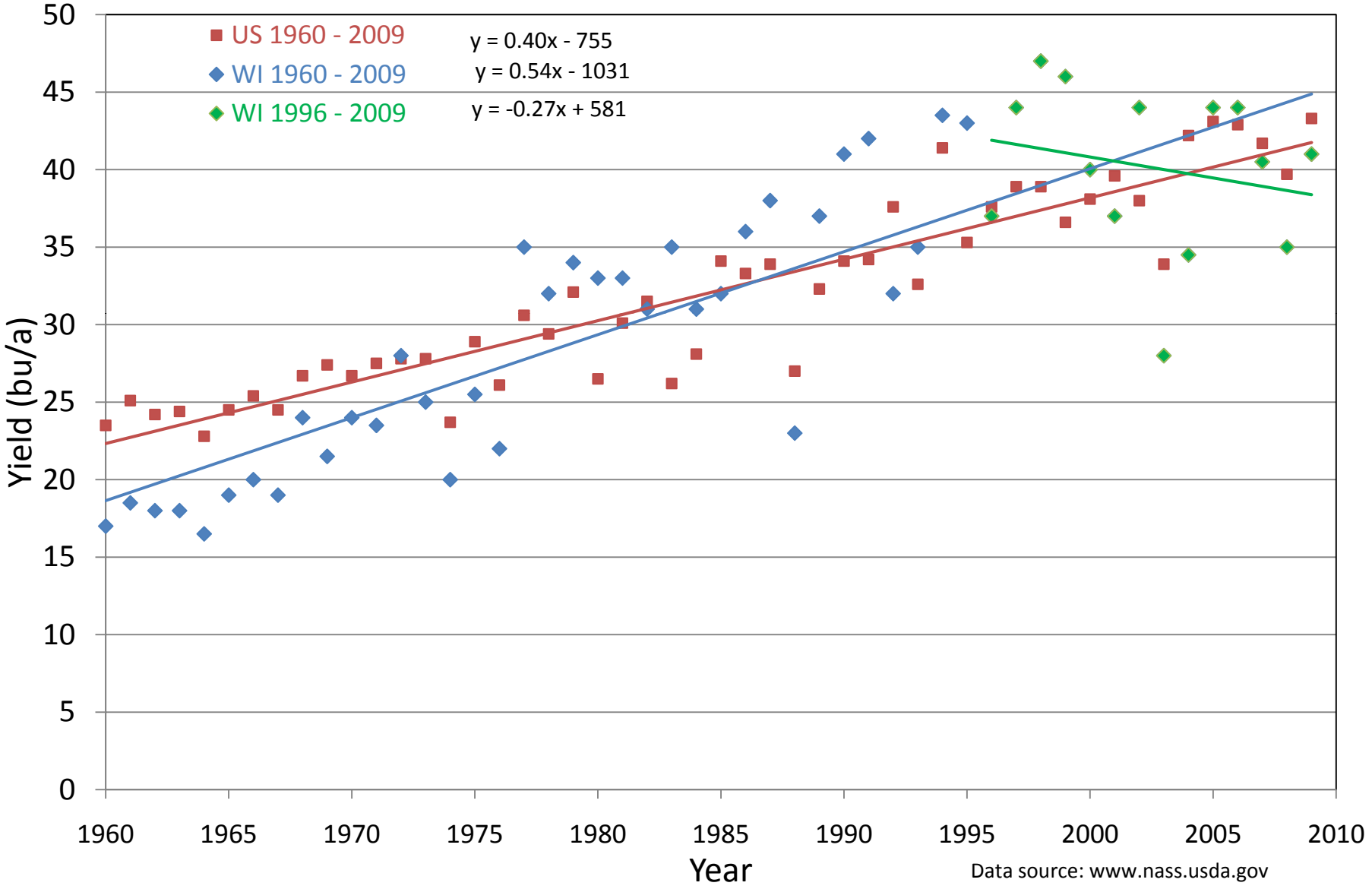
Economic advantage ($/acre) of Variety A or Variety B. Seed price difference = $10.5 per bag: A = $51.5, Variety B = $62.

Yield advantage bushel/acre		Crop Price ($/bushel) $5.00	$6.00	$7.00	$8.00	$9.00	$10.00	$11.00
	7	$32	$39	$46	$53	$60	$67	$74
	6	$27	$33	$39	$45	$51	$57	$63
Variety A	5	$22	$27	$32	$37	$42	$47	$52
yields less than	4	$17	$21	$25	$29	$33	$37	$41
Variety B	3	$12	$15	$18	$21	$24	$27	$30
	2	$7	$9	$11	$13	$15	$17	$19
	1	$2	$3	$4	$5	$6	$7	$8
Variety A = Variety B	0	$3	$3	$3	$3	$3	$3	$3
	1	$8	$9	$10	$11	$12	$13	$14
	2	$13	$15	$17	$19	$21	$23	$25
Variety A	3	$18	$21	$24	$27	$30	$33	$36
yields more than	4	$23	$27	$31	$35	$39	$43	$47
Variety B	5	$28	$33	$38	$43	$48	$53	$58
	6	$33	$39	$45	$51	$57	$63	$69
	7	$38	$45	$52	$59	$66	$73	$80

http://corn.agronomy.wisc.edu/Season/DSS.aspx

Soybean Yields

United States and Wisconsin, 1960 to 2010



Weed Management in GR Soybean

- 26% of respondents indicated that they applied a preemergence herbicide to their soybean crop.

- What is the average number of glyphosate applications you make to your soybeans?

	-----Number of applications ------				
Acreage	1	2	3	N/A	N
	---------% of Respondents---------				
< 100	68	28	1	2	88
≥ 100	47	51	0	1	74
Total	59	39	1	2	162

- 3.1 bushel (7%) yield increase between 1 and 2+ passes

WISCONSIN SOYBEAN MARKETING BOARD

Predicted Yield Losses with Postemergence Herbicides

Nathanael D. Fickett, David E. Stoltenberg, and Chris M. Boerboom

University of Wisconsin-Madison

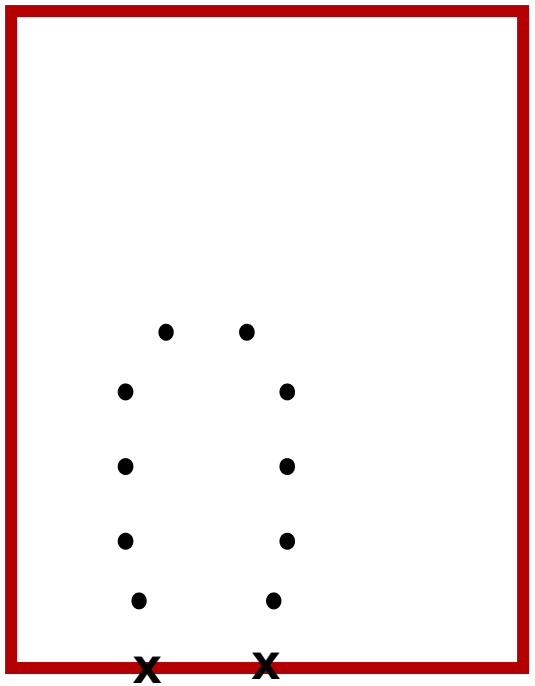
Clarissa M. Hammond

Wisconsin Department of Agriculture, Trade, and Consumer Protection

THE UNIVERSITY of WISCONSIN MADISON

1. Survey: Methods

- Total POST fields:
  - 2008
    - Corn: 48 fields, 10 counties
    - Soybean: 30 fields, 8 counties
  - 2009
    - Corn: 45 fields, 11 counties
    - Soybean: 40 fields, 11 counties
- Surveyed 10 1-m^2 quadrats spaced by 30 paces in a horseshoe pattern



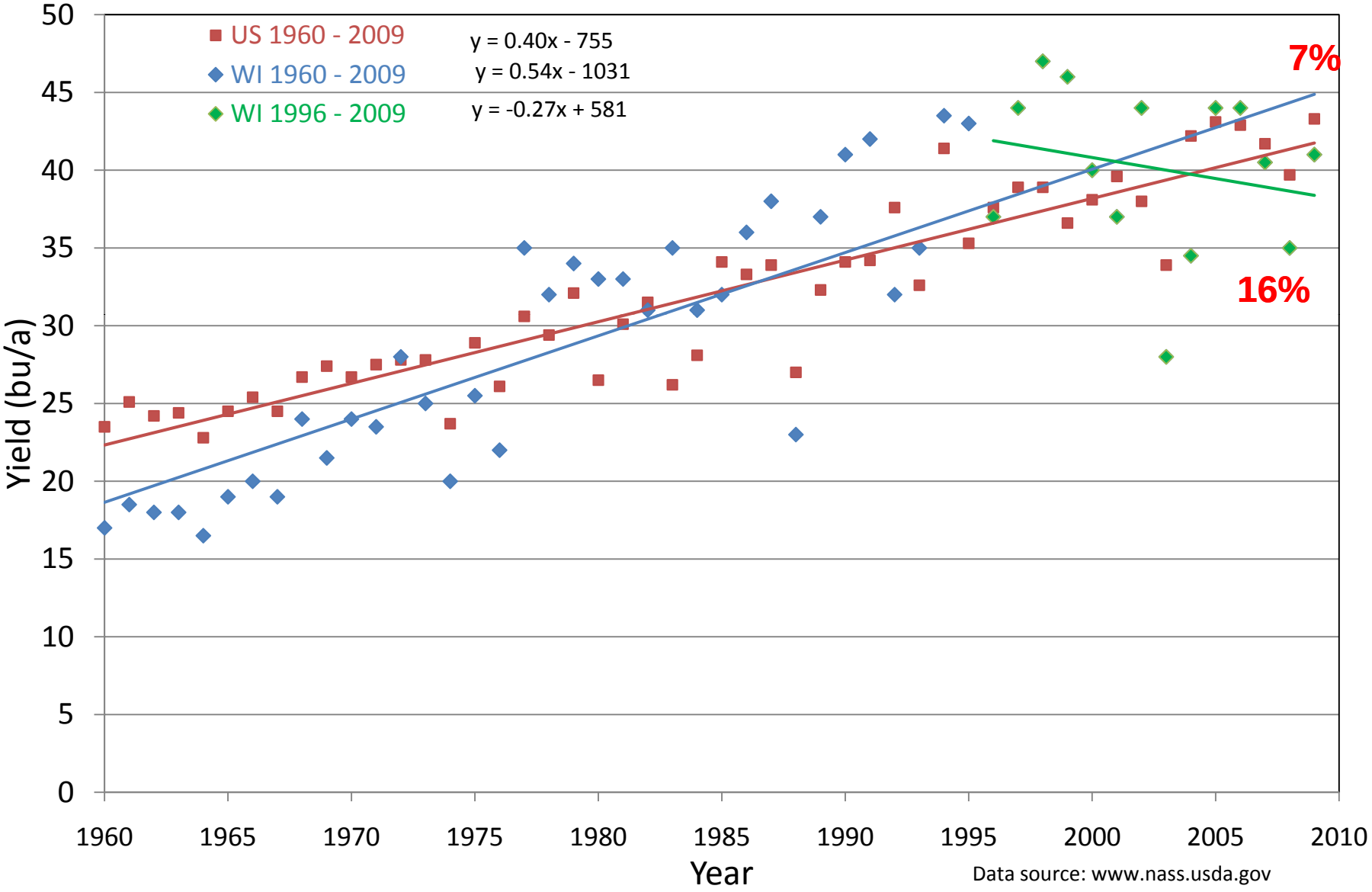
Summary

	2008		2009	
	Corn	Soybean	Corn	Soybean
Mean density (no./m²)	102 ± 17	107 ± 26	93 ± 15	98 ± 25
Mean height (in)	5.9 ± 0.8	8.5 ± 1.4	5.5 ± 0.7	7.0 ± 1.1
Mean growth stage	V5	V4	V5	V3
Mean yield loss (%)	4.4	9.3	4.8	3.1

- Weeds in many corn and soybean fields were controlled after critical heights of 4 and 6 inches, respectively

Soybean Yields

United States and Wisconsin, 1960 to 2010




J. Obermeyer, Purdue

Common Diseases of Soybean

Fungi

White Mold

BSR/SDS

Phytophthora Root Rot

Bacteria

Bacterial Blight

Virus

Soybean Mosaic Virus

Bean Pod Mottle Virus

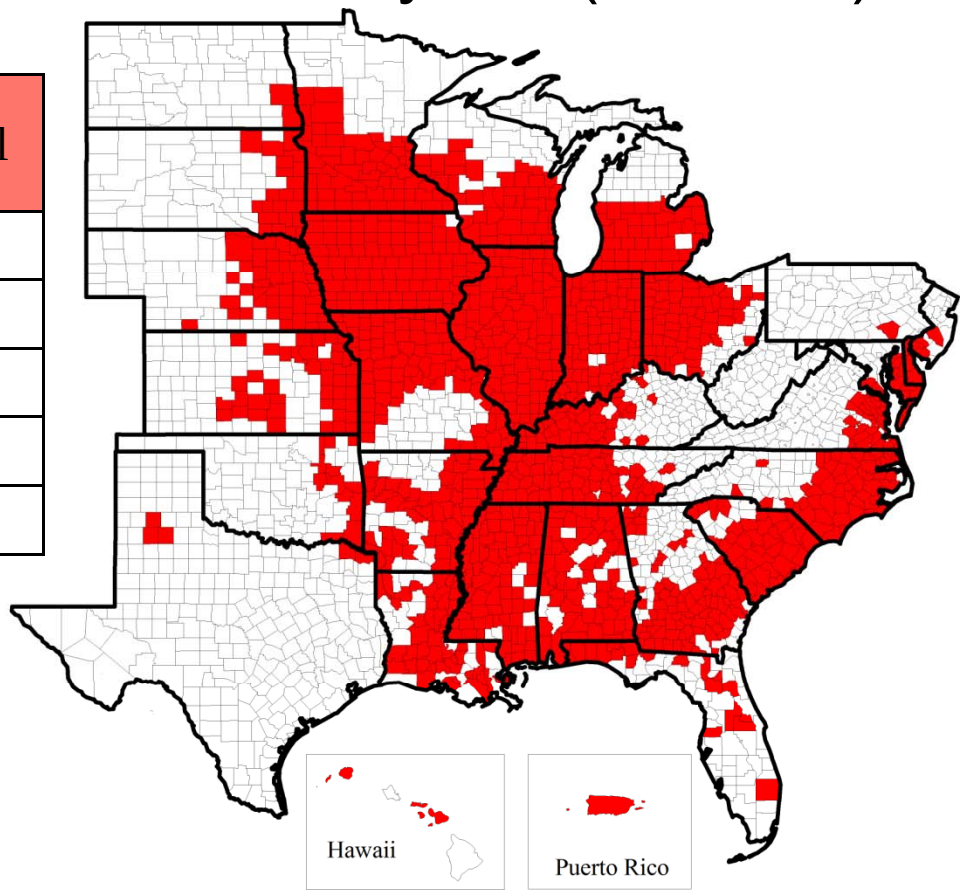
Nematodes

Soybean Cyst Nematode

2009 WSMB Sponsored SCN Testing Program

- 801 kits sent out
  - 151 soil samples sent in and analyzed (11/1/09)

Risk of Yield Loss	Egg count range (per 100 cc soil)	% of total
None	0	73.5%
Low	1 to 500	7.9%
Moderate	500 to 2000	7.3%
High	2000 to 5000	5.3%
Very high	Over 5000	6.0%



WISCONSIN SOYBEAN MARKETING BOARD

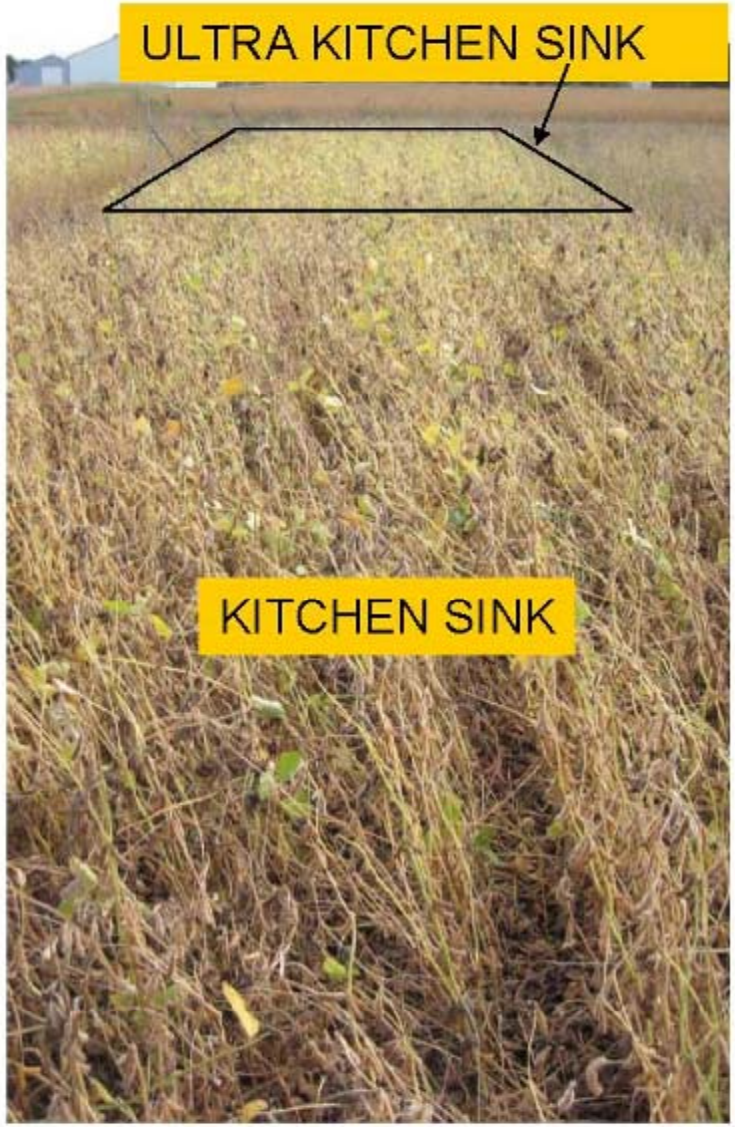
High Yield Experiment 2008

- RCB split-plot design with 5 reps
  - Experimental unit: 20’ by 50’

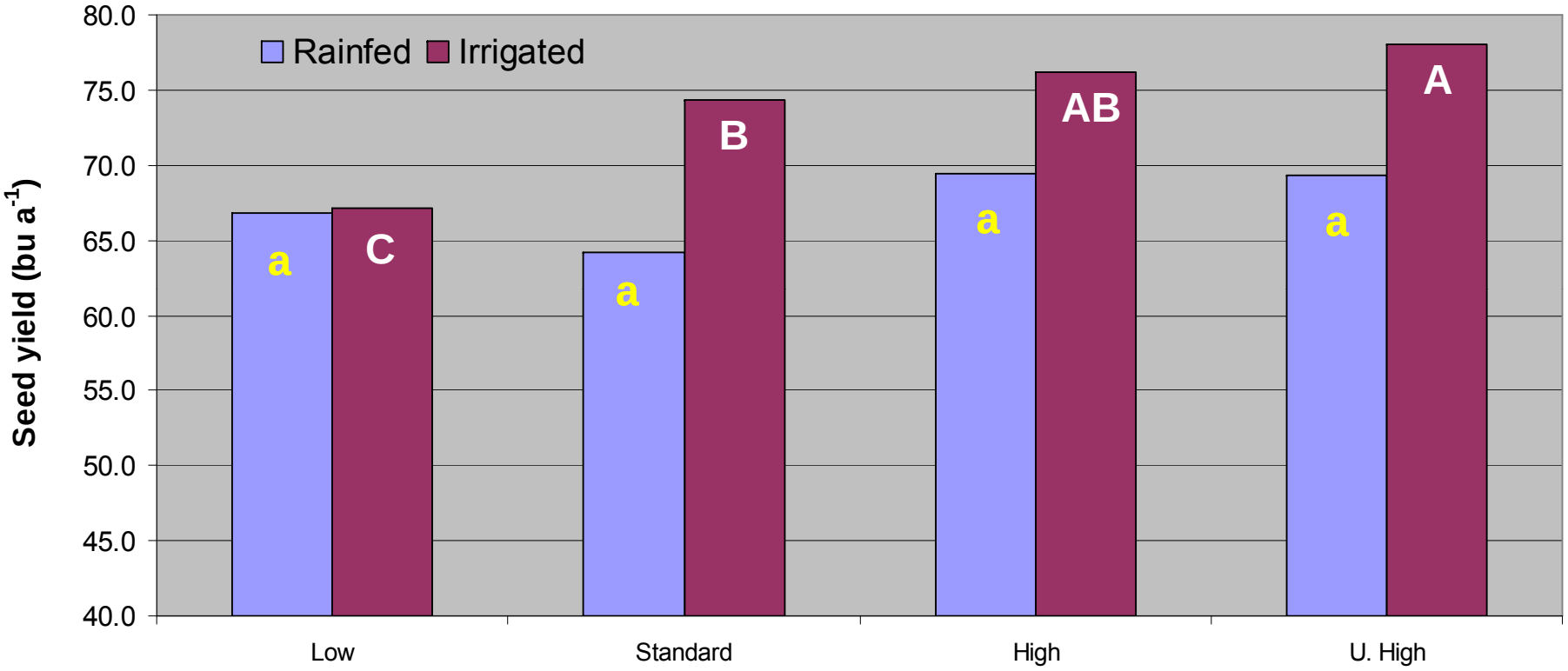
	Treatments			
	LOW INPUT	**STANDARD**	**KITCHEN SINK**	**ULTRA KITCHEN SINK**
Irrigation	**1** Irrigated	**2** Irrigated	**3** Irrigated	**4** Irrigated
Seeding Rate	175,000	175,000	260,000	260,000
Fertigation	28%	28%	28%	28%
Inoculant		Optimize	Optimize	Optimize
Seed treatment		CruiserMaxx	CruiserMaxx	CruiserMaxx
Foliar Insecticide		Warrior	Warrior	Warrior
Foliar Fungicide		Headline (1x)	Headline (2x)	Headline (2x)
			Quilt (1x)	Quilt (1x)
Soil applied biocide			Contans	Contans
Foliar nutrients			Micros (3x)	Micros (3x)
Nitrogen			Chicken litter	Chicken litter
P and K			40P + 80K	40P + 80K
Ethephon				Yes

2008 High Yield Trial

Arlington, WI Oct. 3, 2008



Grain Yield by Management System

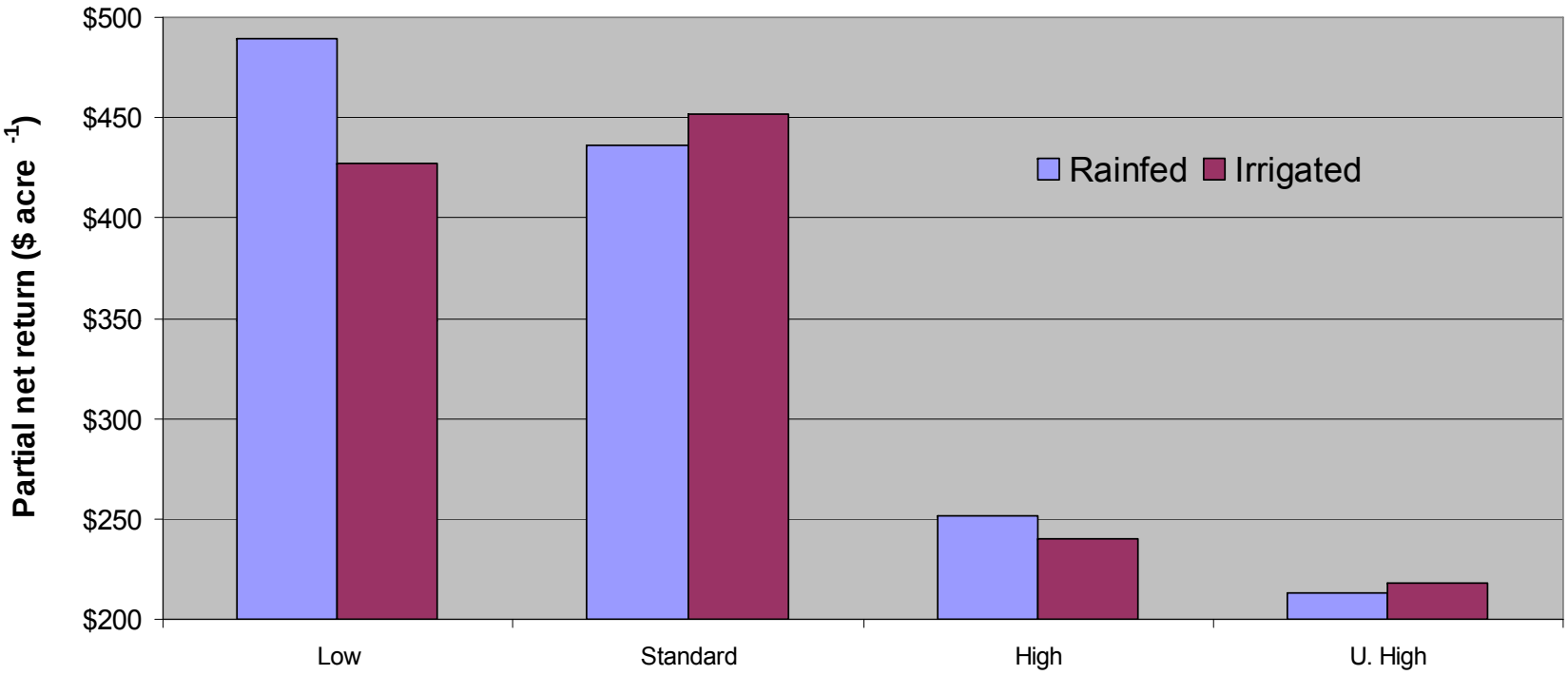


- No response to management in a rain-fed environment
- Significant ($p \leq 0.10$) management response in irrigated system

Differential Input Costs per Acre

		Irrigated				Rain-fed			
Input	**Product**	**Low**	**Stnd**	**High**	**U. High**	**Low**	**Stnd**	**High**	**U. High**
Irrigation		64.80	64.80	64.80	64.80				
Biocide	Contans WG			42.00	42.00			42.00	42.00
Manure	Chickity Doo Doo			43.00	43.00			43.00	43.00
N + P + K	dry fertilizer			68.00	68.00			68.00	68.00
Inoculant	Optimize		2.13	2.13	2.13		2.13	2.13	2.13
Seed treatment	Cruiser Maxx		9.50	9.50	9.50		9.50	9.50	9.50
Seed	DSR-2200	35.00	35.00			35.00	35.00		
Seed	DSR-2200			52.00	52.00			52.00	52.00
PGR	Pistill				31.09				31.09
Foliar fungicide	Headline		15.00	30.00	30.00		15.00	30.00	30.00
Foliar fungicide	Quilt			15.00	15.00			15.00	15.00
Foliar nutrients	Mangro DF+ plus B			13.00	13.00			13.00	13.00
Foliar nutrients	EB Mix			13.49	20.23			13.49	20.23
Foliar nutrients	28%	10.05	10.05	10.05	10.05				
Insecticide	Warrior		6.00	6.00	6.00		6.00	6.00	6.00
Total		109.85	142.48	368.97	406.80	35.00	67.63	294.11	331.95

Comparison of System Profitability



- Break even yields:
  - Rain-fed environment: 6 to 34.5 bu
  - Irrigated environment: -3.1 to 26.1 bu

High Yield Experiment 2009

Input	
Irrigation	4 acre inches
Seeding rate	260000 seeds/a
Inoculant	Optimize and Soil Implant
Seed treatment	CruiserMaxx
Fertigation	28% N
Soil applied biocide	Contans
P and K	40 lb/a P + 80 lb/a K
Foliar nutrients	Micros (4x)
Foliar fungicides	Headline/Quilt (3x)
Foliar insecticide	Warrior (2x)

		High input	RR variety trial
Brand	**Variety**	**Yield (bu/a)**	
Asgrow	DKB27-52	79	
Dairyland	DSR-2560/RR	81	60
Kruger	K-249RR/SCN	79	72
NK Brand	NK S21-N6	81	72
Nu-Tech	6244	79	65
Pioneer	93M11	75	

2010 WISCONSIN SOYBEAN YIELD CONTEST

A NEW PROGRAM TO RECOGNIZE WISCONSIN'S TOP SOYBEAN PRODUCERS

Top Prize

$1000

For more information and to enter, please contact:

Dr. Shawn Conley
1575 Linden Drive
Madison, WI 53706
608-262-7975
spconley@wisc.edu

Deadline to enter

July 15, 2010

Sponsored by:
Wisconsin Soybean Association
Wisconsin Soybean Marketing Board
University of Wisconsin-Extension
College of Agriculture and Life Sciences

For questions about the Wisconsin Soybean Marketing Board or the Wisconsin Soybean Association contact:

Bob Karls, Executive Director
2976 Triverton Pike Rd.
Madison, WI 53711
Tel: 608-274-7522
FAX: 608-274-3988
E-mail: karls@wisoybean.org

WISCONSIN SOYBEAN ASSOCIATION

UW Extension

Plant Management Network International

Visit/Support *Focus on Soybean*

- An online educational resource for soybean growers and consultants
- Open-access webcasts monthly courtesy of the United Soybean Board

Find it at: www.plantmanagementnetwork.org/fos

Or at: www.unitedsoybean.org

The Soy Report

MONDAY, NOVEMBER 30, 2009

Biological Control and White Mold of Soybean

With the wide-spread reports of White mold (or Sclerotinia stem rot, SSR) this year in Wisconsin and across the region, we have been fielding many questions about control options. In particular, many of these questions have been about Contans WG. In this blog, Angie Peltier (Postdoctoral Research Associate in Plant Pathology) and I try to provide information that will help you understand more what biological control for white mold entails.

What is Contans WG?

Contans WG (SipcamAdvan; Durham, NC) is a commercial biocontrol agent and is a proprietary powder formulation that contains the fungus ***Coniothyrium minitans***. Contans WG has been labeled for use in both conventional and organic soybean.

C. minitans was first described in California in 1947, and it is now known to have a world-wide distribution. The host range of *C. minitans* includes important plant pathogens such as *Sclerotinia sclerotiorum*, *S. trifoliorum*, *S. minor*, and some strains of *Botrytis cinerea*, *B. fabae*, and *Sclerotium cepivorum* (Turner and Tribe, 1976).

How does it work?

The fungus that causes white mold (*Sclerotinia sclerotiorum*) produces long-lived survival structures called sclerotia that many say resemble rat droppings. Sclerotia are important in the life cycle of *Sclerotinia*, allowing the fungus to survive in the soil until conditions are favorable for the disease cycle to begin: Upon canopy closure and during periods of cool and wet weather, sclerotia germinate to produce mushroom-like fruiting structures called apothecia. Apothecia produce ascospores that are wind-disseminated. If during a period of leaf wetness ascospores land on dying soybean flower tissue, they can use this food source to gain entry into susceptible soybean plants and cause disease. Many apothecia can emerge from one sclerotium, making each sclerotium an important inoculum source.

The Soy Report Mission

To provide Wisconsin growers and agricultural clientèle with timely crop management recommendations, diagnostics, and crop updates.

WI State Soybean and Wheat Extension Specialist

Shawn Conley

WI State Extension Field Crops Plant Pathologist

Paul Esker

The Soy Report: Awarded 2009 ASA Extension Educational Materials Certificate of Excellence


CoolBeans - UWEX Soybean Site - Mozilla Firefox
File Edit View History Bookmarks Yahoo! Tools Help
http://soybean.uwex.edu/
Most Visited Getting Started Latest Headlines Customize Links Blogger The Soy Report PlantDOC Cases Madison, WI Weather... 7-Day Forecast for La...
Search Sidewiki Bookmarks Translate AutoLink AutoFill conleysp
Search Web Mail Shopping Personals My Yahoo! News Games Travel Finance Answers Sports Sign In
CoolBean.info
UW Extension
Home
The SoyReport
Searchable Database
Video Crop Diagnostics
Library
Soybean Variety Trial Results
Wheat Variety Trial Results
Research Protocols
UW-Extension
Soybean Health webpage
Wisconsin Soybean Association
UW Corn Agronomy
Chat'n Chew Café
UW Agronomy
WI Crop Manager
Contact Information
Searchable Database
Video Crop Diagnostics
Click here to subscribe to the Cool Bean.info e-mail list
Soybean Variety Selection for the 2010 Crop: More Important than Ever
2009 Wisconsin Soybean Performance Results
2010 Wisconsin oats and barley performance tests
2008 Soybean and Small Grain Research Report
Validation of PPNT for Optimum Economic Nitrogen Rate for Winter Wheat
Recommendations for Winter Wheat Establishment in 2009
2009 Wisconsin Winter Wheat Variety Trial Results
Considerations for Spraying Foliar Fungicides in Soybean
Wisconsin Soybean Marketing Board
2009 Wisconsin Area Soybean Conferences
Early Season Assessments for Soybean "Stress"
Check Your Wheat Closely
Delayed Soybean Emergence and Cotyledon Loss
2009 Agronomy and Soils Field Day Flyer
Predicting When Soybeans Will Emerge
Factors to Consider When Lowering Soybean Seeding Rates in 2009
Wheat Stand Assessment, Winterkill Yield loss, and Nitrogen Application
Do I Need to Spray a Foliar Fungicide in Wheat in 2009?
Back