



Seven Wonders of the Corn Yield World

- **Ranks those factors that each year can have a positive (and sometimes negative) impact on corn yield**
- **Gives each factor an average bushel per acre value**



Crucial Prerequisites, but not Yield Wonders

- **Drainage**
- **Pest/Weed Control**
- **Proper soil pH & adequate levels of P and K based on soil tests**



Seven Wonders of the Corn Yield World

Rank	Factor	Value
		bu/acre
1	Weather	70+
2	Nitrogen	70
3	Hybrid	50
4	Previous Crop	25
5	Plant Population	20
6	Tillage	15
7	Growth Regulators	10
TOTAL		260 bu

Given key prerequisites



Seven Wonders of the Corn Yield World

Rank	Factor	Value	
		bu/acre	%
1	Weather	70+	27
2	Nitrogen	70	26
3	Hybrid	50	19
4	Previous Crop	25	10
5	Plant Population	20	8
6	Tillage	15	6
7	Growth Regulators	10	4
TOTAL =		260bu	100%

Given key prerequisites



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Improved Fertility Prerequisites **Total 260 bu**



Standard vs. High Tech Package

Fertility	No P or K based on soil test 100 lbs P ₂ O ₅ as MESZ (N, P, S, & Zn)
Nitrogen	180 lbs pre-plant as UAN 100 lbs extra N sidedress as Super-U
Genetics	RR Refuge Hybrid Triple stack Hybrid Both with soil insecticide at planting
Population	32,000 plants/ac vs 45,000 plants/ac Both in 30 inch rows and twin rows in 2010
Fungicide	No Fungicide Strobilurin Fungicide (@ R1)



High-Yield Omissions Study, 2009-2010



Ears from
1/1000 of an
acre

High Technology Package

Standard Practice



Omission Plot Experimental Design

TREATMENT	FACTORS					
	Fertility	Nitrogen	Genetics	Population	Fungicide	
HIGH TECH	MESZ	Base + Slow release	Triple stack	45,000	Strobilurin	
Remove Technology	Fertility	No P & K	Base + Slow release	45,000	Strobilurin	
	Nitrogen	MESZ	Base	45,000	Strobilurin	
	Genetics	MESZ	Base + Slow release	Refuge	45,000	Strobilurin
	Population	MESZ	Base + Slow release	Triple stack	32,000	Strobilurin
	Fungicide	MESZ	Base + Slow release	Triple stack	45,000	none
STANDARD	No P & K	Base	Refuge	32,000	none	
Add Technology	Fertility	MESZ	Base	Refuge	32,000	none
	Nitrogen	No P & K	Base + Slow release	Refuge	32,000	none
	Genetics	No P & K	Base	Triple stack	32,000	none
	Population	No P & K	Base	Refuge	45,000	none
	Fungicide	No P & K	Base	Refuge	32,000	Strobilurin

Standard vs High-Tech Two Years

Factor	Standard		High Tech	
	Yield	Δ	Yield	Δ
	bu acre ⁻¹			
None or All	193		245	
Fertility	197	+ 4	236	- 9
Nitrogen	198	+ 5	232	-13
Genetics	202	+ 9	225	-20
Population	187	- 6	238	- 7
Fungicide	198	+ 5	218	-27

LSD (p<0.10) = 6

Data from Champaign and Dixon Springs



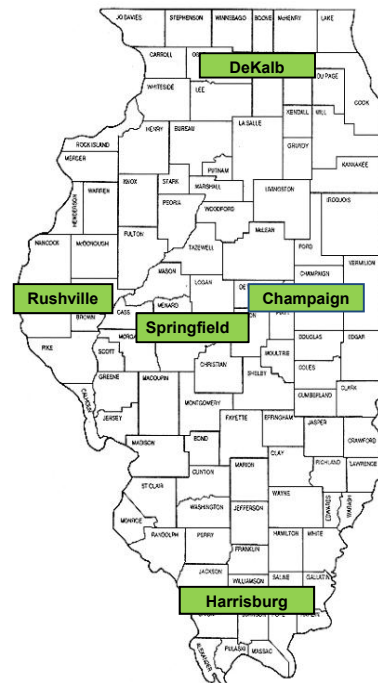
Omission Plots 2011

14+ plots at 5 sites with

- Banded fertility at planting
- Different MYP hybrids
- Twin rows vs 30 inch
- Different fungicides

Weather

- Different planting dates
- Different growing conditions



Improved Growth with Spring-Banded MESZ



Champaign, IL 2011



No Corn Plant Left Behind



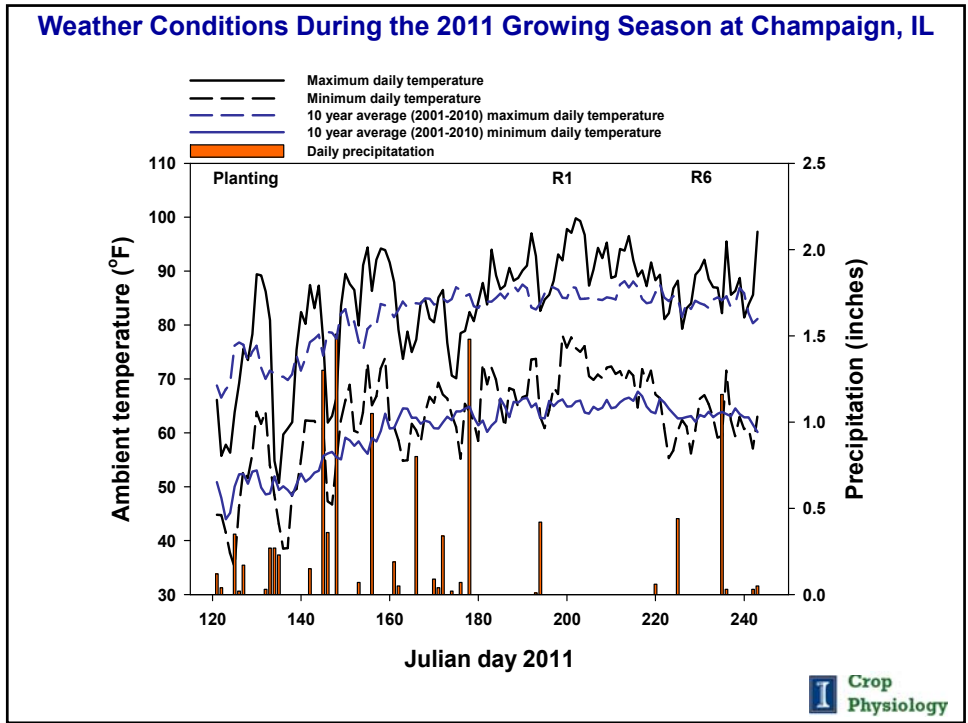
Standard Technology



High Technology

Champaign, IL 2011



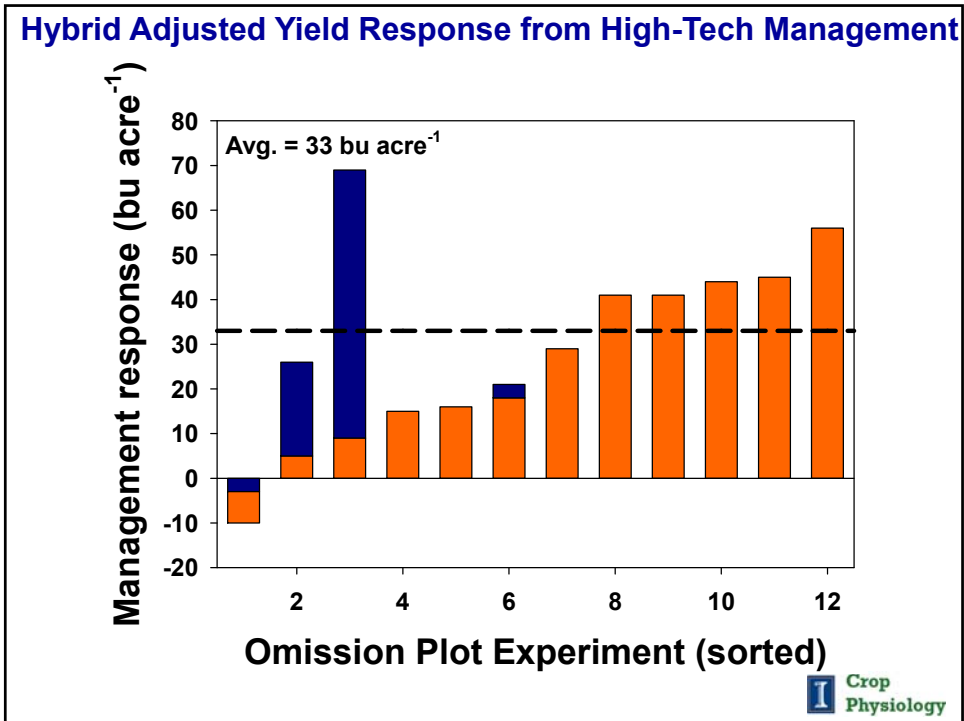


2011 Omission Plot at Champaign, IL

Factor	Standard		High Tech	
	Yield	Δ	Yield	Δ
----- bushels acre ⁻¹ -----				
None or all	153		198	
Fertility	175	+22	180	-18
Nitrogen	176	+23	190	-8
Genetics	161	+8	177	-22
Population	127	-26	200	+2
Fungicide	159	+6	183	-16

LSD (P ≤ 0.1) = 16

Crop Physiology



Value of Input Factors with Standard or High-Tech

Factor	Standard	High Tech
	-----Δ bushels acre ⁻¹ -----	
Fertility	14	17
Nitrogen	8	11
Population	-10	1
Fungicide	3	8

Average of 12 individual trials in Illinois in 2011

Crop Physiology

Conclusions

- **Yield gains are possible from a systems approach to crop management that combines individual practices known to impact yield**
- **The factor or factors which drive increased yield in the high-tech package depend on the weather**



Conclusions

- **Increasing plant population may be the foundation for pushing higher yields, but it must be managed**
- **Selecting the right hybrid for the high-tech package is crucial, especially in a stressful environment**



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