

2011 Agronomy Update Meetings

**Arlington, Wausau, Eau Claire, Sparta, Kimberly, Fond du
Lac, Janesville and Belmont**

Joe Lauer

University of Wisconsin

**Cooperating with Columbia, Marathon, Eau Claire, Monroe,
Outagamie, Fond du Lac, Rock and Grant Counties**

January 4 – 7, 2011



Overview

- 2010 growing season review
- Performance of corn biotech traits in the UW trials during 2010
- Tropical corn – Is there a place for it in Wisconsin?
- Seed treatments – Do they make a difference?



Highlights for corn production during 2010

• Growing Season

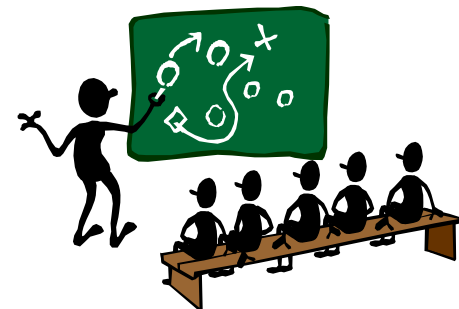
- ✓ Season was nearly ideal
 - ❑ Rainfall tended to be high in NE
- ✓ Early planting
- ✓ Rainfall adequately distributed
- ✓ Dry fall

• New in the Hybrid Trials

- ✓ Improved readability
 - ❑ Portrait layout of results
 - ❑ Font size
- ✓ New map

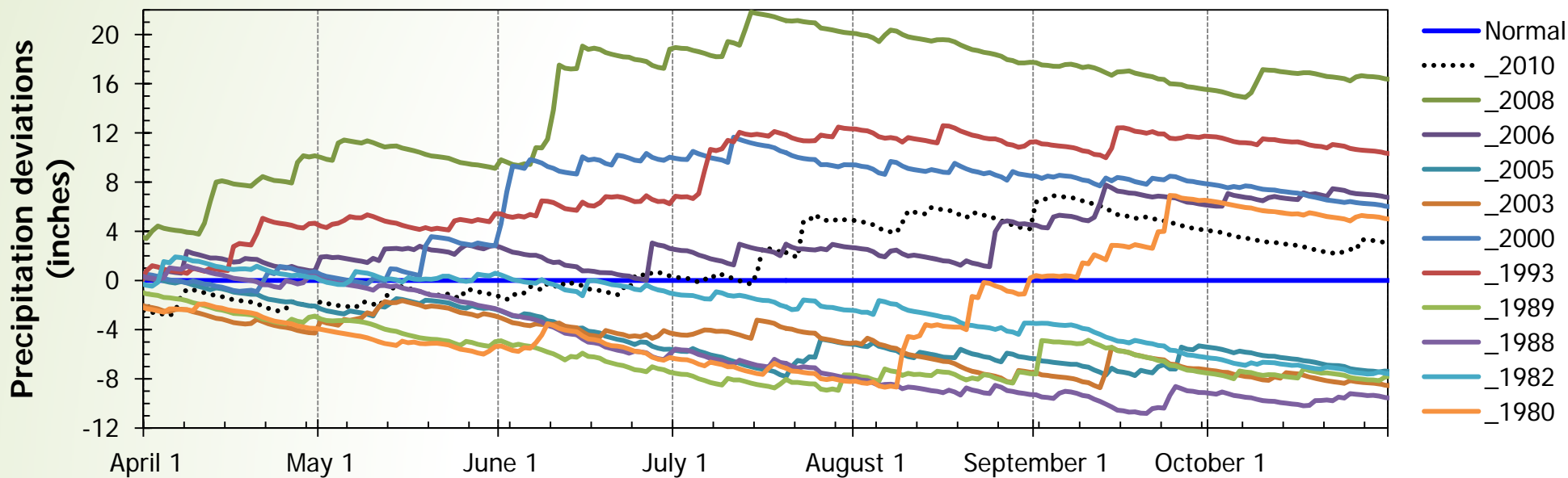
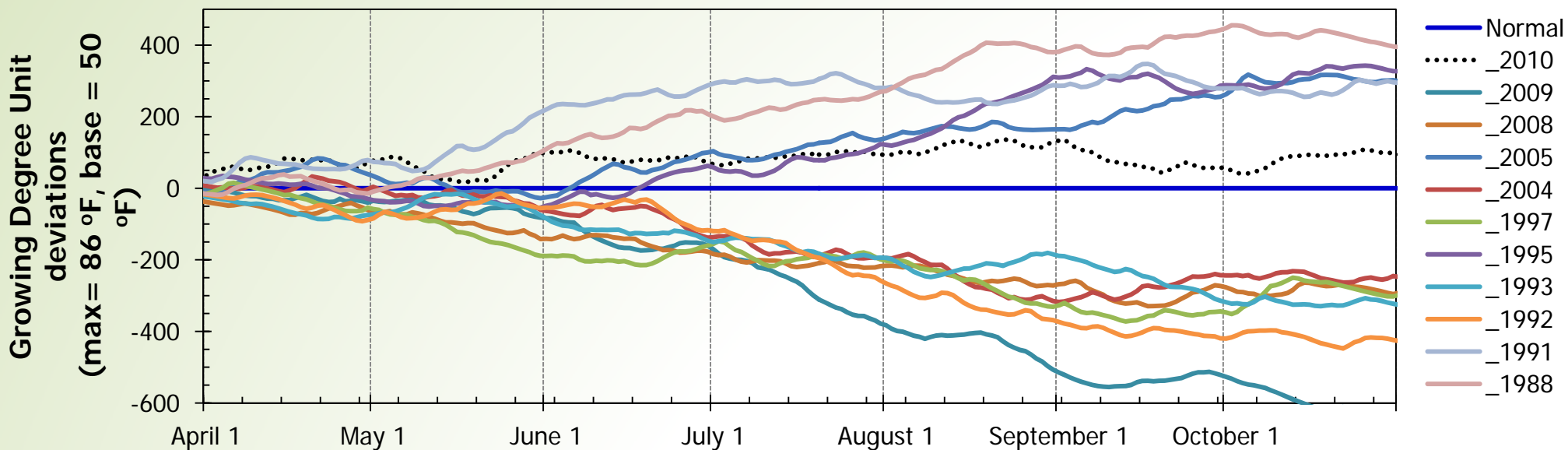
• Records

- ✓ Value of crop: high, dry yield AND high price
- ✓ Silage: South Central Zone
 - ❑ 11.7 T/A by G2 Genetics 5H-516RRHX
 - ❑ Previous best:
1998= 11.3 T/A by Pioneer 3527
- ✓ Grain: All Time Zone and Location:
 - ❑ Southern= 271 bu/A by G2 Genetics 5X-909RRHXT
Arlington= 290 bu/A by G2 Genetics 5X-909RRHXT
 - ❑ Previous best:
Southern 2009= 266 bu/A by Dairyland ST9009
Janesville 2009= 288 bu/A by
Dekalb DKC59-64(VT3) and AgriGold A6309VT3



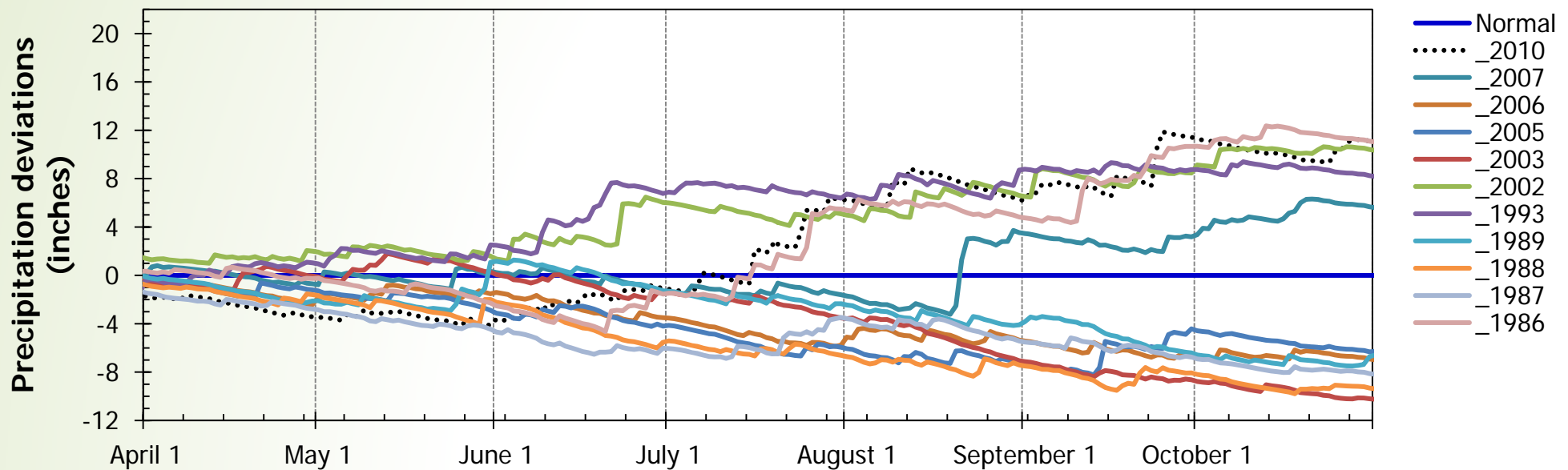
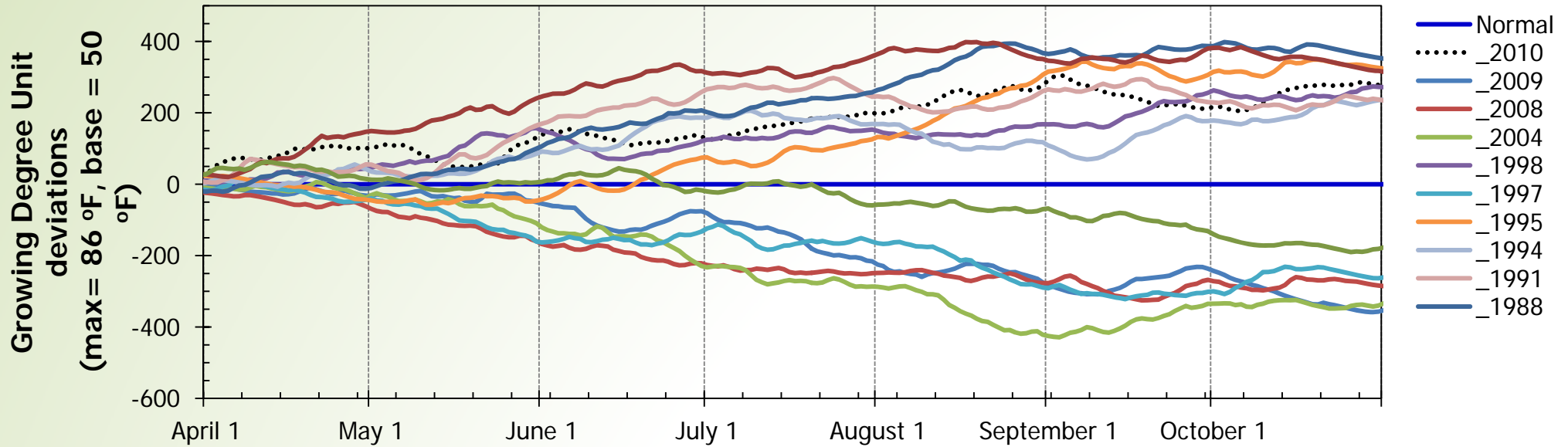
Growing degree unit accumulation and precipitation deviations during 2010 compared to the 30-yr normal

(\pm Standard Deviation of warm/cool and wet/dry seasons)



Growing degree unit accumulation and precipitation deviations during 2010 compared to the 30-yr normal

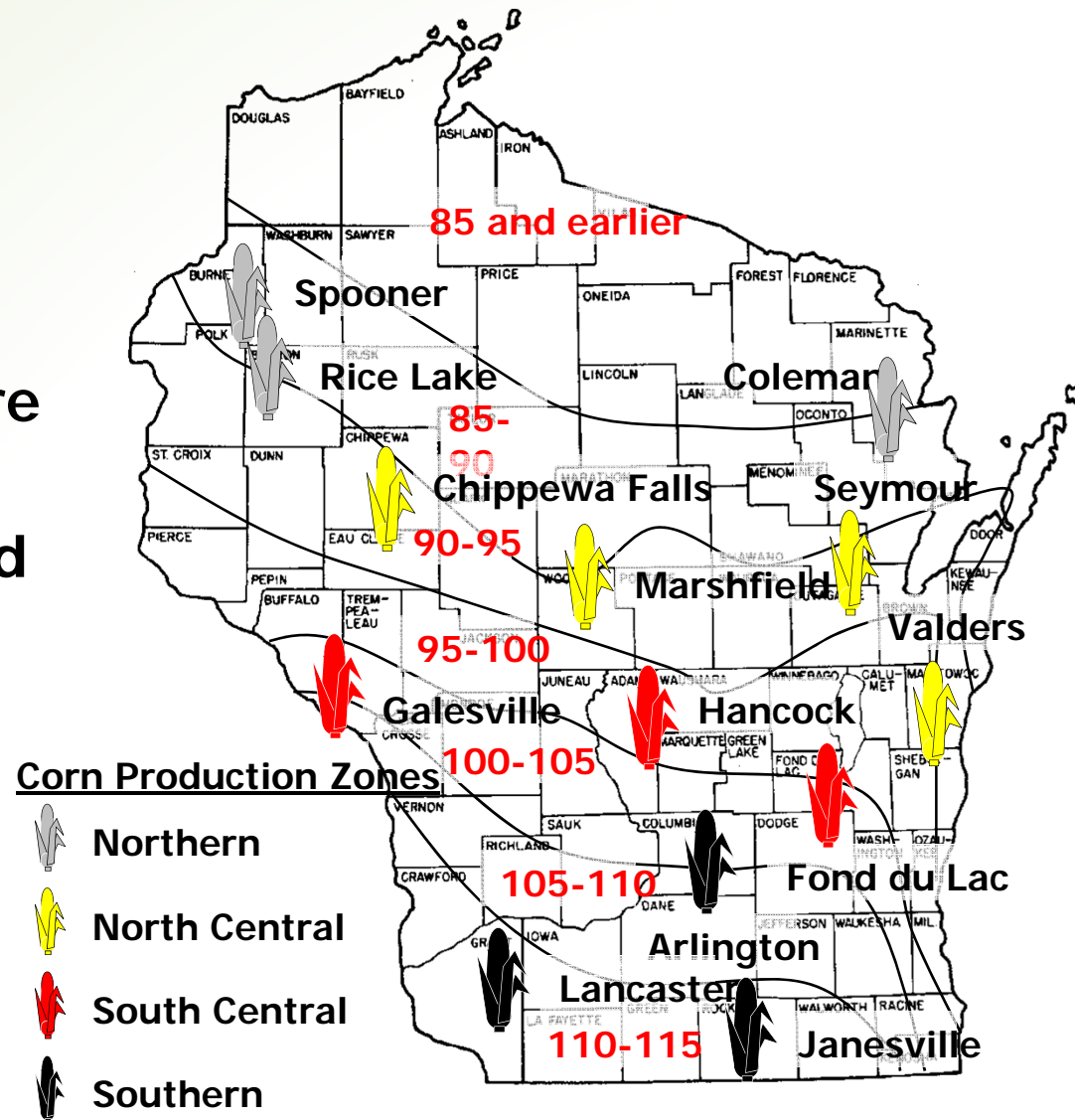
(\pm Standard Deviation of warm/cool and wet/dry seasons)



Corn Agronomy Program 2010

Rationale and Situation

- Corn is grown on ~4 million acres in WI. A one bushel increase by farmers increases farm income \$8 to \$20 million dollars annually.
- In 2010, 475 corn hybrids were tested at 13 locations.
- Objective: To provide unbiased performance comparisons of hybrid seed corn available in Wisconsin.



2010 Wisconsin Corn Performance Trials

Grain Summary

Location	<u>2000-2009</u>		<u>2010</u>		Percent change
	N	Yield	N	Yield	
Arlington	2003	213	163	243	14
Janesville	1900	221	163	232	5
Lancaster	1768	210	163	214	2
Fond du Lac	1486	185	156	198	7
Galesville	1580	205	156	209	2
Hancock	1609	218	156	181	-17
Chippewa Falls	1195	158	138	211	34
Marshfield	1600	163	171	175	7
Seymour	1318	170	138	137	-20
Valders	1551	165	138	137	-17
Coleman/Rhineland	209	183	59	152	-17
Spooner	1361	130	177	190	46

2010 Wisconsin Corn Performance Trials Silage Summary


Location	2000-2009		2010		Percent change
	N	Yield	N	Yield	
Arlington	639	9.6	69	9.2	-4
Lancaster	639	8.9	69	8.7	-3
Fond du Lac	665	8.3	76	6.9	-16
Galesville	670	9.3	76	9.1	-2
Chippewa Falls	392	7.3	66	7.6	4
Marshfield	595	7.3	66	7.0	-5
Valders	576	7.3	66	7.1	-3
Coleman/Rhineland	176	7.4	26	6.2	-16
Spooner	390	6.7	50	8.1	21

Hybrid Selection Principles

1. Use multi-location averages to compare hybrid performance
2. Evaluate consistency of performance
3. Pay attention to seed costs
 - ❑ <http://corn.agronomy.wisc.edu/Season/DSS.aspx>
4. Every hybrid must stand on its own for performance
5. Buy the traits you need

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WISCONSIN CORN HYBRID PERFORMANCE TRIALS



Grain • Silage • Specialty • Organic

UW
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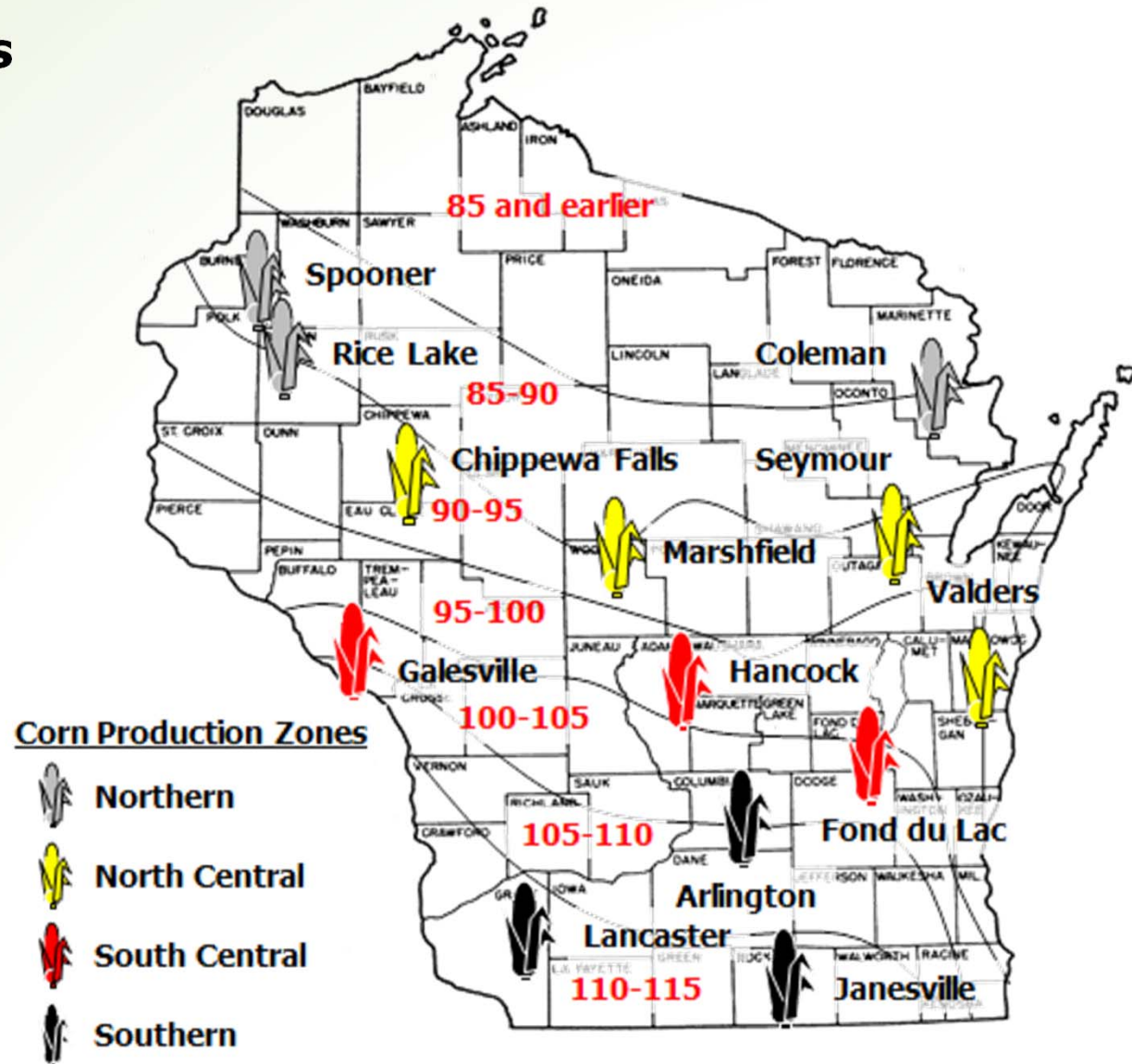
Joe Lauer
Kent Kohn
Thierno Diallo

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College of Agricultural and Life Sciences,
University of Wisconsin
University of Wisconsin-Extension
Wisconsin Crop Improvement Association

2010

Materials and Methods

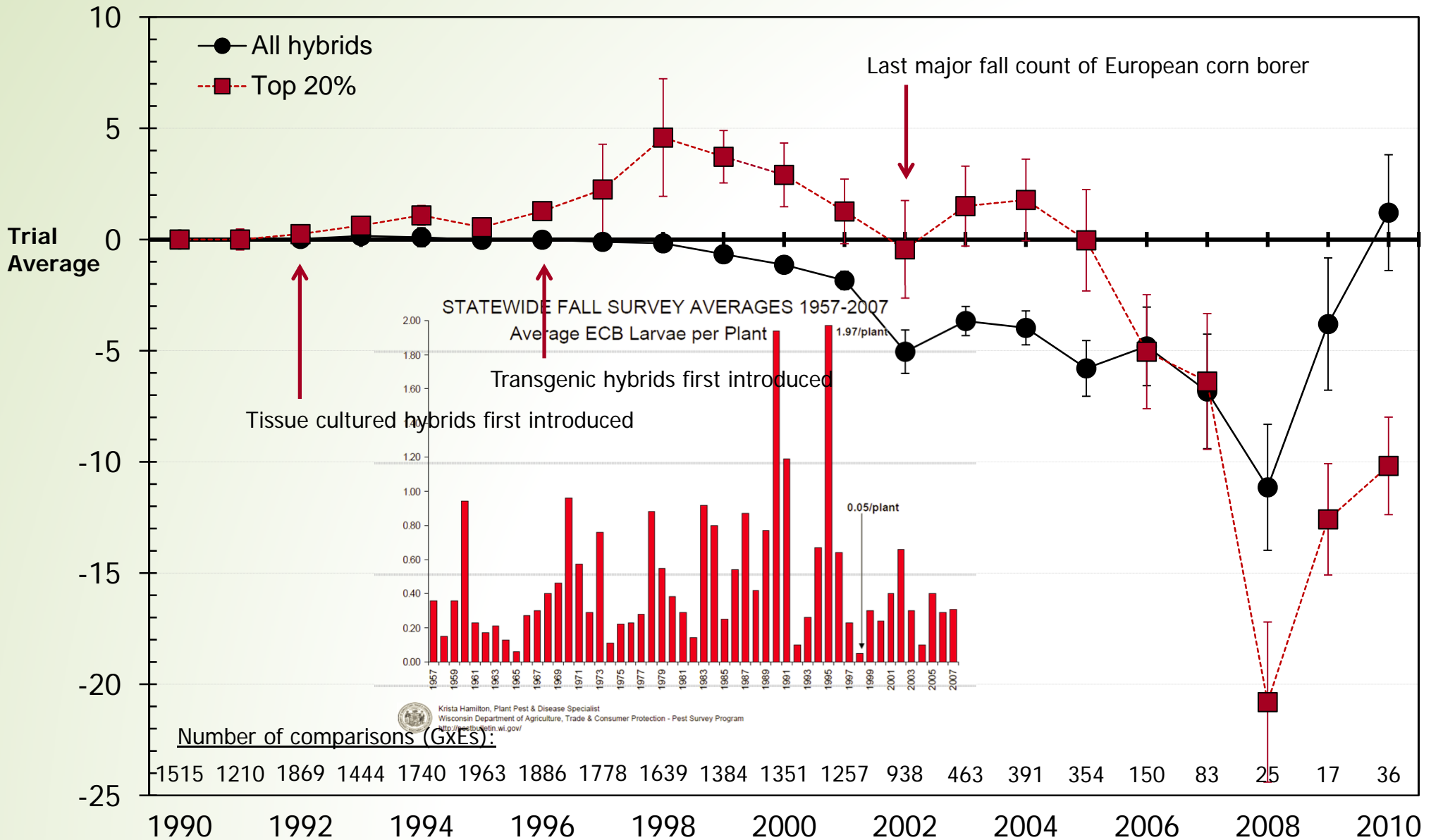
- UW hybrid performance trials (1990 to 2010)
- Comparison methods
 - ✓ Isoline v. All hybrids
 - ✓ Test genetics v. systems
 - ✓ All hybrids v. Top 20% group
 - ✓ State v. Zone v. Location
- Cohorts
 - ✓ Trait
 - ✓ Event by itself
 - ✓ Event by itself AND stacked
 - ✓ Technology
- Measures
 - ✓ Actual yield
 - ✓ Relative performance
 - Frequency
 - Percent
 - Trial average



Relative performance of conventional corn hybrids

Grain yield difference (bu/A) = hybrid average – trial average

Grain yield (bu/A)

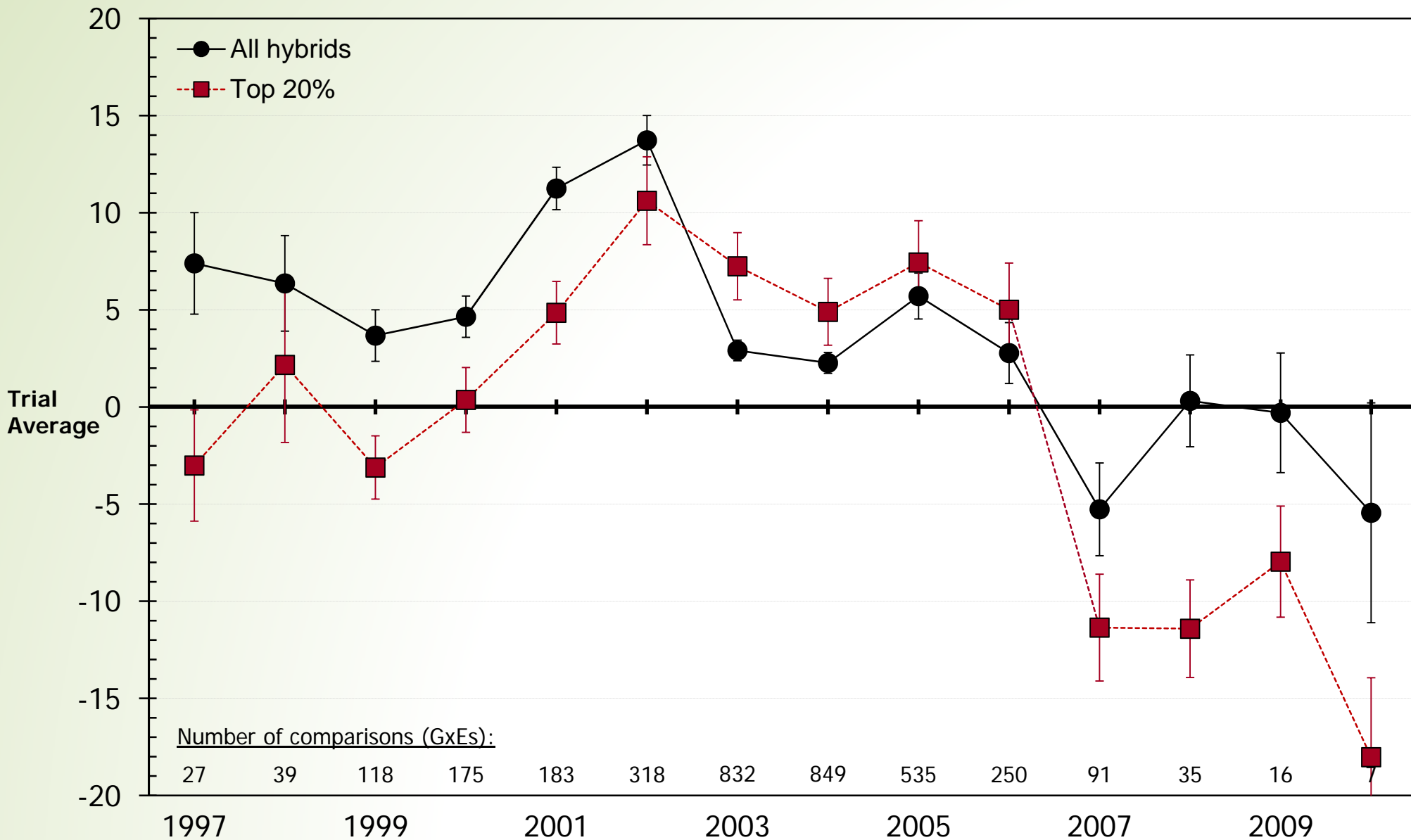




Relative performance of hybrids with Mon810

Grain yield difference (bu/A) = hybrid average – trial average

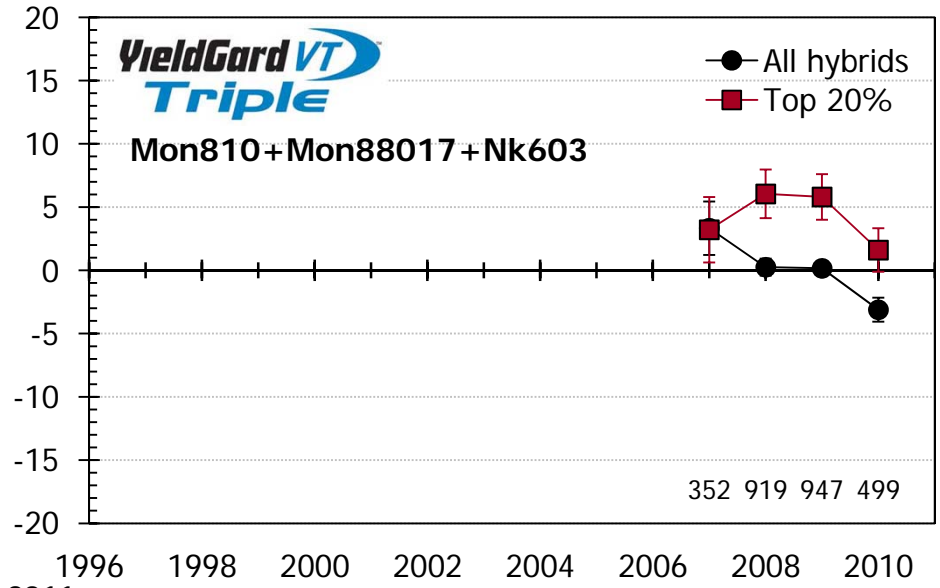
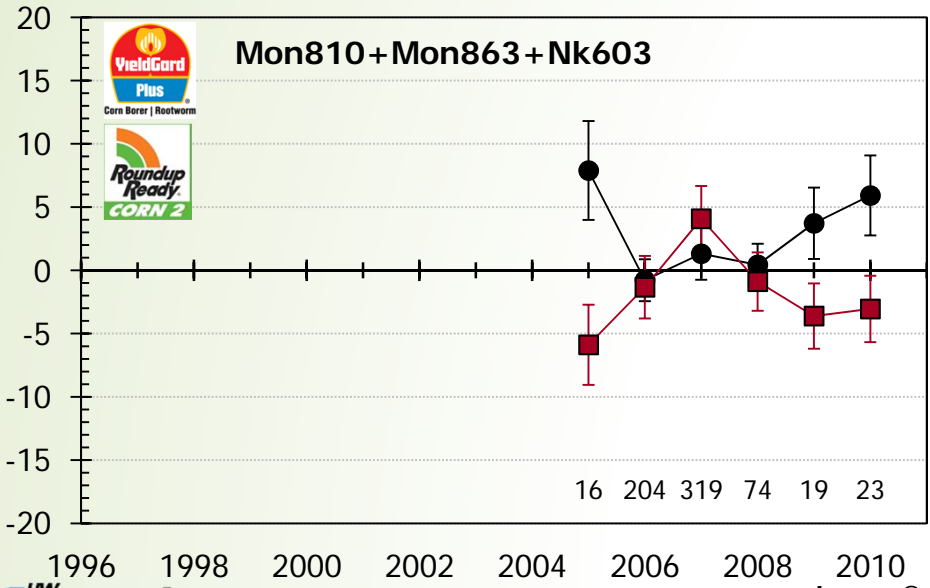
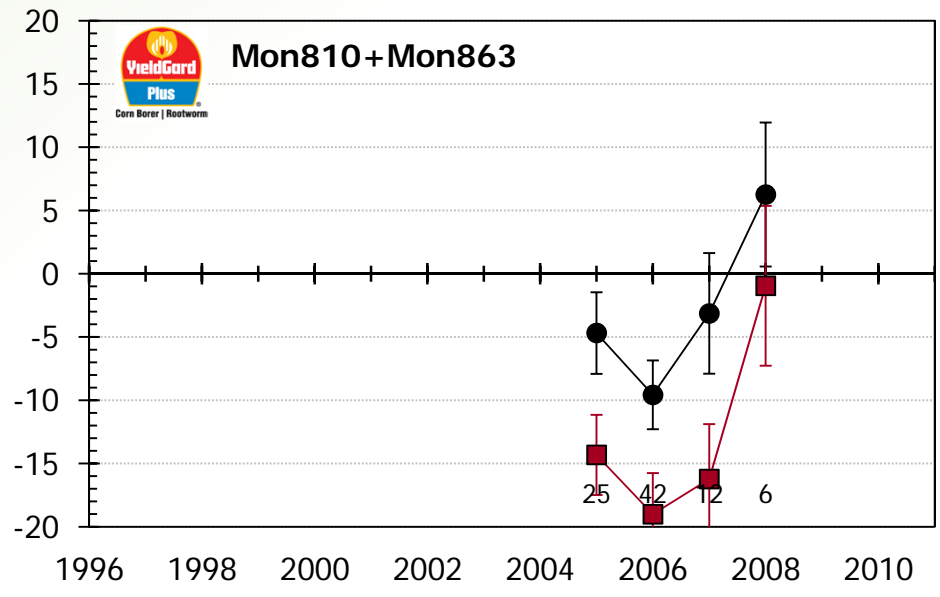
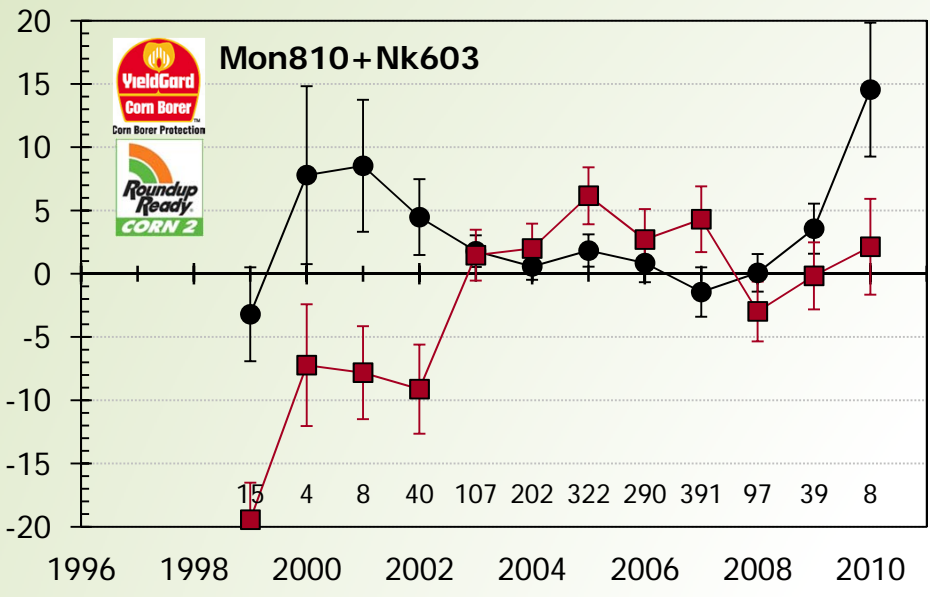
Grain yield (bu/A)













Relative performance of hybrids with Mon810

Grain yield difference (bu/A) = hybrid average – trial average



Performance of selected corn transgenic events in Wisconsin during 2010 (All hybrids).

Technology	Traits: Events	GxE	Diff.
		N	Bu/A
	Conventional: None	36	1.2
	CB,CR,RR: Mon810+Mon88017+Nk603	499	-3.1
	CB,CR,RR: Mon89034+Mon88017+Nk603	53	2.4
	CB,LL,RR: Bt11+T25+GA21	104	5.0
	CB,LL,RR: TC1507+T25+Nk603	209	1.7
	CB,CR,LL,RR: Bt11+MIR604+T25+GA21	248	-1.7
	CB,CR,LL,RR: TC1507+DAS591227+T25+GA21	20	-6.8
	CB,CR,LL,RR: TC1507+ DAS591227+ T25+ Nk603	115	2.4
	CB,CR,LL,RR: TC1507+ Mon89034+ DAS591227+ Mon88017+ T25+ Nk603	105	-2.2
	LSD (0.10)		6.8

† GxE: Number of replicated hybrid means used to calculate Diff.

‡ Diff.: Grain yield difference = hybrid average – trial average

Tropical Corn (Low starch) – Is there a place for it in Wisconsin?

Joe Lauer, Pat Hoffman, Mike Bertram, and Zen Miller

- **Rationale:**

- ✓ Feed for growing heifers is different than for a high performing dairy cow.

- An ideal forage should have:

- High yield
 - High energy (high digestibility)
 - High intake potential (low fiber)
 - High protein
 - Proper moisture at harvest for storage

- Adapted corn silage may have too much energy

- **Objective: To measure yield, adaptation and quality of tropical corn hybrids**



Materials and Methods

- **Mix of on-farm and research station trials**

- ✓ 2006

- Everett Farm
- Luedtke Farm
- Pethke Farm
- Schuessler Farm

- ✓ 2007

- Arlington, WI
- De Pere, WI
- Malone Farm
- Marshfield, WI
- Stratford, WI

- ✓ 2008 and 2009

- Arlington, WI
- Marshfield, WI (2009: Planting date)
- Stratford, WI

Adapted corn		Tropical corn	
Dahlco	4013RRBTRW	Agroceres	AG1051
Dairyland	DST11725	Agroceres	AG2060
Dairyland	DST11907	DeKalb	AG8060
DeKalb	DKC50-44	DeKalb	AG9010
DeKalb	DKC54-46	DeKalb	AG9020
Garst	8922YG	DeKalb	DKB215
NK Brand	N78-D6	DeKalb	DKB290
Pioneer	34N44	DeKalb	DKB390
Pioneer	38B83	DeKalb	DKB393
Spangler	324G	DeKalb	DKB499
Kaltenberg	K8105LF	DeKalb	DKB789
MARS	EX2 (Leafy)	Hyttest	HT92-90W
Kaltenberg	Male Sterile	Hyttest	HT94-99W
		Jung	HDS04
		MARS	EX1 (Blend)
		Pioneer	30F34

Tropical Corn Results

Year	Trait	Yield T/A	Moisture %	NDF %	NDFD %	Starch %	Milk per Ton	Milk per Acre
	Average [†] Hybrid	8.0	64	47	59	30	3040	24900
2006	Adapted	6.0	65	42	59	30	2980	17700
	Tropical	6.0	73	54	58	14	2520	14900
	LSD(0.10)	NS	3	4	NS	5	170	2360
2007	Adapted	6.7	55	42	55	32	3170	21300
	Tropical	5.5	73	67	54	2	2020	11000
	LSD(0.10)	0.8	3	3	NS	1	90	1750
2008	Adapted	7.2	54	39	59	37	3140	22600
	Tropical	5.6	76	60	59	5	2370	13200
	LSD(0.10)	0.6	2	2	NS	3	90	1770

[†] Average hybrid from UW Silage Performance trials (N=7339 GxEs, 1989-2010)

Corn Seed Treatments – Do they make a difference?

- **Growers must do ALL of the right things to minimize early season STRESS**
- **Rain a growers best friend or worst enemy**
 - ✓ Rainfall - soon after planting that results in saturated or nearly saturated soils - is as important a factor on yield as is date of planting or tillage type
 - ✓ Grower's today plant large numbers of acres of corn each day-increasing the at risk acres when a major weather front comes through
- **Objective: To evaluate efficacy of corn seed treatments**



Efficacy of Corn Seed Treatments

Disease	Favorable Environment	Captan	Maxim	Apron
Rhizoctonia	Rainfall followed by cool and then warm weather	Good	Good	Poor
Fusarium	Warm, wet soil	Good	Excellent	Poor
Pythium	Likes cold and wet	Poor	Poor	Excellent
Helminthosporium	??	Good	Good	Poor
Penicillium	??	Good	Good	Poor
Aspergillus	??	Good	Good	Poor



Materials and Methods

- **Assumption:** Corn seed treatments are applied randomly to hybrids in the UW trials.

- ✓ Number of tests is important

- **Cohorts**

- ✓ Trait
 - ✓ Event by itself
 - ✓ Event by itself AND stacked

- ✓ Technology

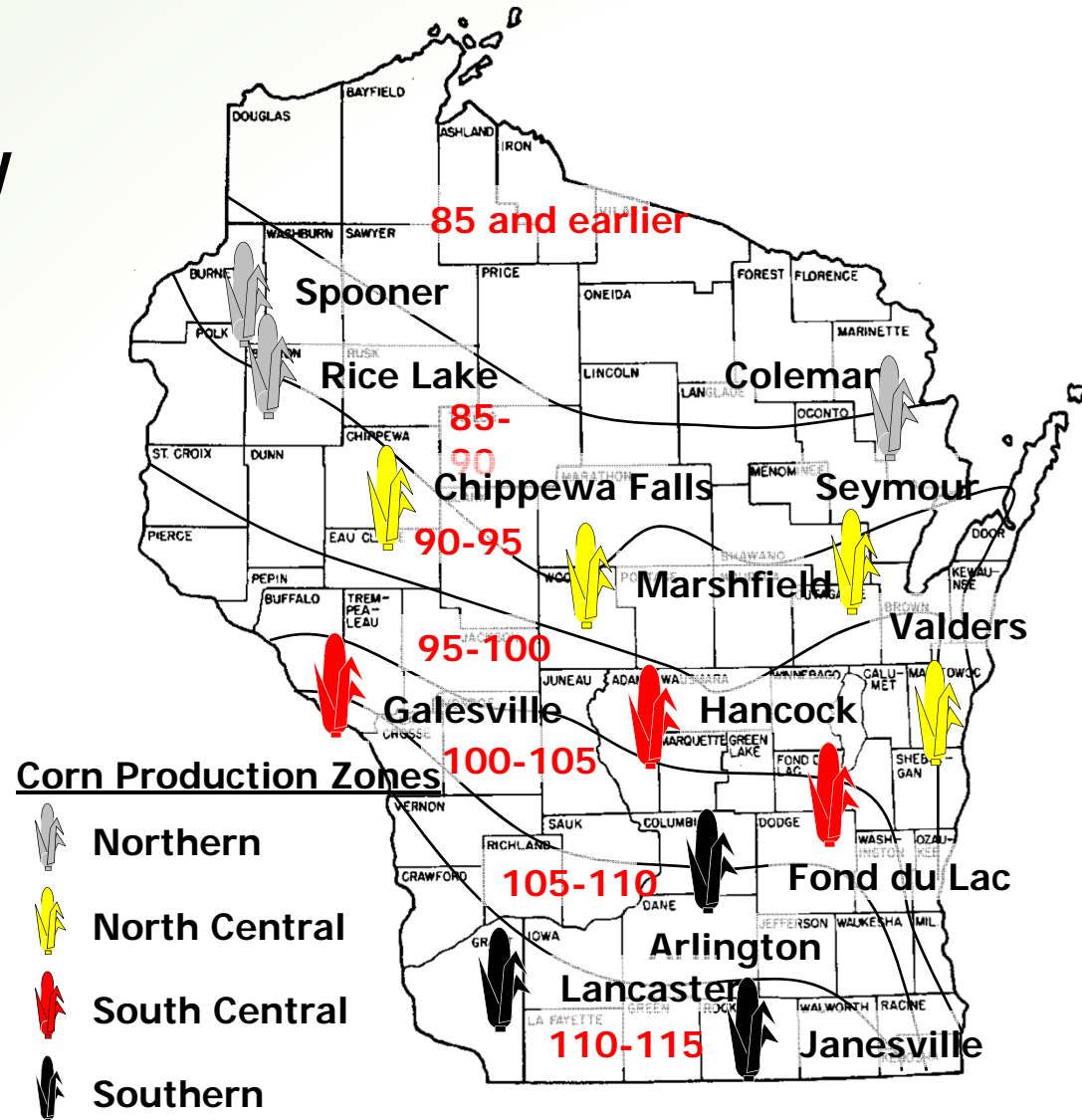
- **Measures**

- ✓ Actual yield
 - ✓ Relative performance

- Frequency

- Percent

- Trial average



Corn Seed Treatments

Common Names : Chemical Names



- **Fungicides**

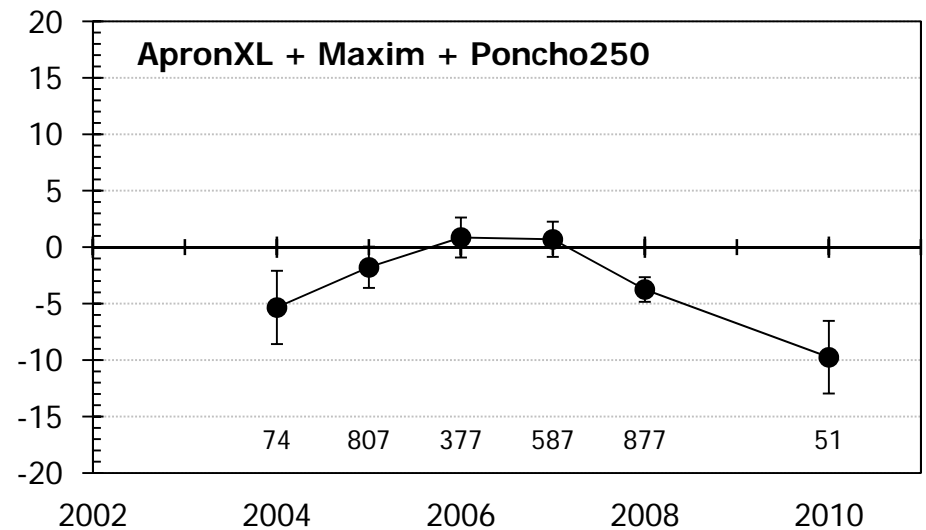
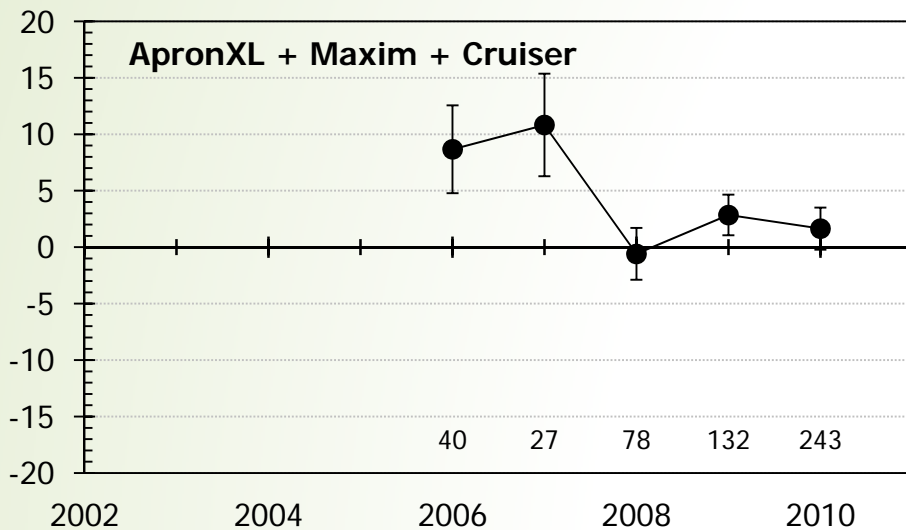
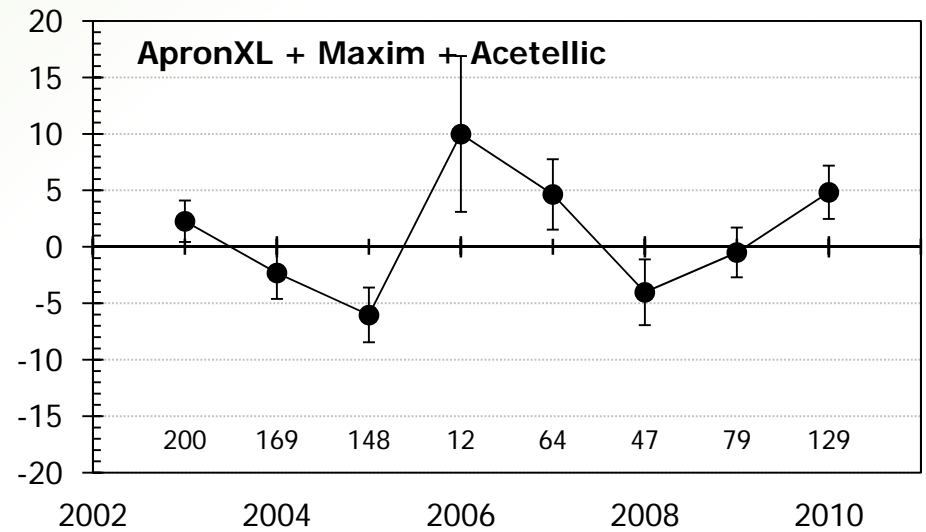
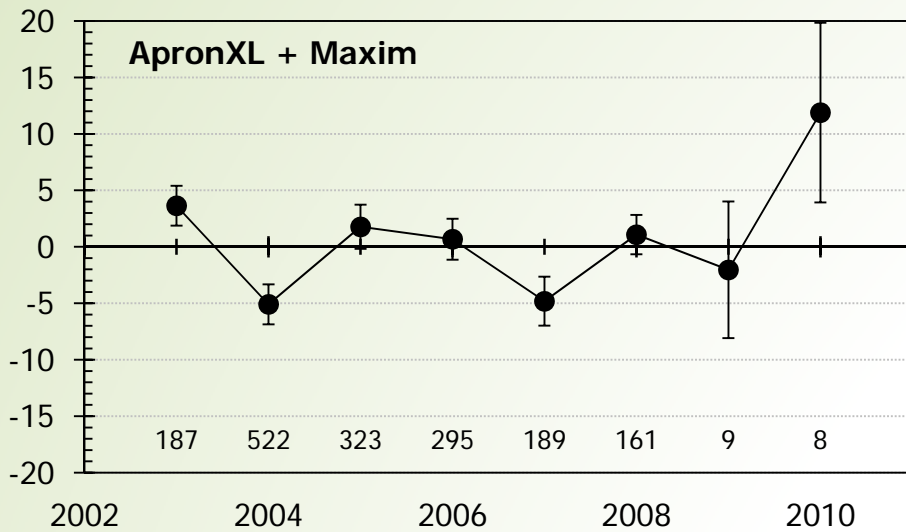
- ✓ Captan
- ✓ Maxim: Fludioxonil
- ✓ Apron FL, Allegiance: Metalaxyl
- ✓ Apron XL: Mefenoxam (Metalaxyl-M)
- ✓ Maxim XL: Fludioxonil+ Mefenoxam
- ✓ Dynasty, Protégé, Quadris, Trilex: Strobilurins

- **Insecticides**

- ✓ Lorsban: Chlorpyrifos
- ✓ Poncho250, Poncho1250: Clothianidin
- ✓ Gaucho, Admire, Condifor, Premier, Premise, Provado, and Marathon: Imidacloprid
- ✓ Assult, Baracuda: Permethrin
- ✓ Actellic, Nu-Gro: Pirimiphos-methyl
- ✓ Cruiser: Thiamethoxam

Relative performance of corn seed treatments

Grain yield difference (bu/A) = hybrid average – trial average



Conclusions

- **Hybrid Selection Principles**

1. Use multi-location averages to compare hybrid performance
2. Evaluate consistency of performance
3. Pay attention to seed costs
 - <http://corn.agronomy.wisc.edu/Season/DSS.aspx>
4. Every hybrid must stand on its own for performance
5. Buy the traits you need

- **Seed treatments:**

- ✓ Performance difference exist for seed treatments
- ✓ “Stay tuned”

- **Even though Tropical corn hybrids are 2-3 feet taller than adapted hybrids, they are lower yielding primarily due to grain yield**

- ✓ Lower starch content
- ✓ NDFD is similar
- ✓ Higher moisture content, so frost will need to kill the plant.
- ✓ Milk per Ton and Milk per acre is lower than adapted hybrids

- **Consider other options to produce heifer feed**

- ✓ Cut corn silage with
 - Straw
 - Grasses – Which species would work best?



Thanks for your attention!

Questions?



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WISCONSIN CORN HYBRID PERFORMANCE TRIALS



Grain • Silage • Specialty • Organic


Cooperative Extension

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2010

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