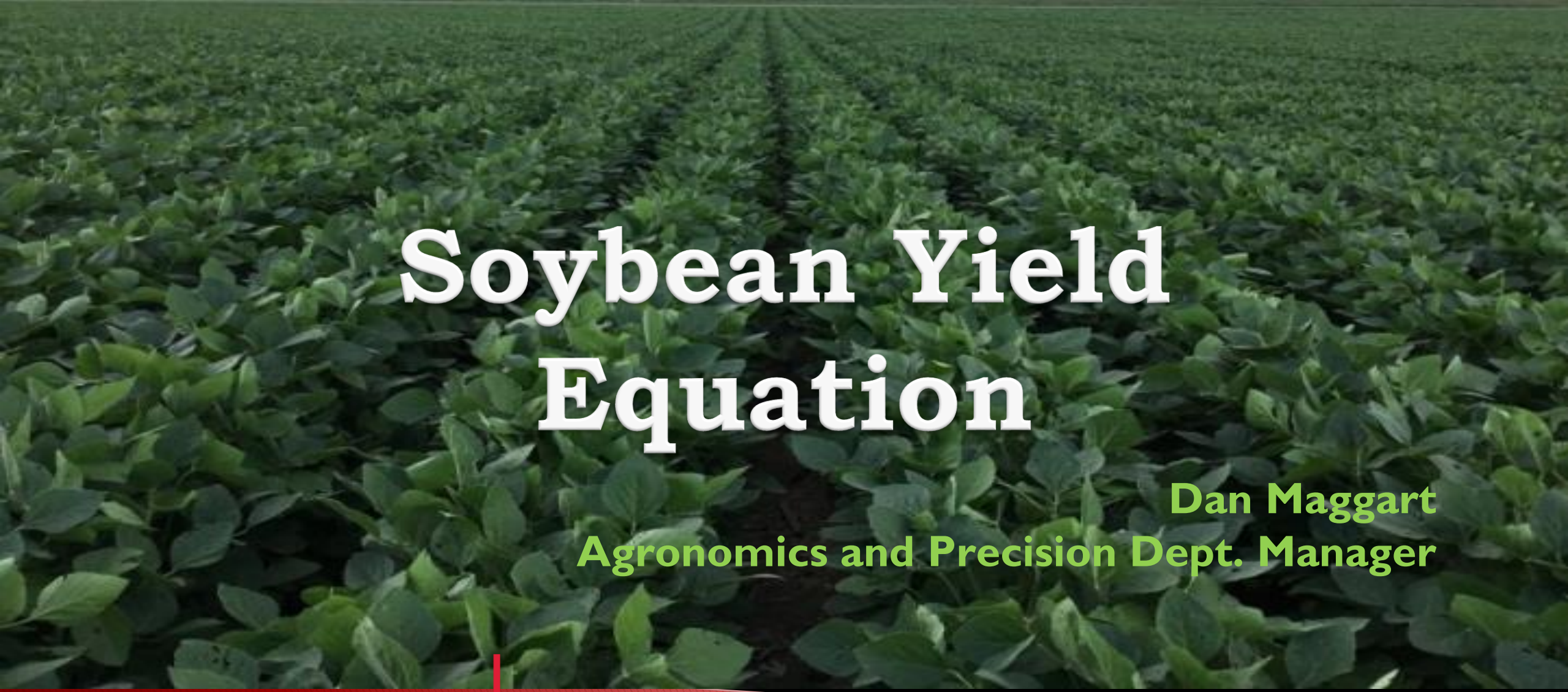

PRAIRIELAND FS, INC.
Welcome
Dan Maggart
Agronomics and Precision Dept. Manager



Soybean Yield Equation

Dan Maggart
Agronomics and Precision Dept. Manager

PRECISION AGRONOMY

PRAIRIELAND FS, INC.

The Maggart Family
2018

Technology Points to Good Agronomy

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PRECISION AGRONOMY

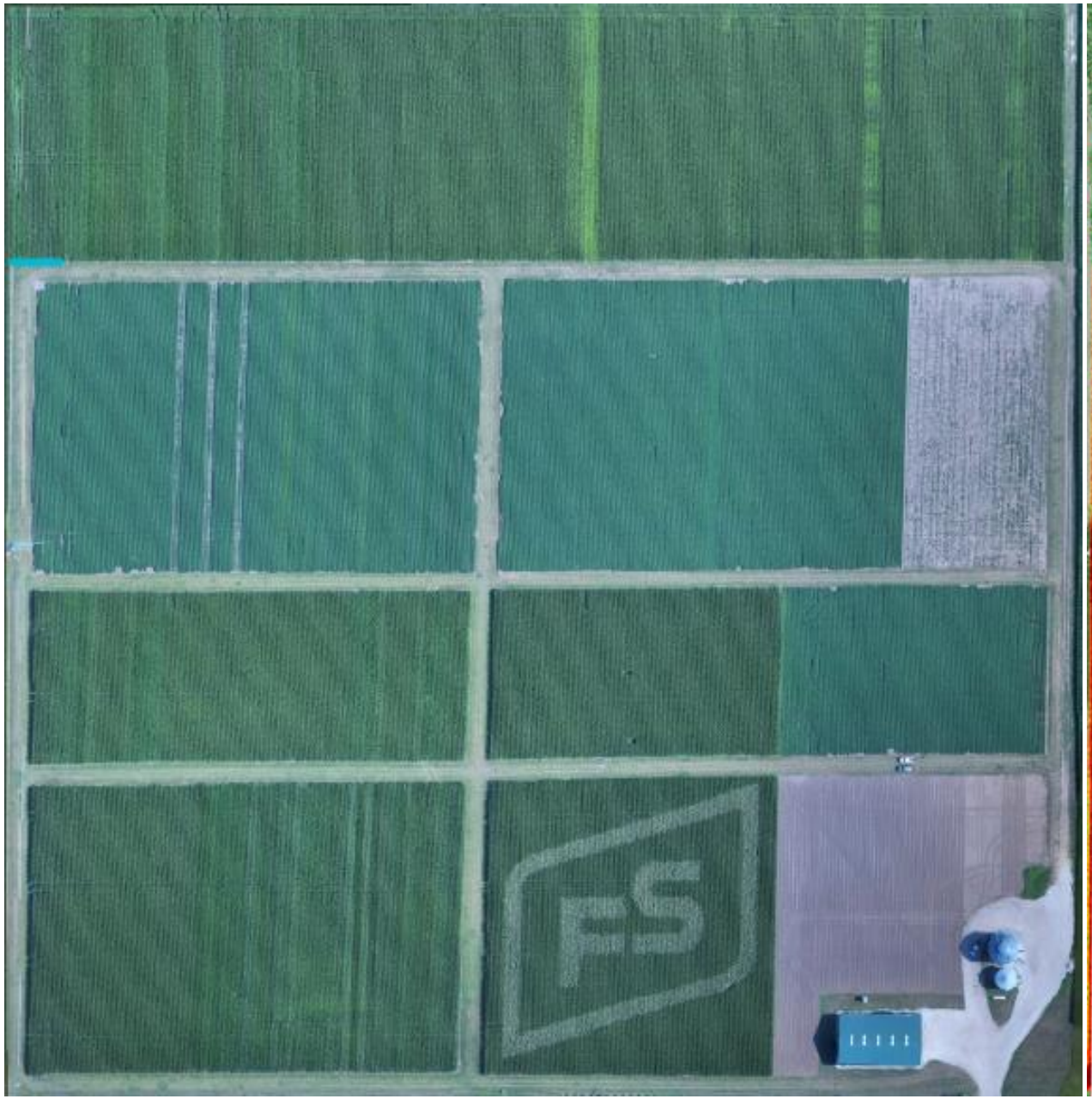
Applied Research at Prairieland FS, INC

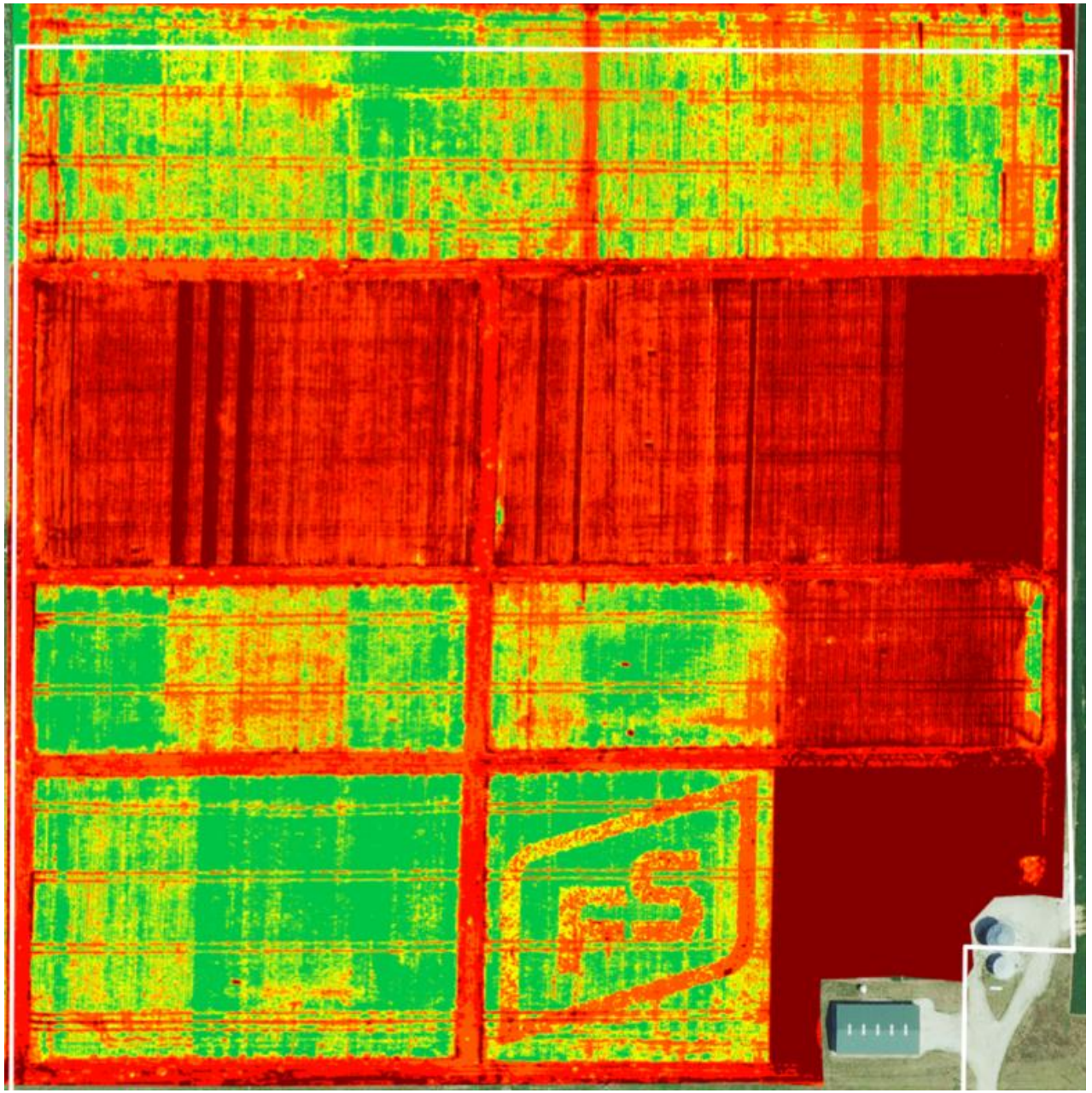
Fixed Research Sites(4)
Demo-Proof of concept- Re-Search Kinderhook, Mt. Sterling, LaBelle, Winchester

MiField- Applied Research
Field level "Applied Research" Partnership in Discovery

Data Aggregation
Common Field Protocols
1200 Trials in 2018

Data Analysis
Profit assessment
Concept adoption





June 6. NDVI

Soybean Yield Equation

Soybean Yield is Dynamic with Environment
Very dependent on Factors that we can not control

Every field has it own set of limitations- some we create

There are certain core Agronomics drivers that build the foundation for stable yield
Our Job is to Understand how to setup the soybean for high yield and ROI.

Dan Maggart

- At or around Anthesis Temps ≥ 90˚F
- ET. can exceed precipitation and soil water reserves
- Night temps of ≥ 70˚F the rate of respiration can exceed the rate of photosynthesis

photosynthesis

$6CO_2 + 6H_2O + \underline{\text{energy}} \rightarrow C_6H_{12}O_6 + 6O_2$

energy in

aerobic respiration

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + \underline{\text{energy}}$

energy out

Temperature and Grain fill

Month	Year	Precip Total	Temp. Avg. High	Days >90˚F	Temp. Avg. Low	Nights > 70˚F
June	2012	0.76	85.8	7	59.3	4
	2014	8.14	82.7	0	63.4	2
	2017	3.67	86.2	5	63.1	4
	2018	2.09	88.8	13	67.5	12
July	2012	1.05	95.1	24	68.5	11
	2014	2.31	80.3	1	59	1
	2017	3.21	90.2	15	67.7	11
	2018	3.47	87.7	13	65.7	8
August	2012	3.39	87.8	13	59.2	2
	2014	4.76	83.2	5	65.7	6
	2017	3.44	82.7	2	60.8	0
	2018	4.27	87.8	13	67	9
Sept.	2012	4.56	76.5	4	52.3	2
	2014	6.59	76.1	1	52.8	2
	2017	0.55	84.3	1	56	9
	2018	4.51	82.5	7	59.2	9

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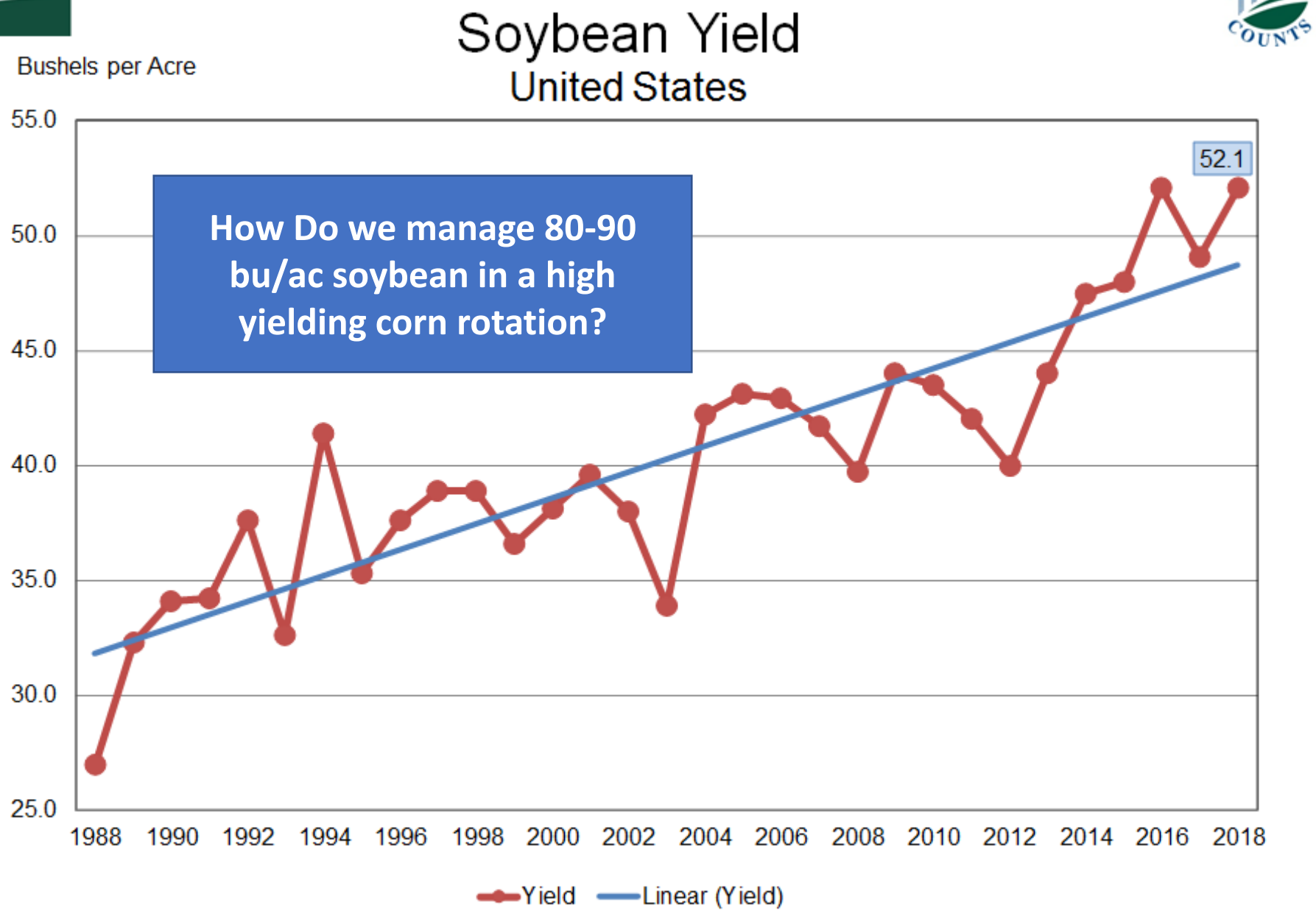
2018 - 65 bushel Soybean yield in Illinois will be the highest state yield TD.

2016 - 59 bushels, last record

The past five-year average is 59 bushels per acre, 7 bushels higher than the trend yield.

Dr. Gary Schnitkey
University of Illinois



The Law of the Minimum

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Full Barrel = Max Yield

Genetic Potential

Plant Health

Row Spacing

Controlling Pests

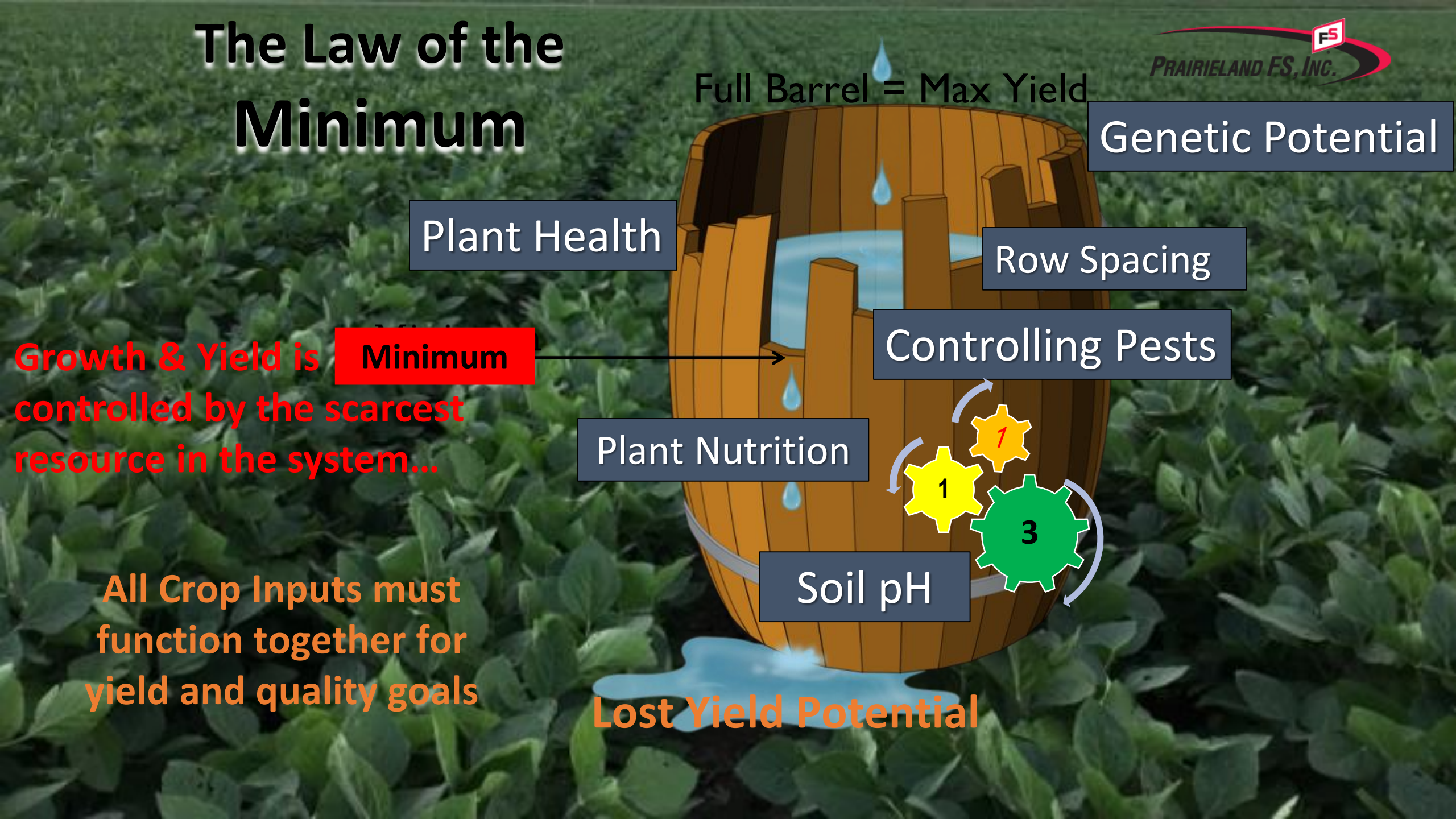
Plant Nutrition

Soil pH

Growth & Yield is controlled by the scarcest resource in the system…

Minimum

All Crop Inputs must function together for yield and quality goals



Lost Yield Potential

The Soybean Yield Equation

~~Controlling~~ the Variable That Drive Yield

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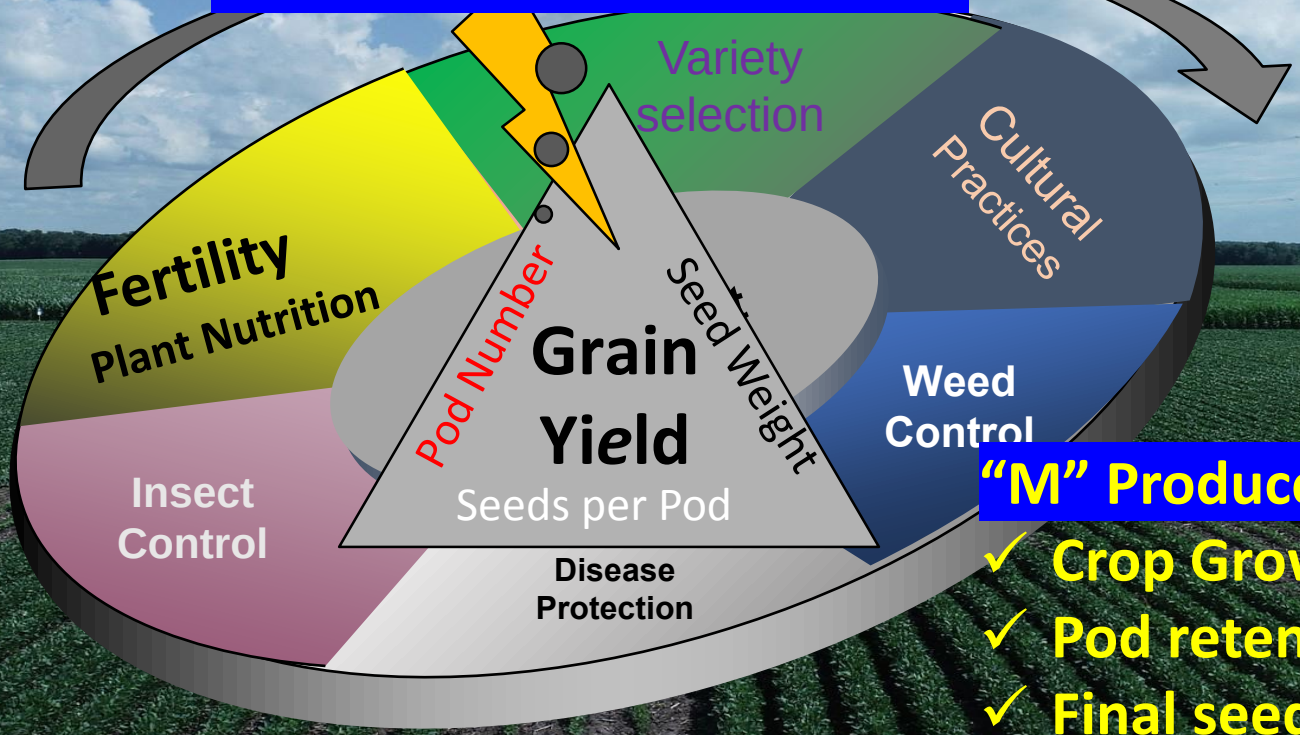
G x E x M

Mitigating "E"

Environmental Extremes

Maximizing "G"

Genetic Potential

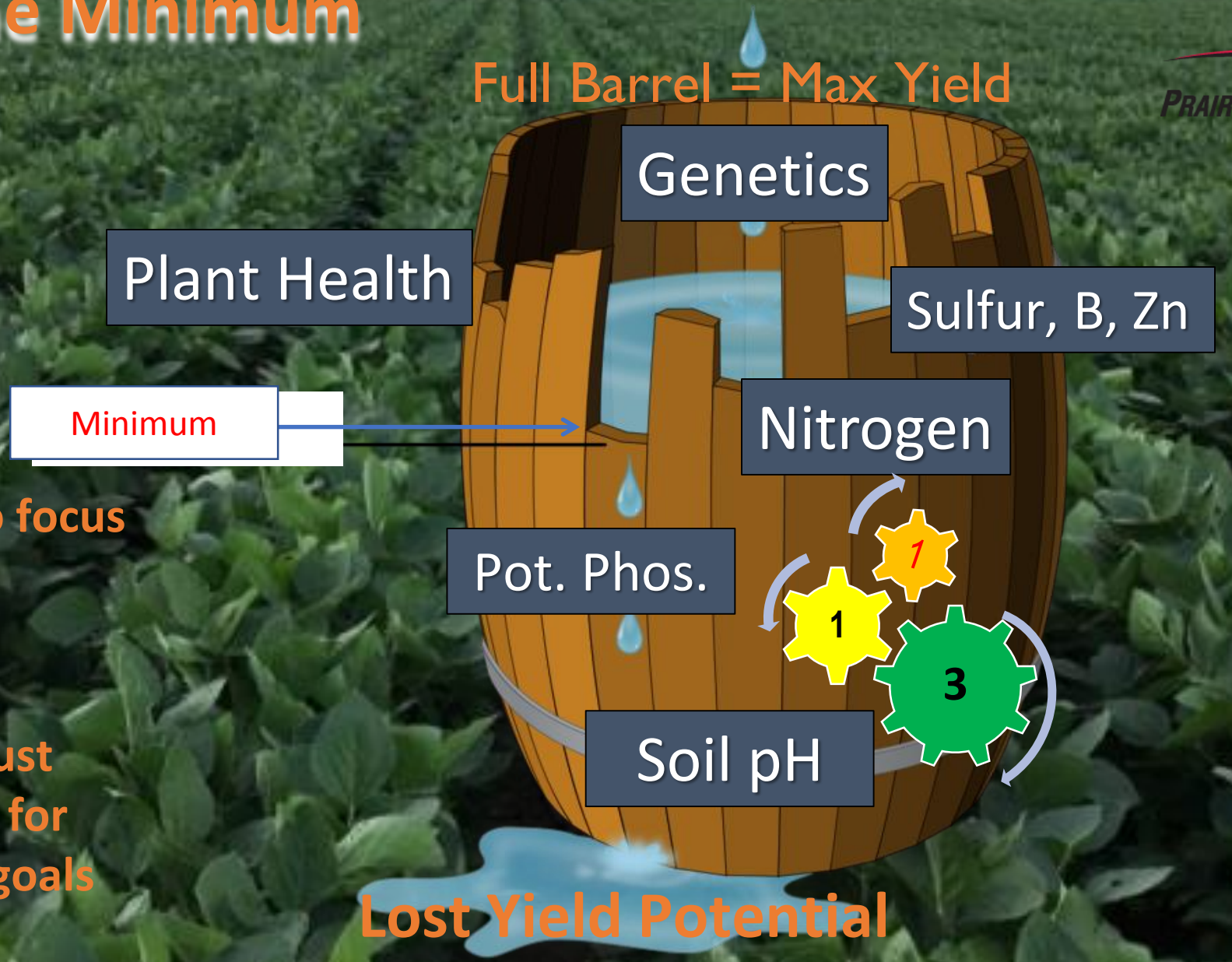


"M" Producer Management

- ✓ Crop Growth Rate (CGR)
- ✓ Pod retention at nodes
- ✓ Final seeds/pod
- ✓ Effective Seed Fill Period

(Number of fill Days x Rate)

The Law of the Minimum Soil Fertility



It is insufficient to focus on each area of Management in isolation…..
All Crop Inputs must function together for yield and quality goals

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Soil Fertility BMP's

- ✓ Grid Soil Sample to discover limiting factors related crop nutrient (Grids/Zones?)
- ✓ Manage variables (zones) with VR Tech. Allocate Resources X Productivity
- ✓ Correct pH issues first - Consider tillage depth with Limestone applications
- ✓ In Reduced Tillage, periodically pull 3" samples to assess stratification – mostly pH
- ✓ Sustaining High Yield rotations requires nutrient concentration - **sufficiency**
- ✓ Move to Annual Fertilization … One application for Corn….One application for Soybean

PRECISION AGRONOMY

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BUILDING A STRONG FOUNDATION

Variable Rate Technology objective is to apply inputs where greatest chance of return exists. Areas of high productivity vs. areas of low productivity.

PRECISION AGRONOMY FS

- **Grid soil sample data is necessary for determining accurate soil fertility levels and for evaluating potential changes to soil fertility build up applications**

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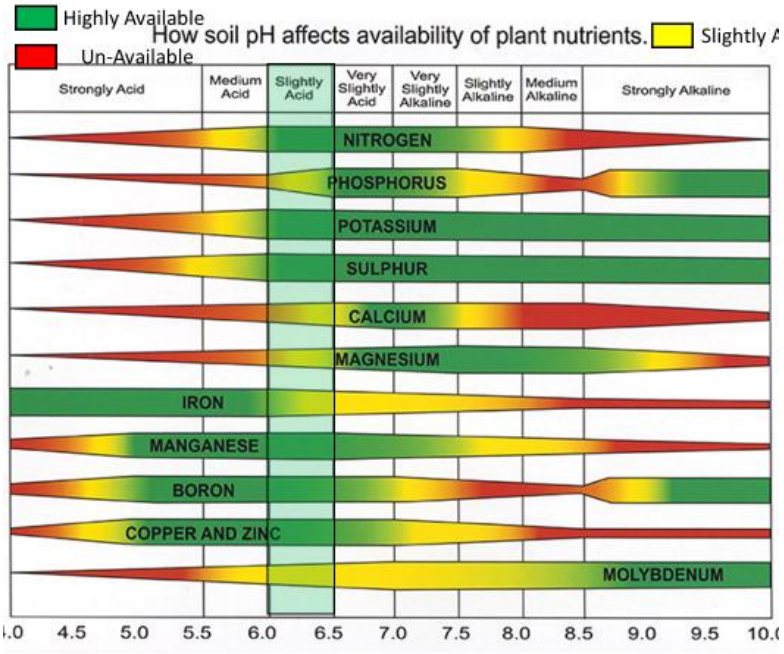
- **Spatial yield data is necessary to accurately account for observed variations in crop productivity**

How pH Affects Nutrient Solubility



Grain Removal ALONE

180 Bu/ac. Corn	230 Bu/ac. Corn
60 Bu/ac. Soybean Soybean	80 Bu/ac.
Total Needs	Total Needs
240 DAP	315 DAP
190 Potash	250 Potash

80 Bu/ac. Soybean	
130 DAP	10lbs. Sulfur/ac.
155 Potash	

Yield Response Curve

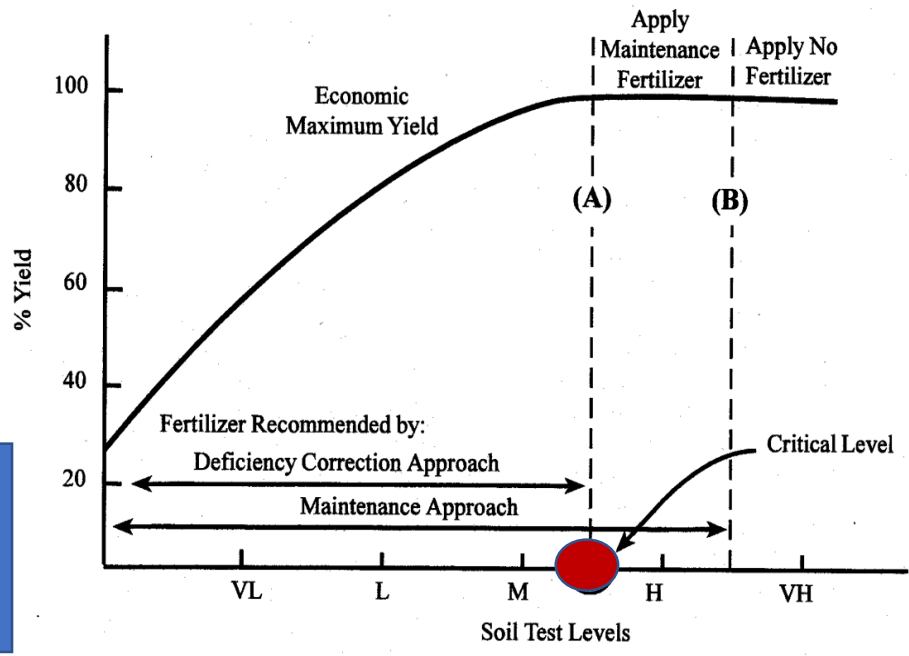


Table 1. Relative yield of selected crops at different pH levels.

(Adapted from USDA, 2011)

Crop	pH				
	4.7	5.0	5.7	6.8	7.5
	Relative Average Yield				
Corn	34	73	83	100	85
Wheat	68	78	89	100	99
Alfalfa	2	9	42	100	100
Soybean	65	79	80	100	93

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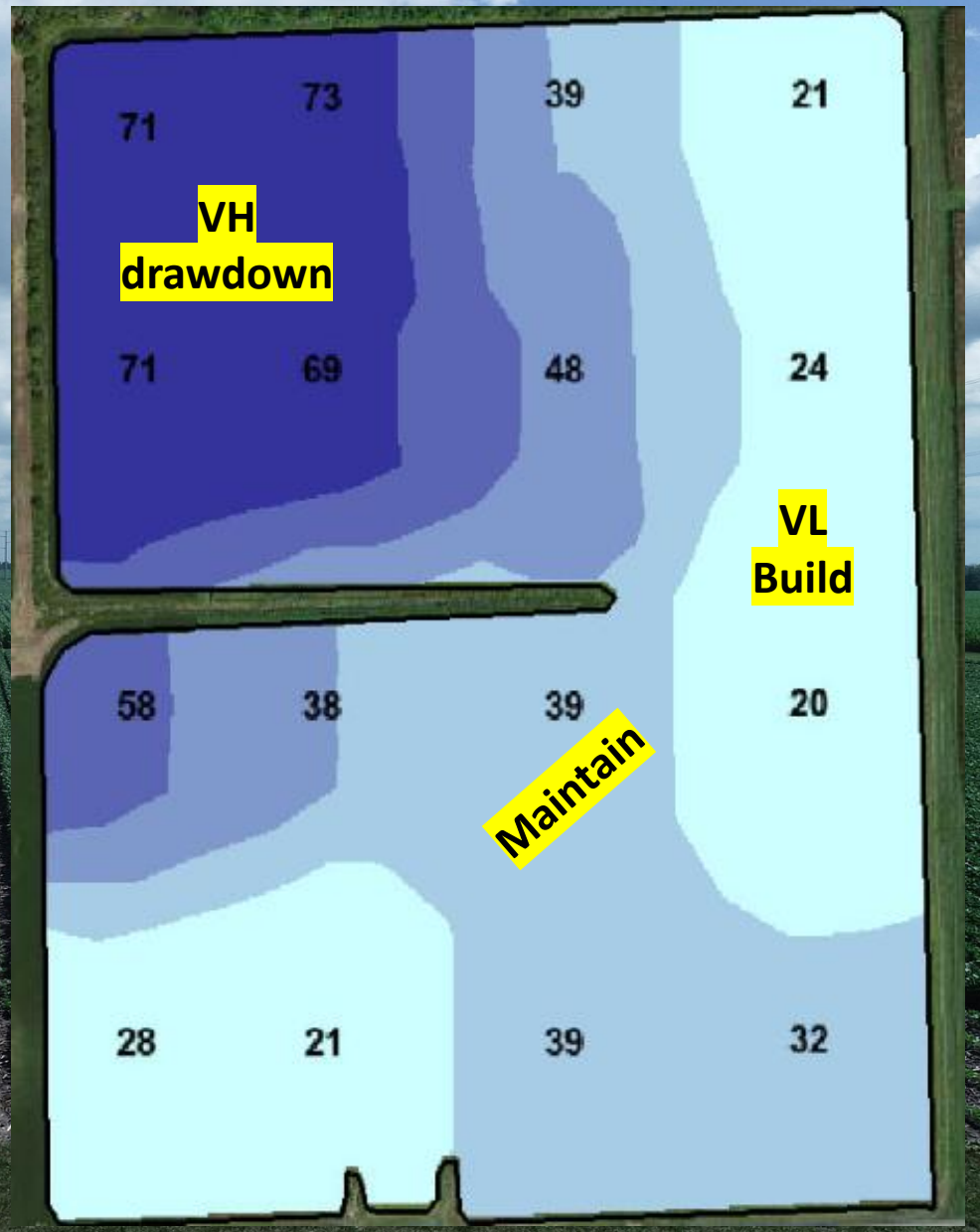
Soil Test Potassium
Critical Level 300 lbs./ac

Soil Test Phosphorous
Critical Level 40 lbs./ac.



What Nutrient is most likely to be yield limiting to soybeans in a “High Yield” Corn and Soybean rotation?

- A.) Potassium
- B.) Sulfur
- C.) Boron
- D.) Phosphorous
- E.) Calcium

Corn 230 bu./ac
P-K Uptake and Partitioning

P_2O_5

Total Required - 101 lbs/ac.

217 DAP

Grain Removal - 80 lbs/ac.

HI - 79%

Deep demand at Grain fill

Lives intercellular-part of cell structure

K_2O

Total Required - 180 lbs/ac.

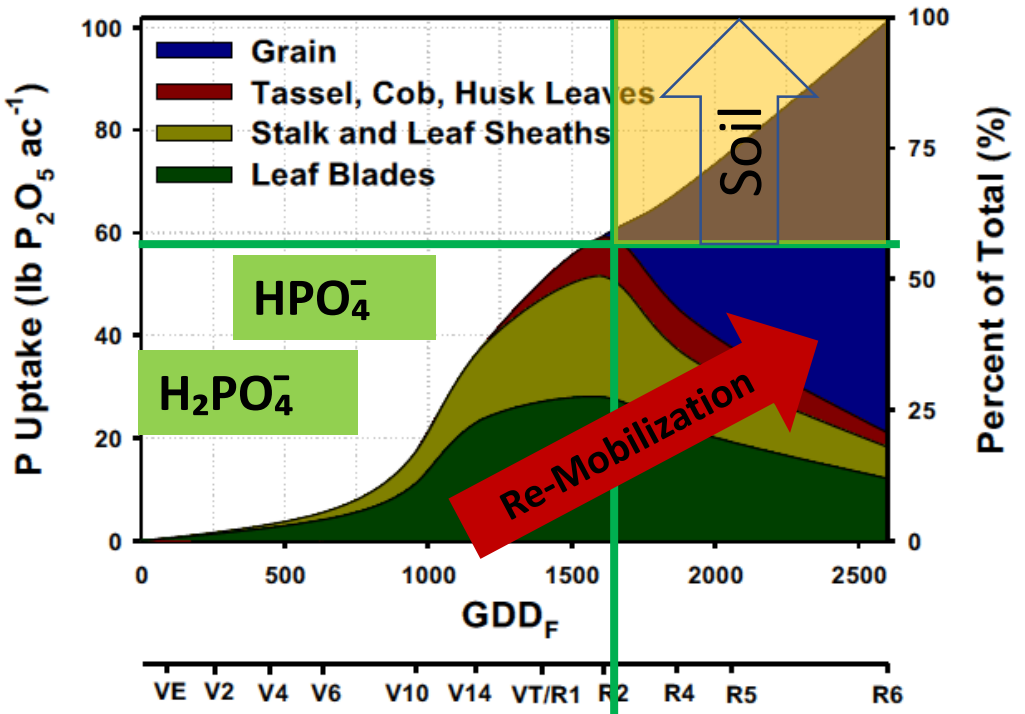
300 Potash

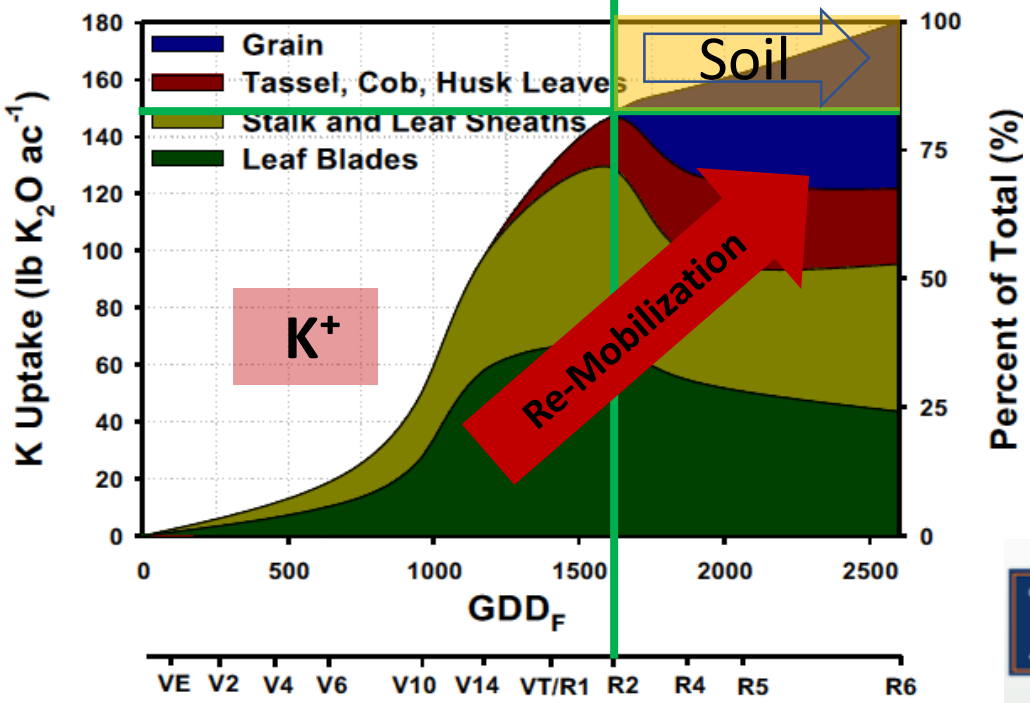
Grain Removal - 59 lbs/ac.

HI - 32%

Remobilized from lower plant parts

Lives extracellular- Part of the liquid fraction outside of plant cells





Crop Physiology

Soybean 60 bu./ac
P-K Uptake and Partitioning

P_2O_5

Total Required - 43 lbs/ac.

Grain Removal - 35 lbs/ac.

HI - 81%

Deep demand at Grain fill

100 DAP

130 DAP

Lives intercellular-part of cell structure

K_2O

Total Required - 153 lbs/ac.

Grain Removal - 70 lbs/ac.

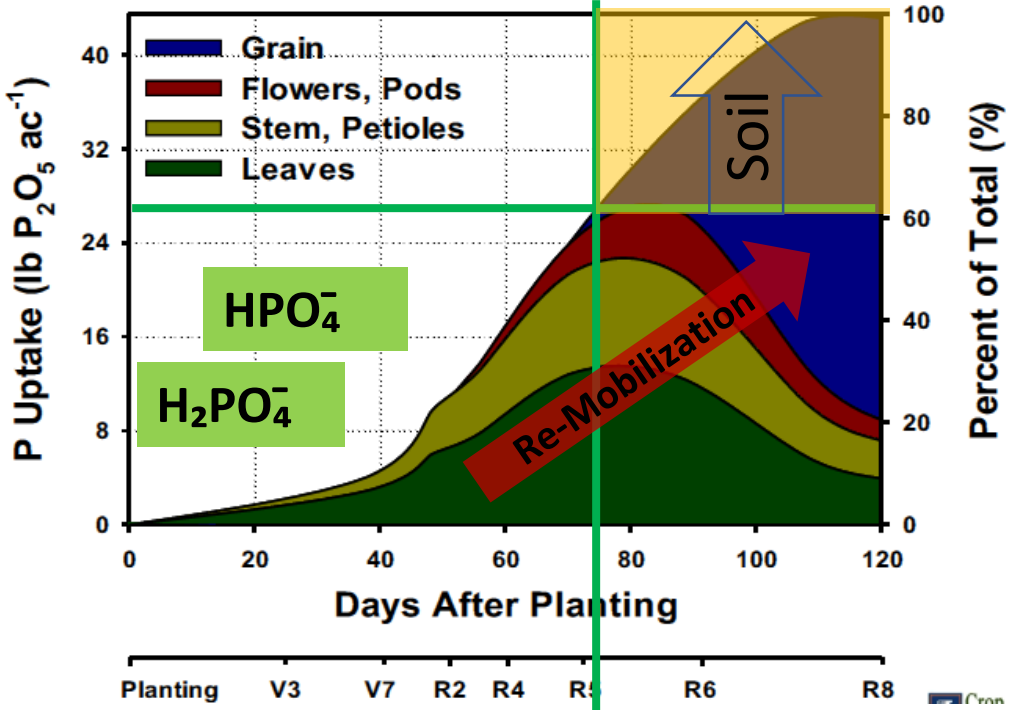
HI - 46%

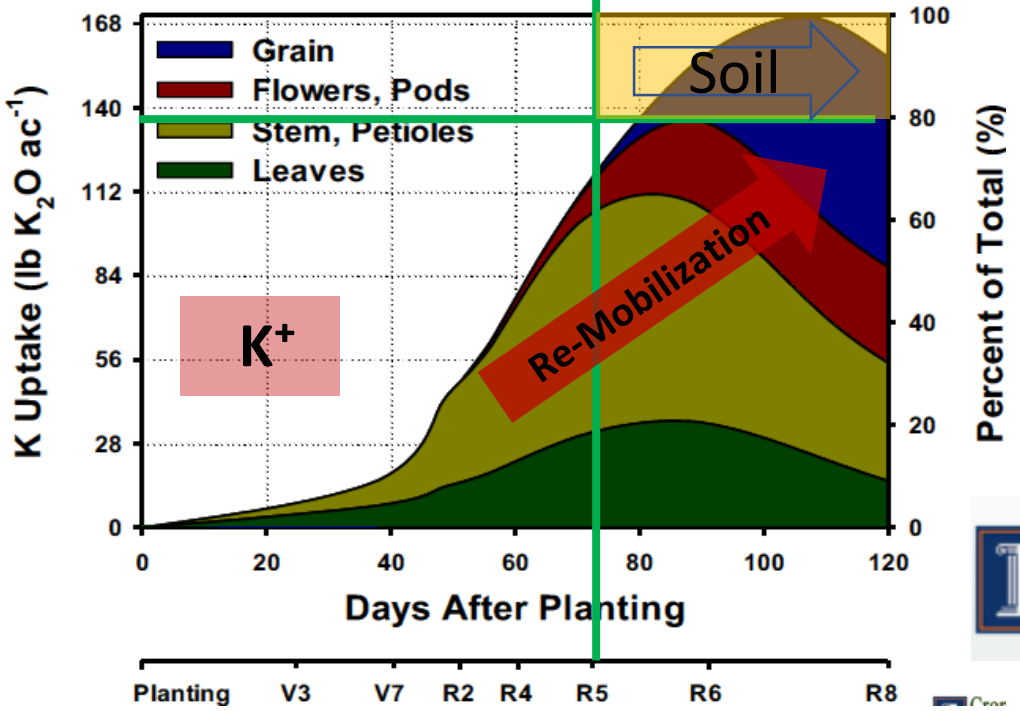
255 Potash

340 Potash

Remobilized from lower plant parts

Lives extracellular- Part of the liquid fraction outside of plant cells

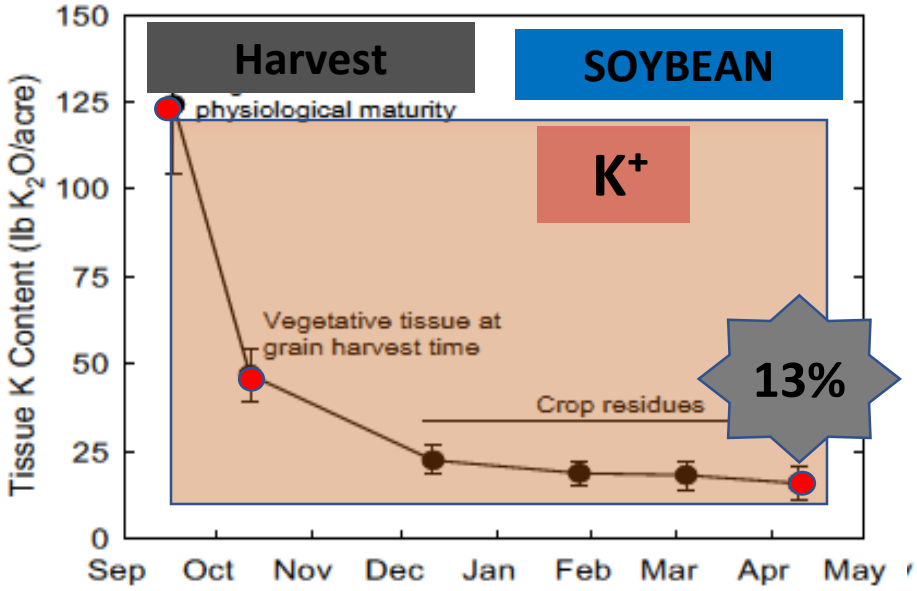


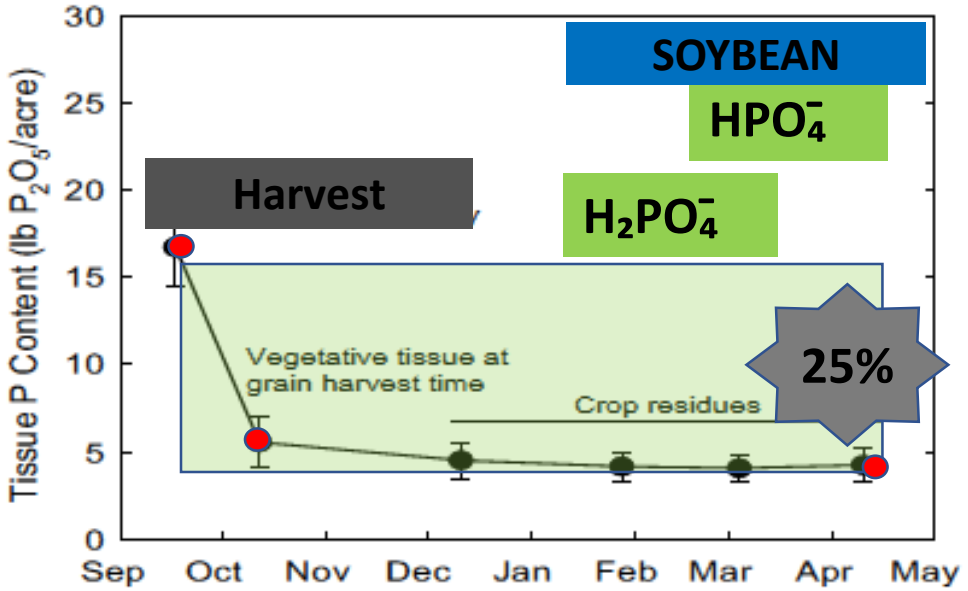


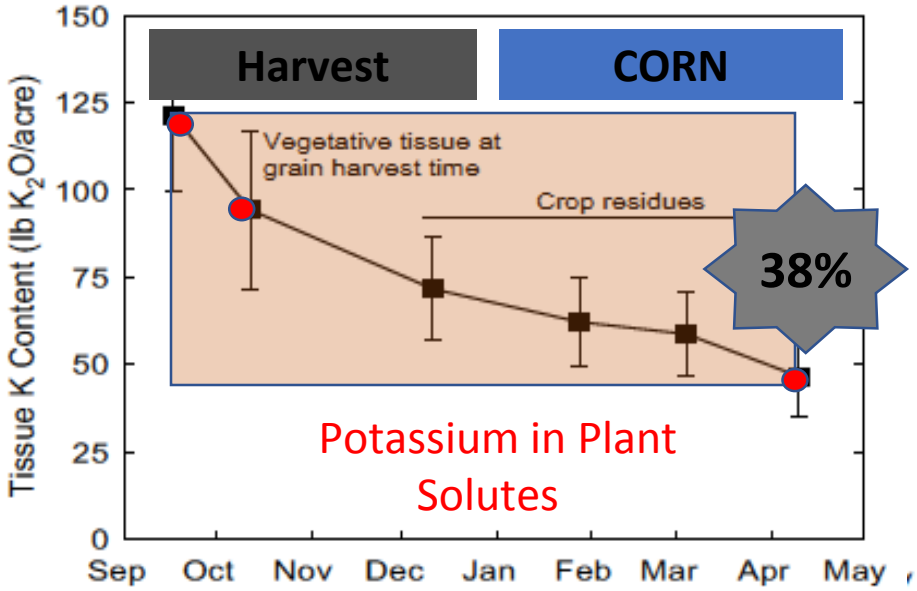
Crop Physiology

P-K Recycle-Crop Residue

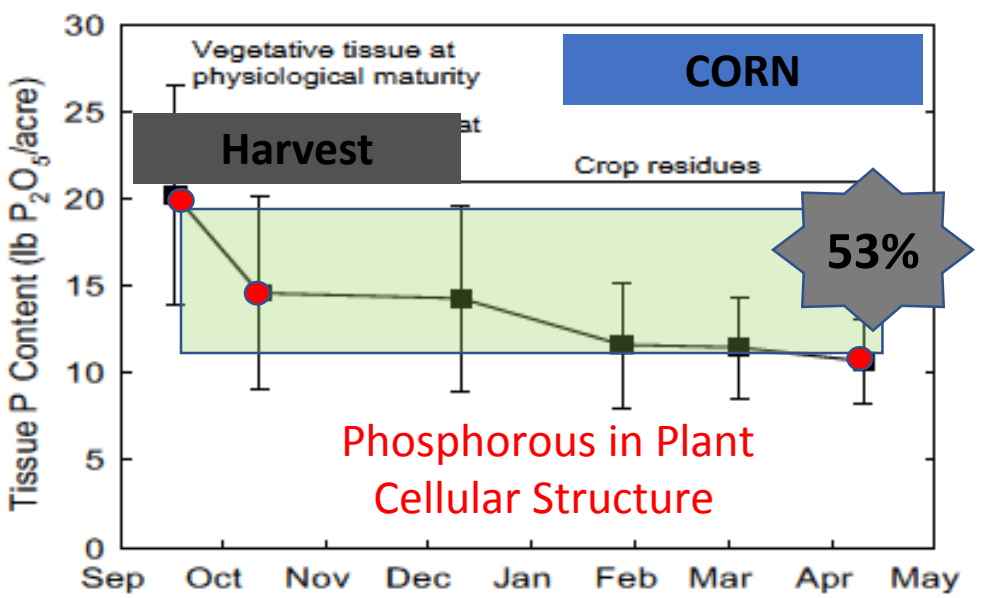
IOWA STATE UNIVERSITY
Extension and Outreach







Potassium in Plant Solutes



Phosphorous in Plant Cellular Structure

What Nutrient is most likely to be yield limiting to soybeans in a “High Yield” Corn and Soybean rotation?

- A.) Potassium
- B.) Sulfur
- C.) Boron
- D.) Phosphorous
- E.) Calcium

Yetter Stalk Devastator
Winchester Demo Site 2018

Yetter Stalk Devastator


With Yetter Stalk Devastator
With YETTER STALK DEVASTATORS


No Yetter Stalk Devastator
No YETTER STALK DEVASTATORS

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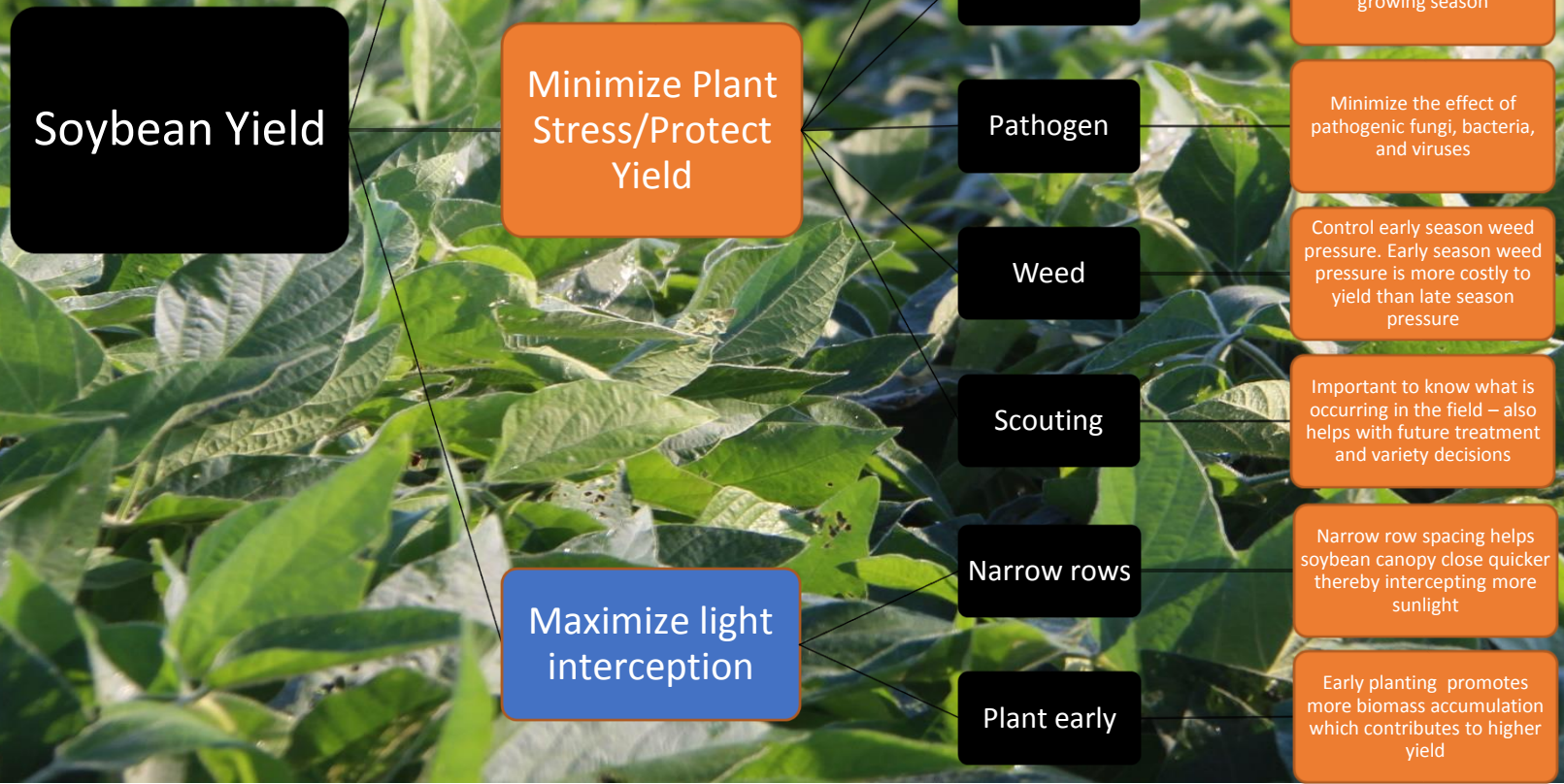
FS- Soybean Yield Roadmap



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Yield Components of modern Soybean genetics…..

- ✓ 60-80% of SB yield comes from the mid 1/3 of the soybean plant main stem
- ✓ Yield increases generally are obtained by increasing number of nodes per plant..RM dependent..20-23
- ✓ Short Season RM tend to flex seed number as the primary yield increasing factor
- ✓ Full Season RM tend to flex seed weight/mass as the primary yield increasing factor

Below and Purcell

Crop Physiology

Soybean Yield x RM 10 locations 2018 PRLFS

Early Season Varieties	
Variety	Yield Avg.
HS 34X60	69.7
AG 34X6	68.8
RM Avg.	**69.25**

Mid Season Varieties	
Variety	Yield Avg.
AG 36X6	71.2
GV 36X7	74.8
HS 37X70	70.7
RM Avg.	**72.23**

Late Season Varieties	
Variety	Yield Avg.
GV 38X9	75.2
GV 39X7	73.6
HS 39X70	71.9
AG 39X7	74.8
RM Avg.	**73.88**

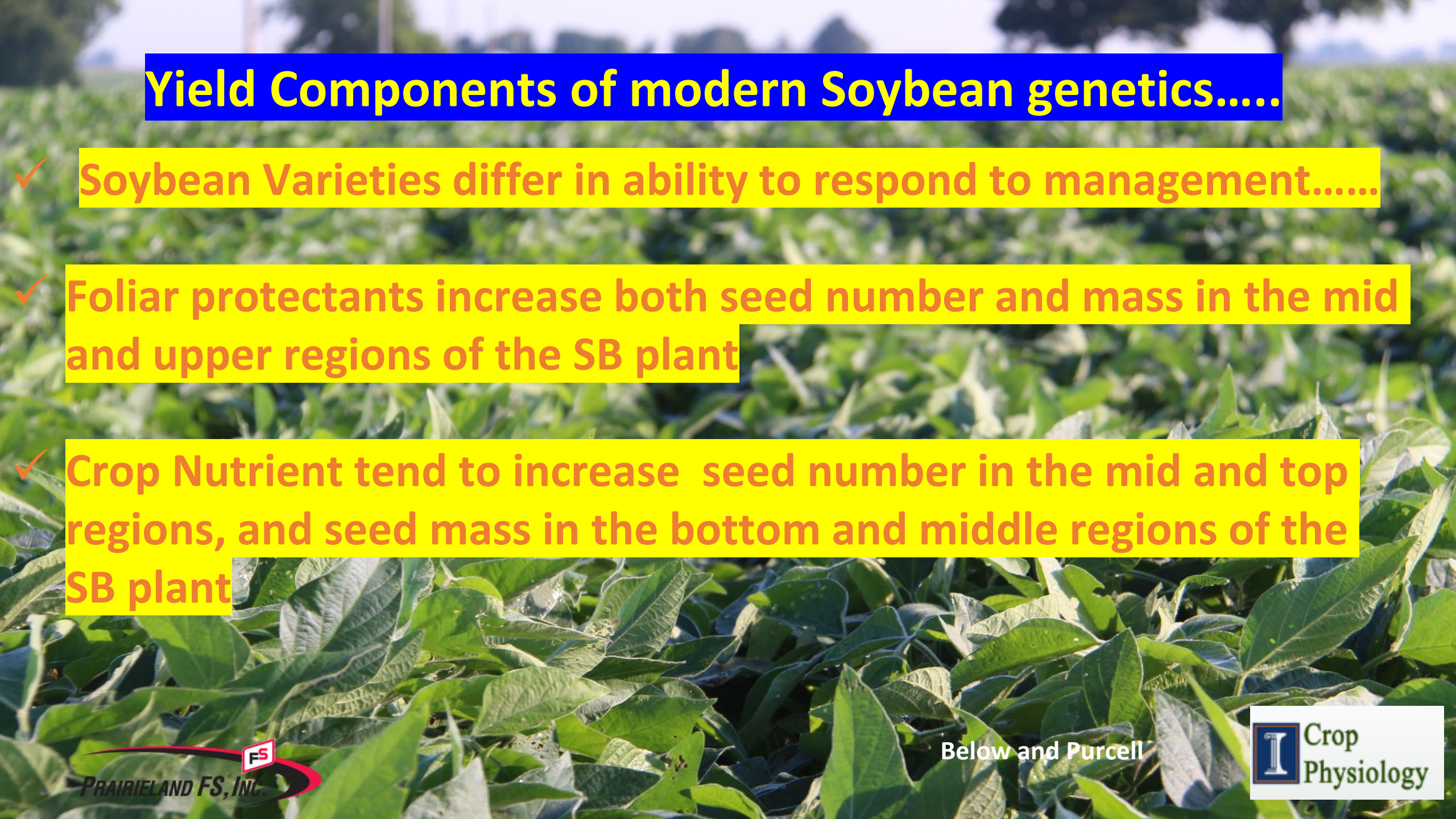
PLUS 3 bu/ac

PLUS 4.6 bu/ac

Relatively Early Maturing varieties tend to develop fewer nodes leaves and progress through different stages at a faster rate

Yield Components of modern Soybean genetics…..

- ✓ Soybean Varieties differ in ability to respond to management……
- ✓ Foliar protectants increase both seed number and mass in the mid and upper regions of the SB plant
- ✓ Crop Nutrient tend to increase seed number in the mid and top regions, and seed mass in the bottom and middle regions of the SB plant



Below and Purcell

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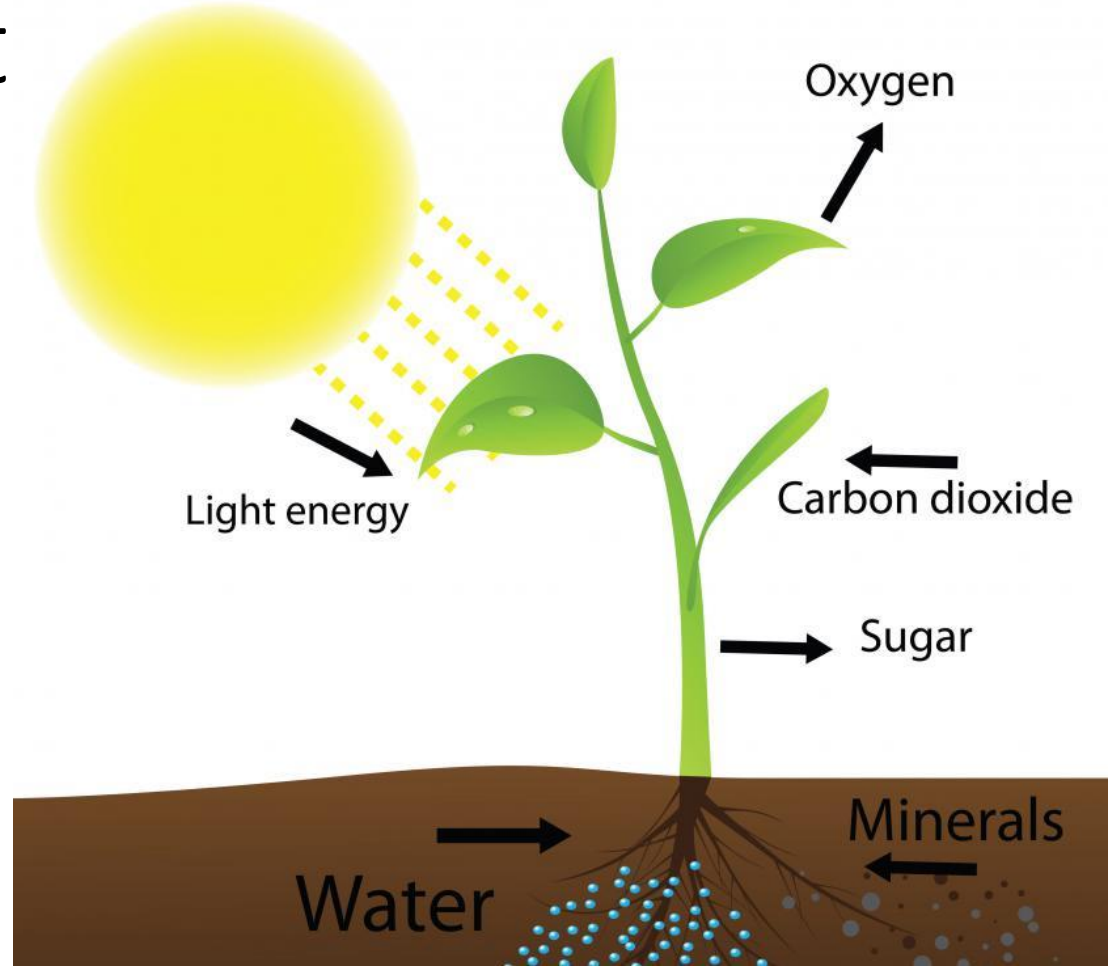
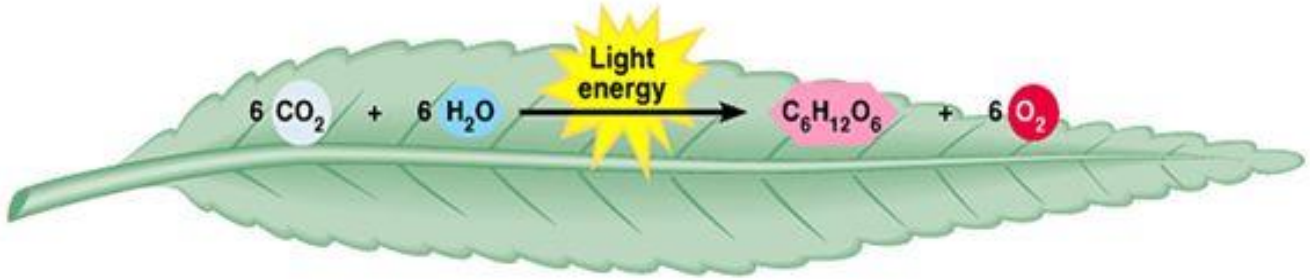
Crop Physiology

Why Sunlight is important

- Soybean are physiologically sensitive to length darkness… “Short Day” Photoperiodism
- Sunlight provides the energy to the soybean plant to convert carbon dioxide into carbohydrates, protein, and lipids.
- Carbohydrate, protein, and lipid production drive SB pod and seed development and ultimately yield
- So…. The more sunlight we capture the more yield???





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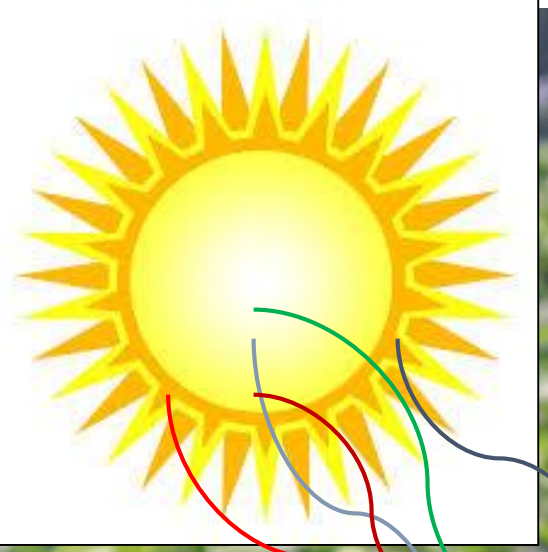

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Maximize light interception

Narrow rows
< 30 inch

Early
Planting

Quicker canopy close
Sunlight Efficient
Less Evapo-Transpire
Cooler Soil

More Biomass
Yield Opportunity

Soybean Row Orientation x Plant

120,000 plants/Acre

7.5” rows Seed every 13”

30” rows Seed every 3”

15” rows Seed every 7”

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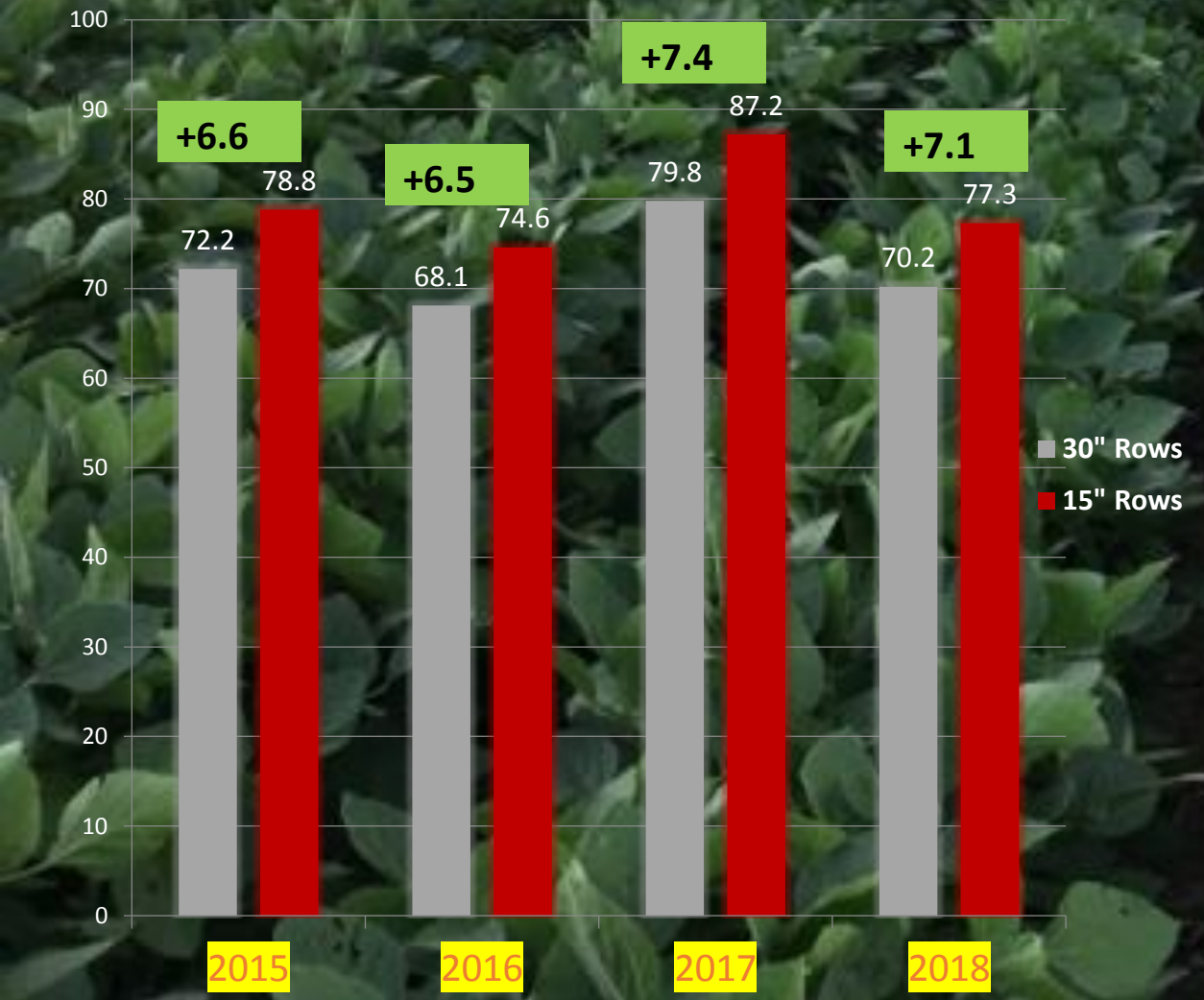
Soybean Row Width Comparison

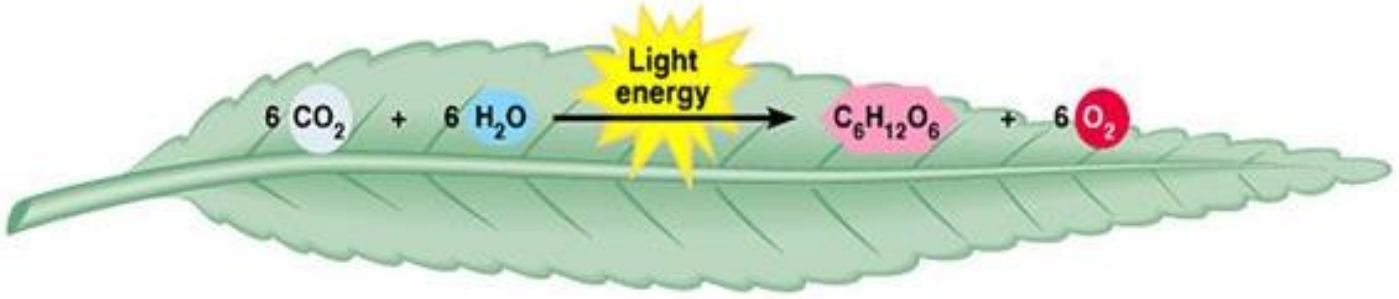
2015 - 2018 Winchester replicated SB row width Comparison



2015 - 2018 PRLFS replicated SB row width Comparison - 9 Site Year -

Narrowing Soybean Row width < 30 Inch

- ✓ **Canopy closure 15-25 days quicker 15” vs. 30”**
- ✓ **Moisture conservation**
- ✓ **Weed Control -**
- ✓ **Canopy Closure @ solstice:R3 – Optimized to Max Sunlight**
- ✓ **Environment set up for increase risk of foliar pathogens.. Reducing Photosynthesis**
- ✓ **Could be a better environment for insect pests**
- ✓ **Workload and planting efficiencies, may get worse**
- ✓ **Post applications more challenging**



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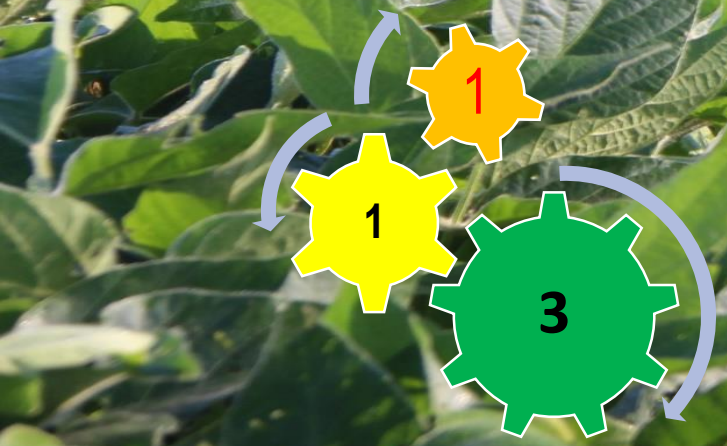
Eliminating Plant Stress

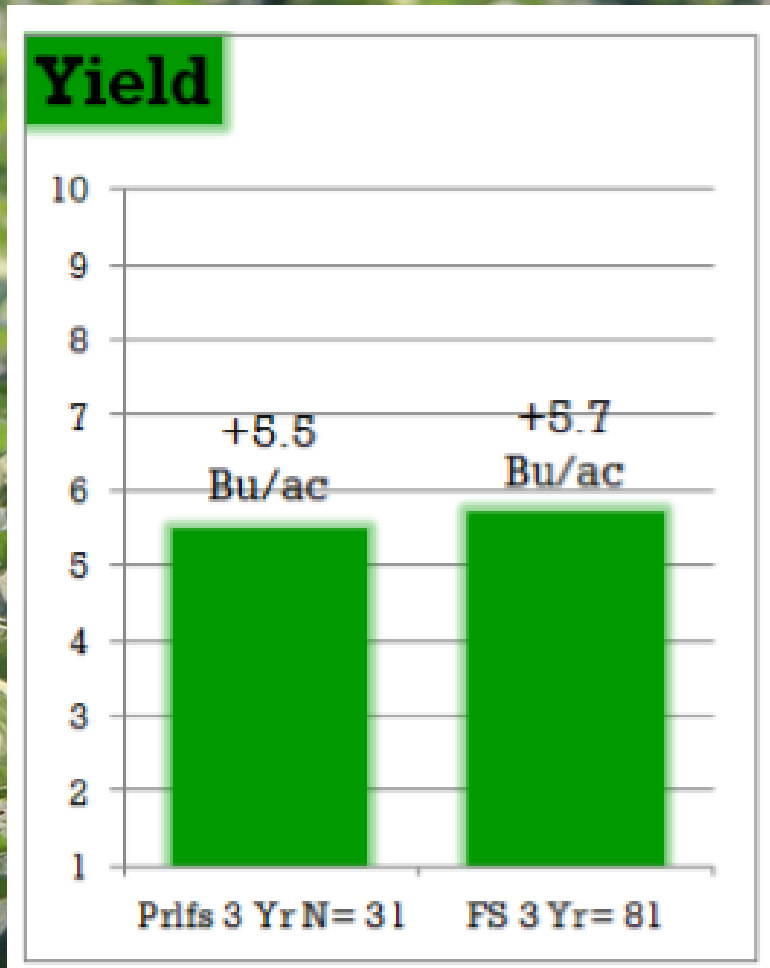
Protect Yield

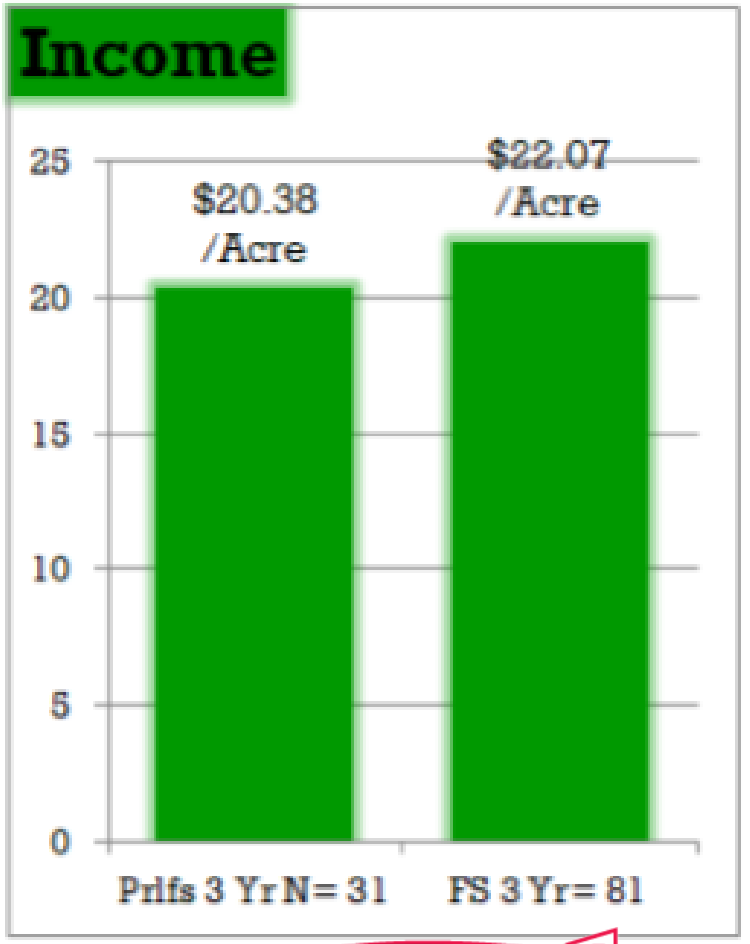
Insect	Reduce insect pressure at planting and throughout the growing season
Pathogen	Minimize the effect of pathogenic fungi, bacteria, and viruses
Weeds	Control early season weed pressure. Early season weed pressure is more costly to yield than late season pressure
Scouting	Important to know what is occurring in the field – also helps with future treatment and variety decisions

R3 Soybean Fungicide + Foliar Nutrition – Three-Year Yield Response - Trend

R3 F&I	3.9bu/ac -34 trials
R3 Fung.	2.7bu/ac -14 trials
R3 Foliar	1.7bu/ac -34 trials







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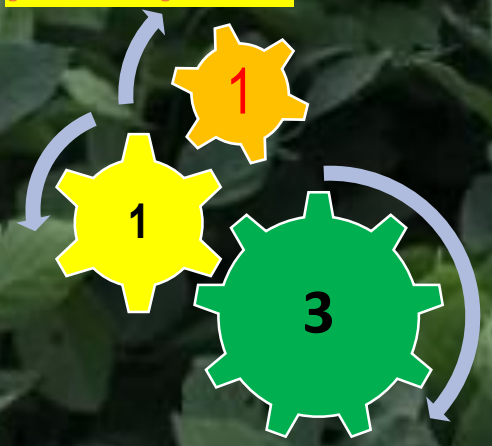
- Soybean responds to late Nutrition during peak DW Accumulation for Grain fill
  - Healthy Photosynthetic tissue creates efficiency / optimizes Resources

✓ K accumulates early in crop biomass and is stored for later use by grain

✓ Nitrogen, Phosphorous, Sulfur are needed in large quantities late, more than can be re-mobilized from lower plant parts



NutriFuse
Focus 3

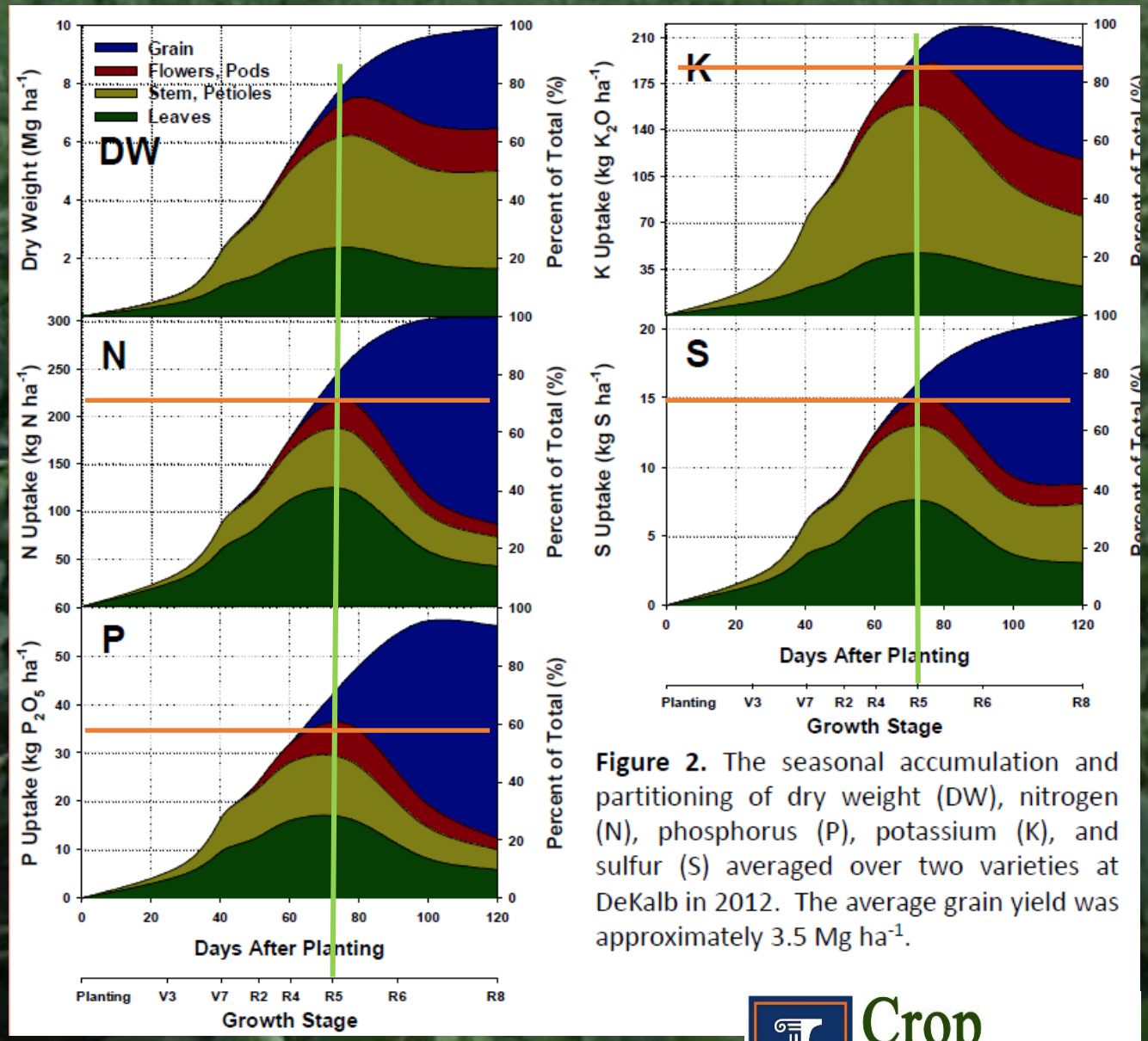
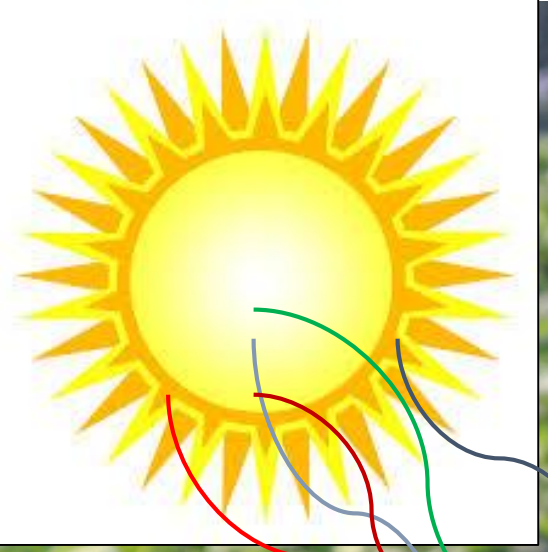


Figure 2. The seasonal accumulation and partitioning of dry weight (DW), nitrogen (N), phosphorus (P), potassium (K), and sulfur (S) averaged over two varieties at DeKalb in 2012. The average grain yield was approximately 3.5 Mg ha^{-1}.

Crop Physiology



Maximize light interception

Narrow rows
< 30 inch

Early
Planting

Quicker canopy close
Sunlight Efficient
Less Evapo-Transpire
Cooler Soil

More Biomass
Yield Opportunity

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Soybean planting date by yield environment

- Yield loss occurred from early to late plantings
- Low yield environment saw less yield loss from early to late planting

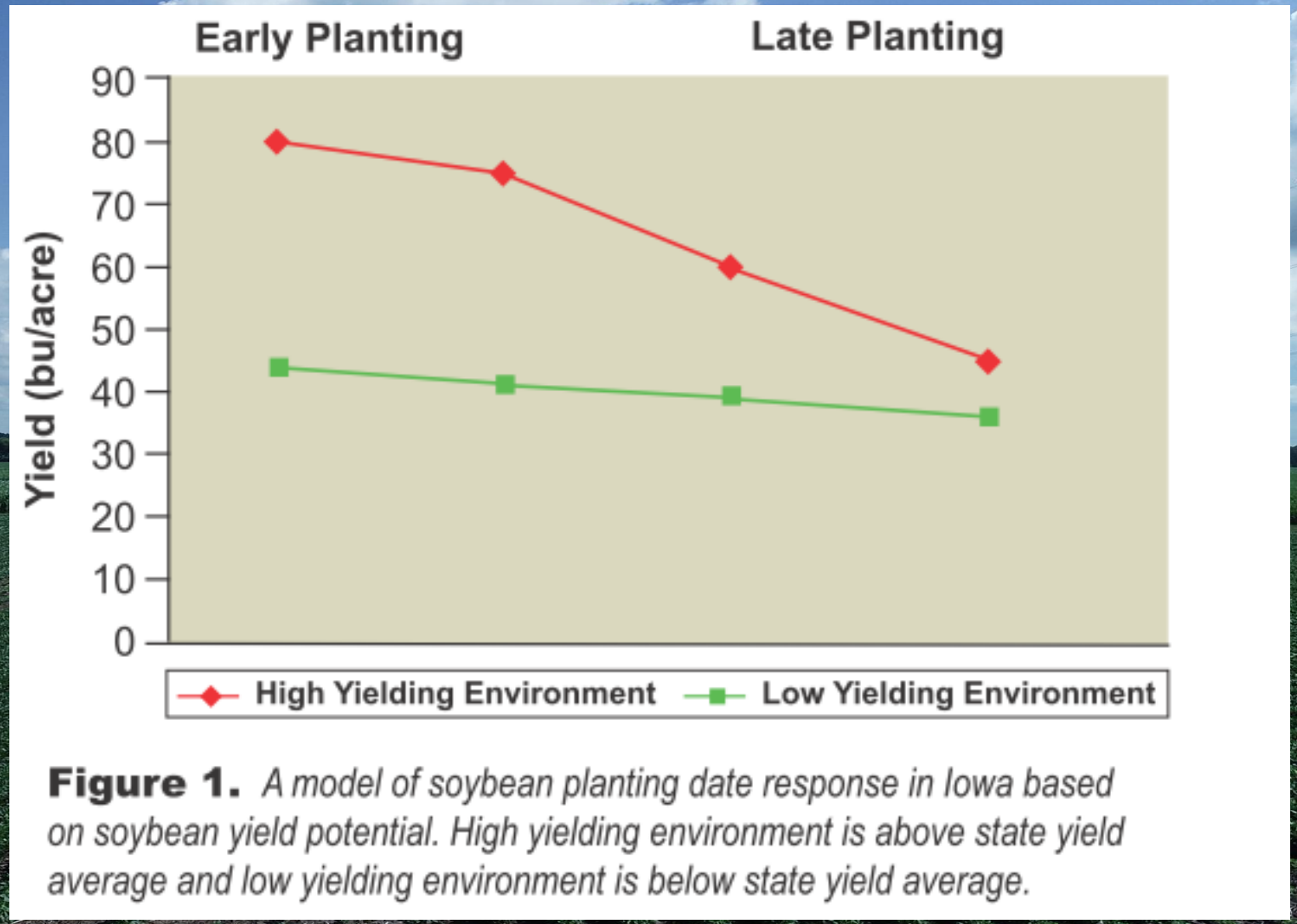

Figure 1. *A model of soybean planting date response in Iowa based on soybean yield potential. High yielding environment is above state yield average and low yielding environment is below state yield average.*

2018 Soybean (4) Planting Date- 3X Reps replication

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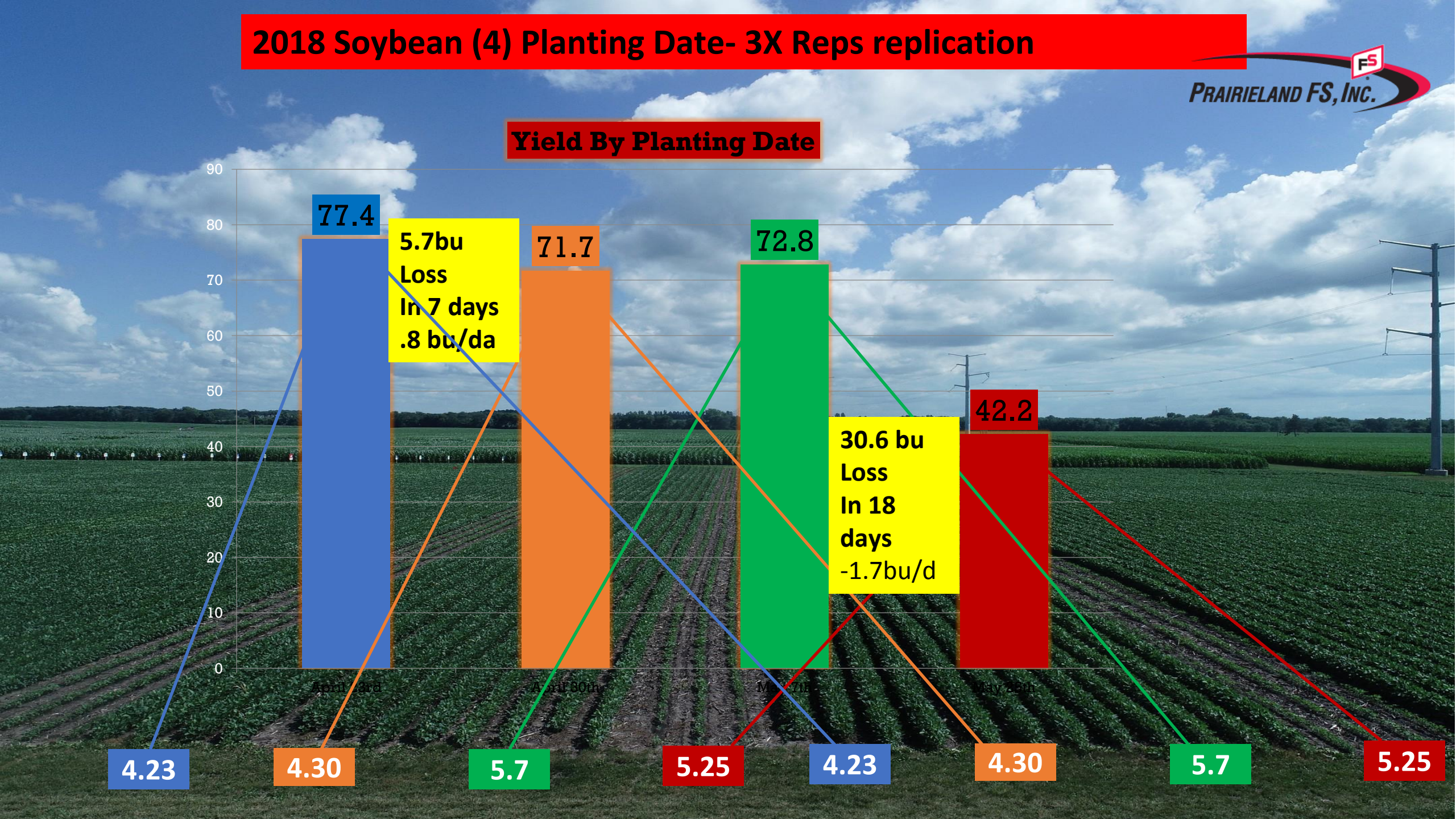
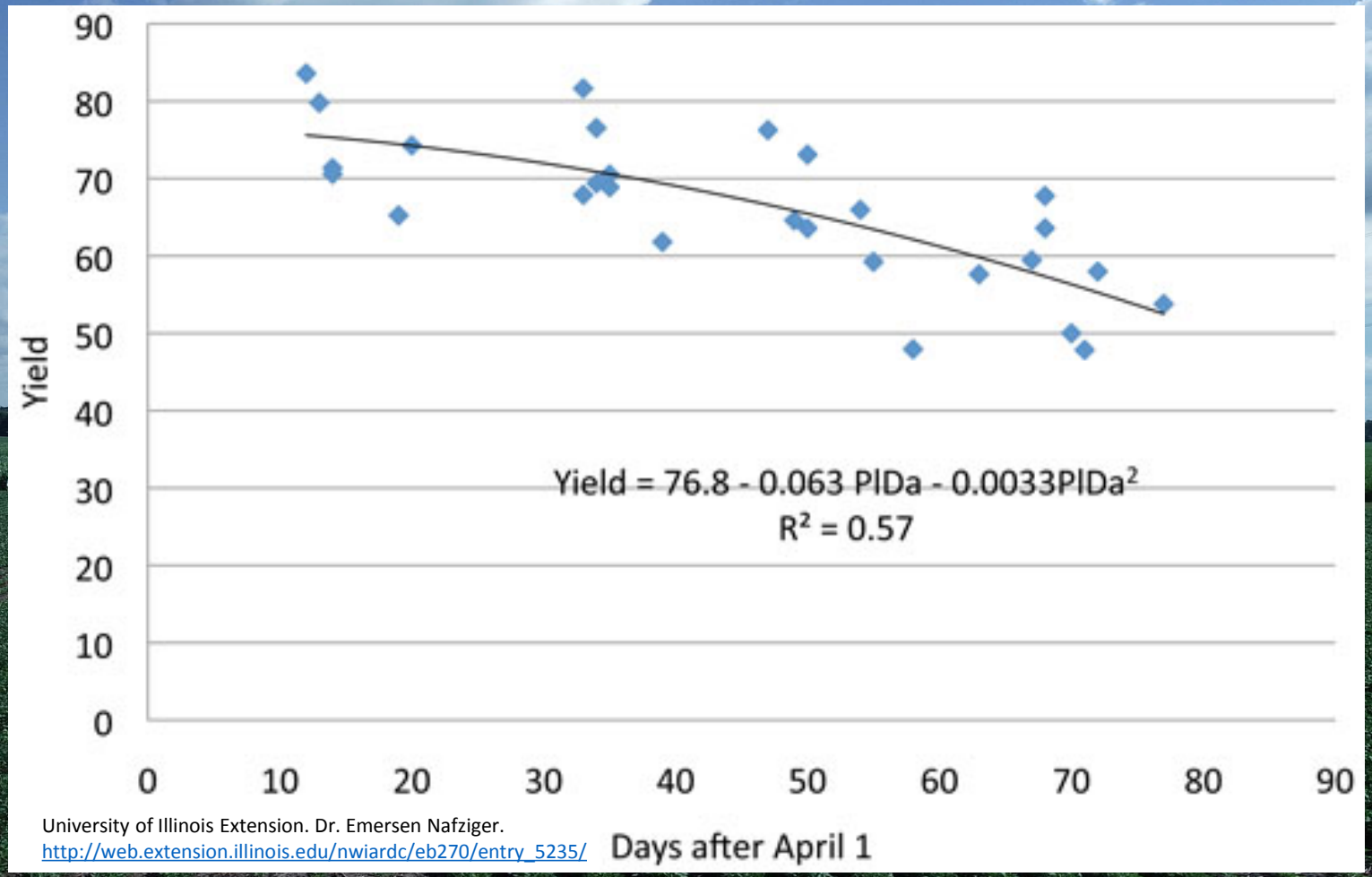


Yield loss per day

- April
  - .1-.2 Bu./A/day
- May
  - 0.3-0.4 Bu./A/day
- June
  - 0.5 Bu./A/day



University of Illinois Extension. Dr. Emersen Nafziger.
http://web.extension.illinois.edu/nwiardc/eb270/entry_5235/

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UNIVERSITY OF ILLINOIS EXTENSION

Soybean - Early planting considerations

- Guidelines
  - Go when soil conditions are right
    - DO NOT “mud-in” SB as this will negate early planting benefits
  - Utilize a seed treatment
  - Understand soybean will take longer to emerge
  - Consider soil moisture
  - Select varieties that are more tolerant to early season dangers
- Risks
  - Crusting
  - Frost
  - SDS
  - BLB
  - Damping off

Soybean planting date

- Soybean yield benefits from early planting
- Early planting results in
  - Increased photosynthesis
  - More main stem nodes
  - More rapid CGR (crop growth rate) during pod set
  - Increases potential for early flowering
  - Longer reproductive period
  - Greater seed filling rate


UTC
Cruiser Maxx
Vibrance
30 Day Time-lapse Seed Treatment 60˚ F
TLC200 PRO 2014/06/13 11:23:06

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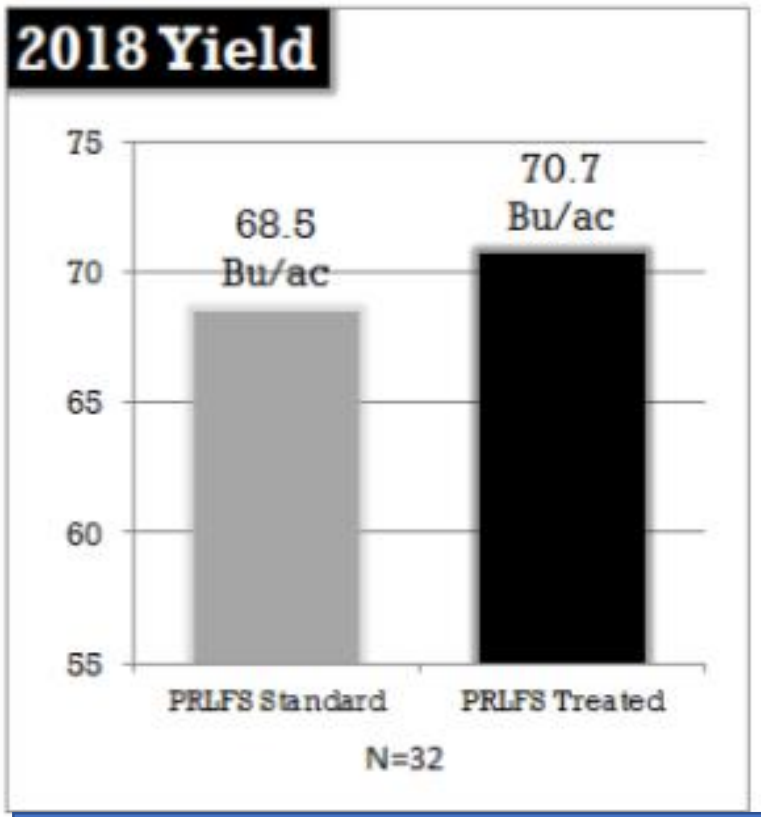

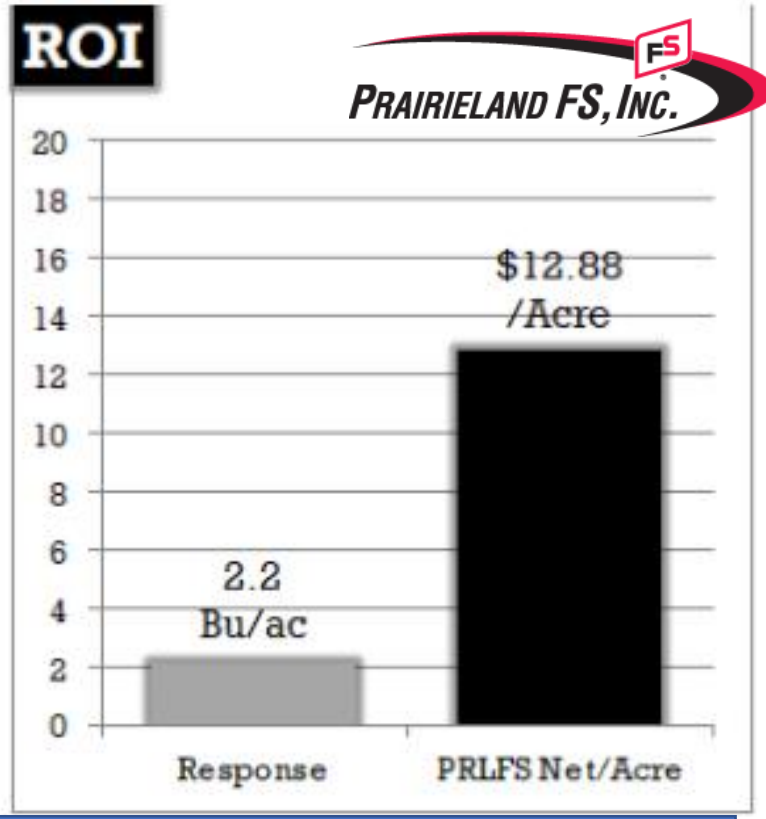

Seed Treatment(s) VS F&I Standard Trials

2018 Prairieland Breakdown	Treatment	Moisture (%)	Yield (bu/acre)	Moisture (+/-)	Yield (+/-)	Cost ($/Acre)	Net ($/Acre)
	F&I + Additional Seed Treatments	12.7	70.7	+0.1	+2.2	$7.80	$12.88
	Standard (F&I)	12.6	68.5				

Maximizing yields and reaching New Field Averages

- Manage to maximize light and plant growth rate (PGR) – full canopy @ R3
  - Plant early – Look for flowering prior to June 21
  - Narrow rows – No sunlight escaping by R3
  - Full Season RM Soybean Varieties
- Reduce stresses that would slow CGR, compete for light, compete for H_2O, harm plant functions, etc.
  - Weeds, Insects, and Pathogens
  - Narrow rows to trap more H_2O
- Managing Fertility in high yield rotations
  - Have to have pH, N, P, and K. at optimum - critical levels
  - N applications may be of benefit when all other basics are covered and yield potentials are >75 bu/A
- **Higher yields environment respond better to intense management practices**

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Questions or discussion of other Topics

Soybean N response – Spring Tillage

Yellow Soybean on Slopes

Soybean Yield Equation

Dan Maggart
Agronomics and Precision Dept. Manager

PRECISION AGRONOMY FS

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Minimizing Immobilization

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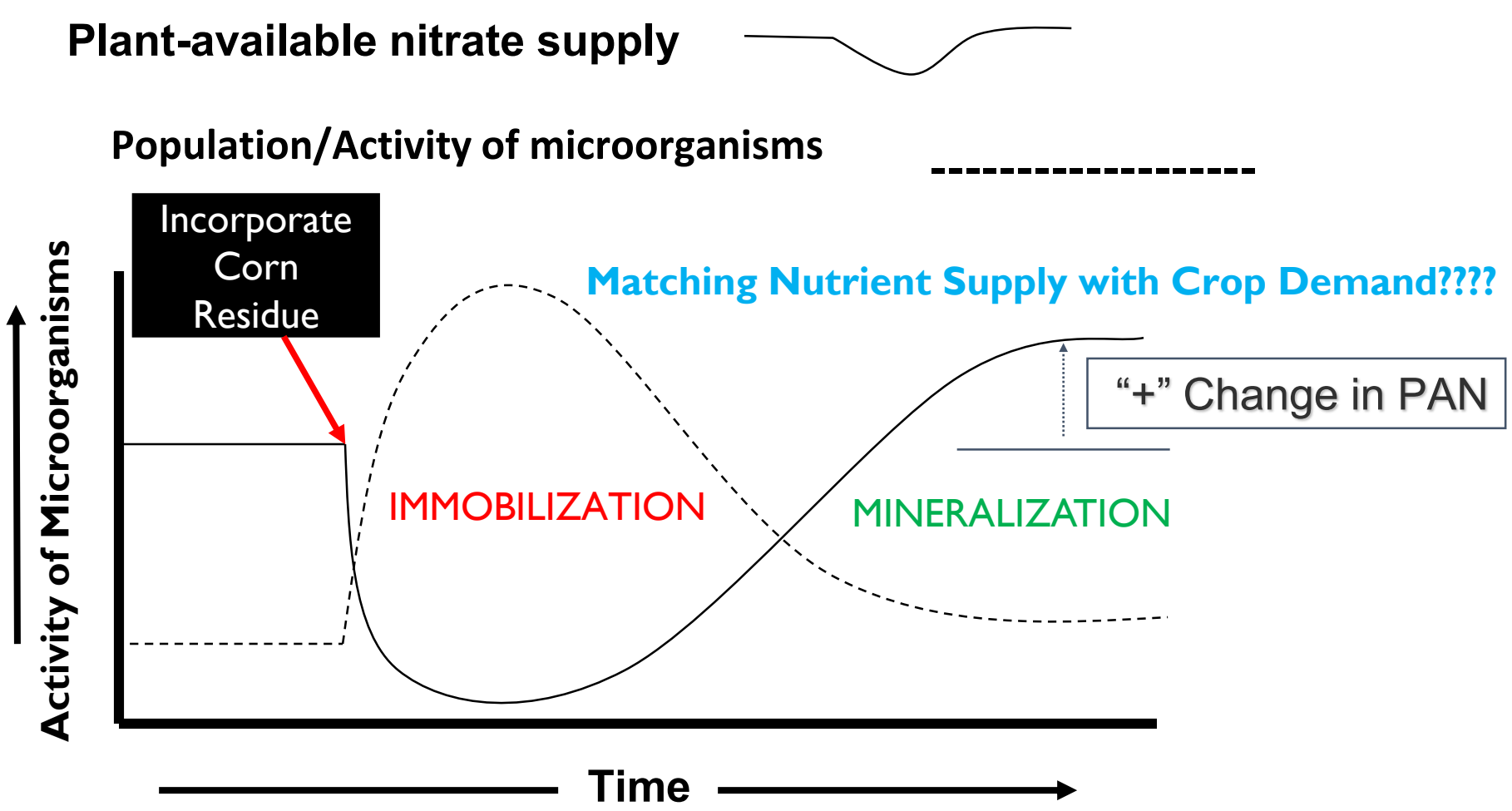
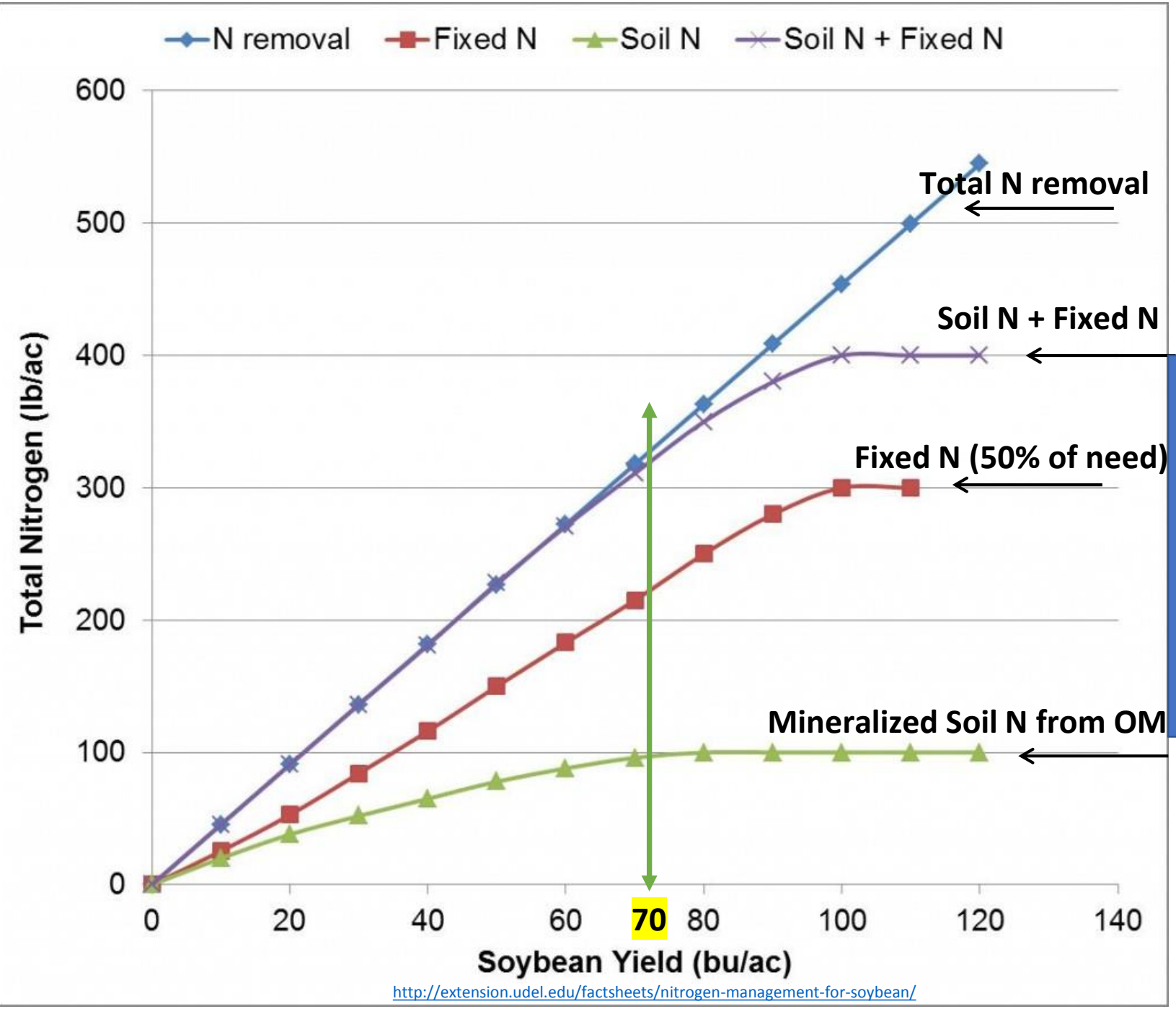
- **Avoid incorporating plant material near planting-time**
  - **Incorporate residue in fall**
  - **Utilize no-till or fall till**
- **Add supplemental N to minimize immobilization**
  - **DAP in fall as dry fertilizer choice**
  - **Not a recommendation for residue management**

Temporary N Loss

Immobilization-Mineralization





http://extension.udel.edu/factsheets/nitrogen-management-for-soybean/

Will N applied to Soybeans produce an ROI?

Consideration 2019

High Yield >70bu/ac
Cool Wet early – Low Mineralization
Soils low in OM
Spring tilled corn residue
C:N Ratio 60:1

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Soybean N response

- ✓ **R1 and R3 applications had biggest impact**
- ✓ **Use nitrate containing and/or controlled release fertilizers**
- ✓ **Target high yield acres, especially in soils with low chance of mineralized N**
- ✓ **>75 bu/A yield potential**

Response to N on Soybean- 2015

Average 3 Locations (100 lbs of N applied)

Source	Preplant	V3	R1	R3
	changes in bushels acre^{-1}			
AN	4.0*	4.2*	5.3*	5.7*
AMS	2.7*	1.6	3.5*	3.2*
UAN	3.5*	4.1*	3.8*	3.1*
Urea	2.3	2.9*	3.2*	3.1*
Urea + Limus	1.6	3.3*	3.7*	4.2*
AN+KN+AMS	2.6*	1.4	4.5*	3.6*
ESN	3.2*	2.7*	4.3*	3.1*

Control = 71.7 *significantly different than control

Crop Physiology

What six secrets research has taught us about high yield soybean. Dr. Fred Below. University of IL.

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Nutritional Demands: Soybeans

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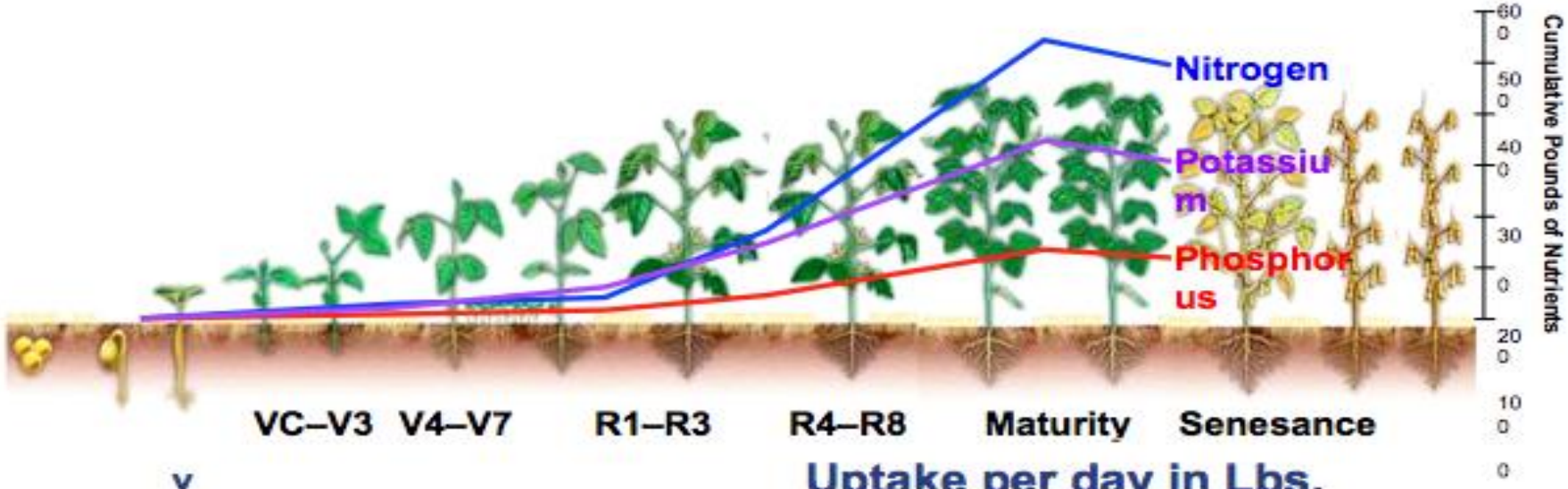

v

Uptake per day in Lbs.

	Growth Stage	# of Days	N		P_2O_5		K_2O	
	3rd Trifoliate	40	.75	5.5%*	.25	5%	.68	6%
	6th Trifoliate	11	1.45	4.5%	.55	6%	2.72	7%
R2	Full Bloom	16	7.81	22%	1.75	35%	5.75	30%
R3-4	Pod Dev.	15	9.13	25%	2.27	40%	9.60	40%
R5-6	Soft Seed	21	11.43	33%	2.76	10%	2.43	10%
R7	Near maturity	16	3.38	10%	1.25	4%	2.25	6%

Flannery;100 bu

* % of total uptake by growth stage

Flannery, Rutgers: 100 bushel yield

Soybean and Corn on slopes

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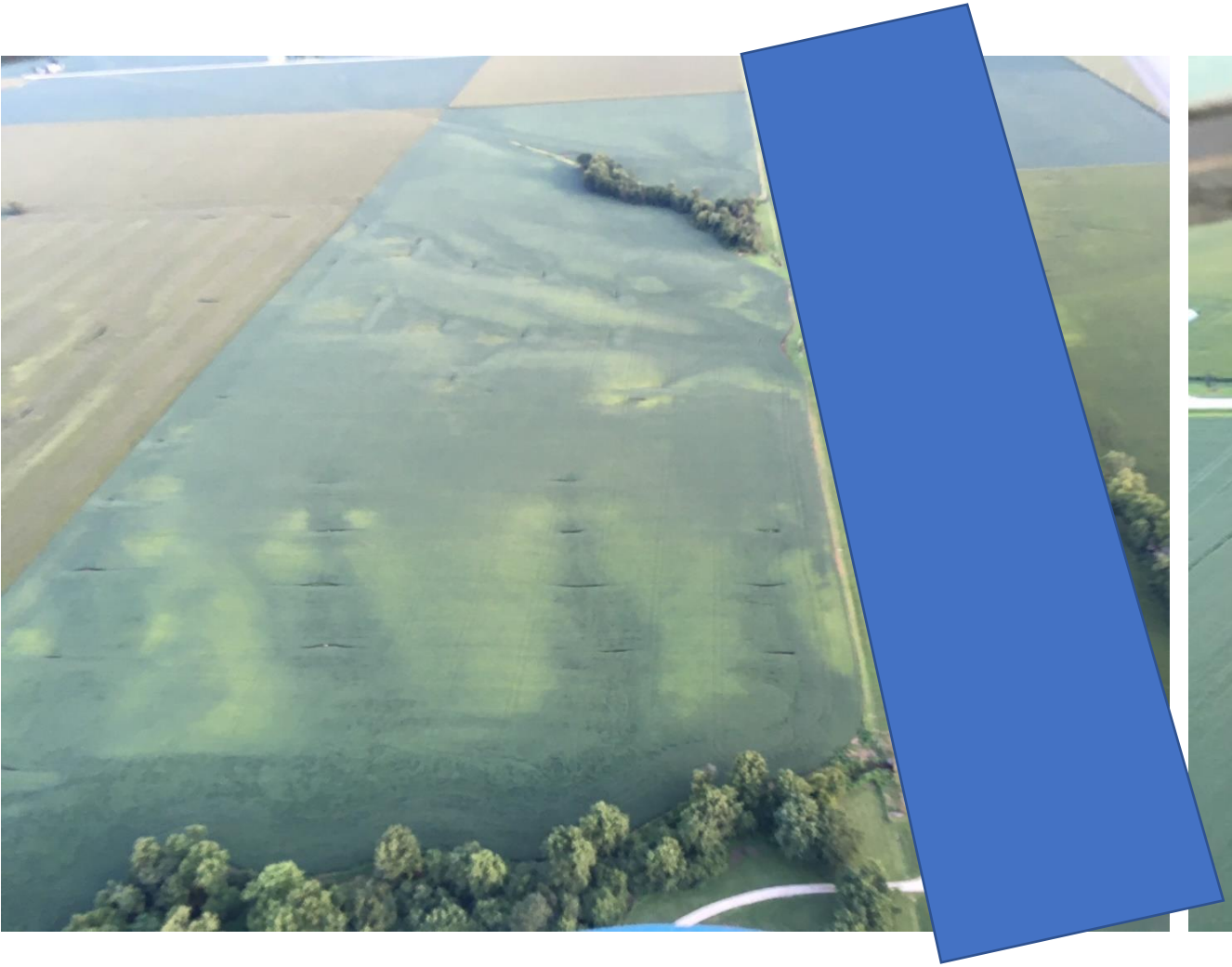

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Winchester 2018- PGR replicated

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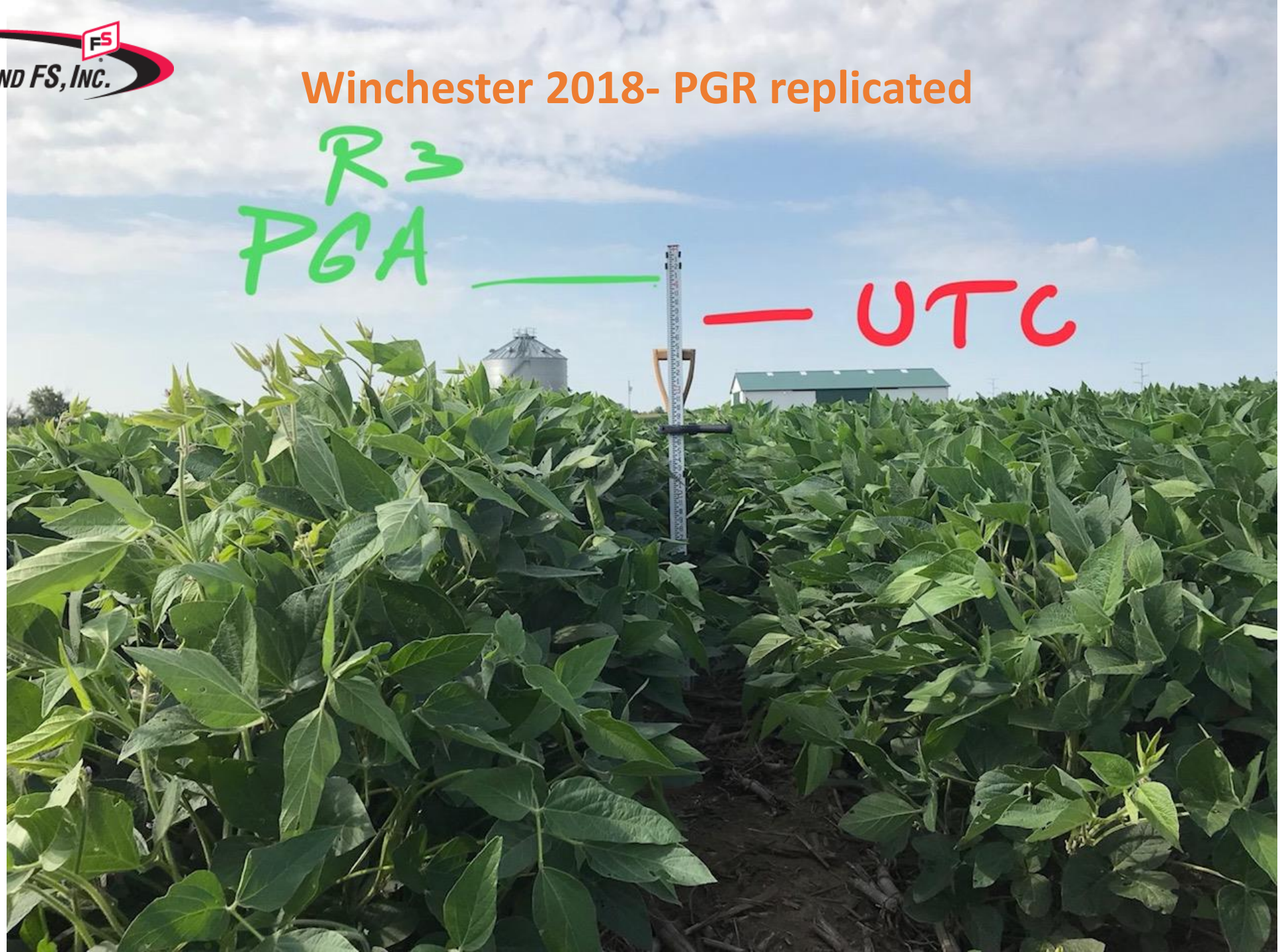
Winchester 2018- PGR replicated



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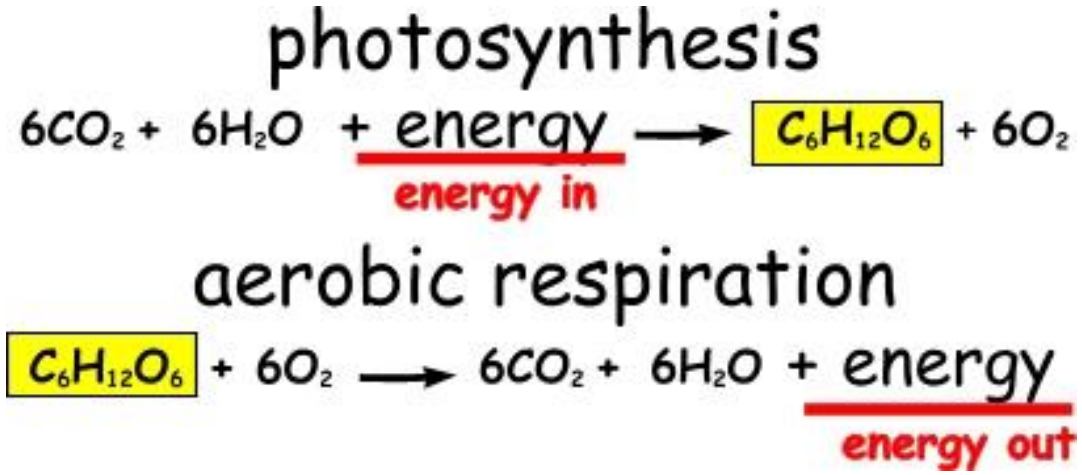
Winchester 2018- PGR replicated

- At or around Anthesis Temps ≥ 90˚F
- ET. can exceed precipitation and soil water reserves
- Night temps of ≥ 70˚F the rate of respiration can exceed the rate of photosynthesis



Temperature and Grain fill

Month	Year	Precip Total	Temp. Avg. High	Days >90˚F	Temp. Avg. Low	Nights > 70˚F
June	2012	0.76	85.8	7	59.3	4
	2014	8.14	82.7	0	63.4	2
	2017	3.67	86.2	5	63.1	4
	2018	2.09	88.8	13	67.5	12
July	2012	1.05	95.1	24	68.5	11
	2014	2.31	80.3	1	59	1
	2017	3.21	90.2	15	67.7	11
	2018	3.47	87.7	13	65.7	8
August	2012	3.39	87.8	13	59.2	2
	2014	4.76	83.2	5	65.7	6
	2017	3.44	82.7	2	60.8	0
	2018	4.27	87.8	13	67	9
Sept.	2012	4.56	76.5	4	52.3	2
	2014	6.59	76.1	1	52.8	2
	2017	0.55	84.3	1	56	9
	2018	4.51	82.5	7	59.2	9

Data from IWS Perry Illinois

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2 Crop – Corn and Soybean Grain Removal tables

Table1.
Values given in the oxidized form

Yield (Bu/A)	150		200		250		300	
	P_2O_5	K_2O	P_2O_5	K_2O	P_2O_5	K_2O	P_2O_5	K_2O
60	101	106	119	118	138	130	156	142
70	108	118	127	130	145	142	164	154
80	116	130	134	142	153	154	171	166
90	123	141	142	153	160	165	179	177
100	131	153	149	165	168	177	186	189

Table2.
Values given in the product form
DAP 0-46-0
Potash 0-0-60

Yield (Bu/A)	150		200		250		300	
	DAP	Pot.	DAP	Pot.	DAP	Pot.	DAP	Pot.
60	218	177	259	197	299	217	339	237
70	235	197	275	217	315	237	355	257
80	251	216	291	236	332	256	372	276
90	267	235	308	255	348	275	389	295
100	285	255	323	275	365	295	404	315

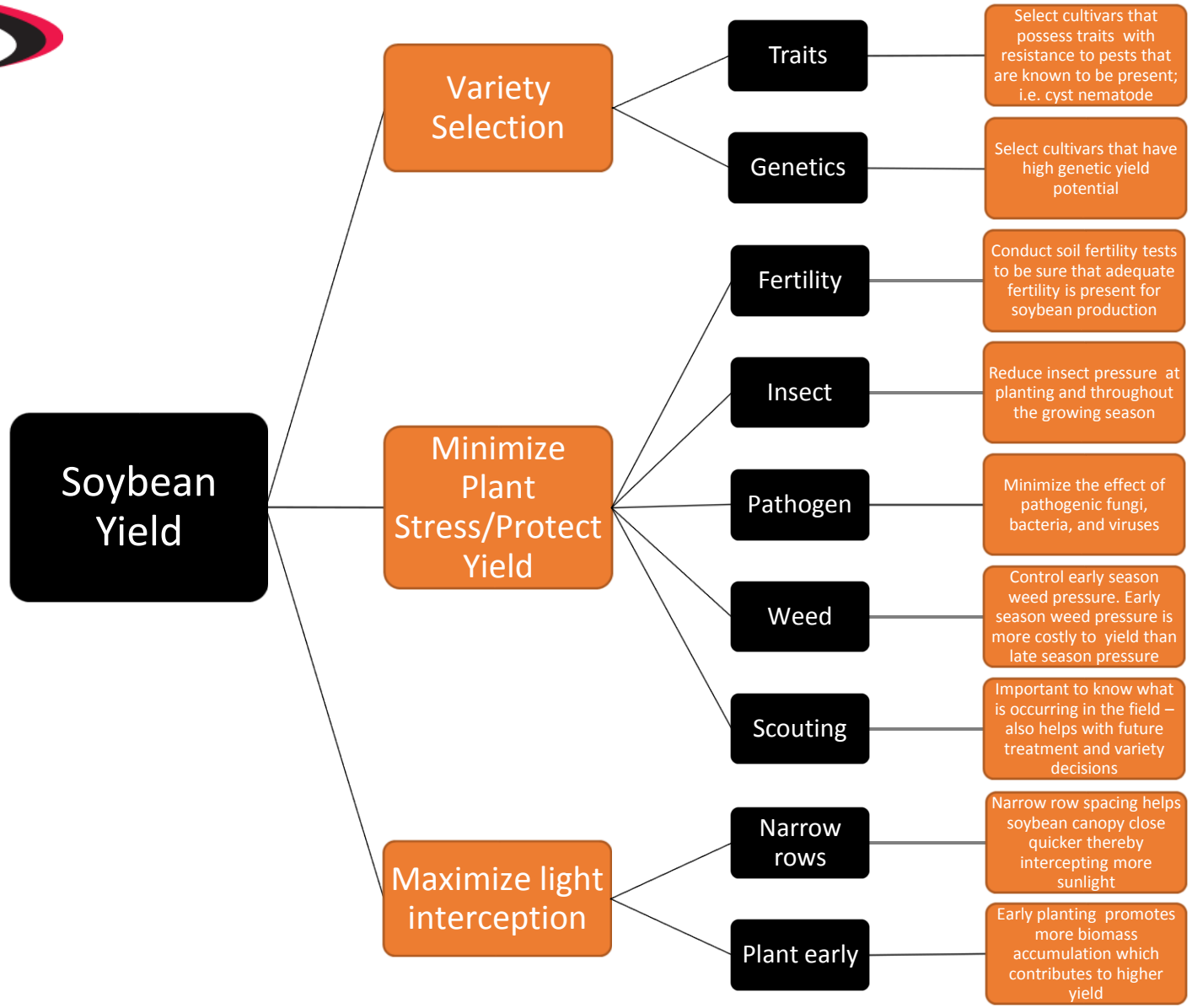
Exp. Yield goal for 2 Crop
250 bu Corn and 80 bu soybean
Removes with grain/acre
153 units of P_2O_5 - 332# DAP
154 units of K_2O – 256# Potash

Soybean Treatment- Ranked by Yield

*2018 Yield Response by Trial Type					
Trial Type	# of Trials in the PRLFS System	PRLFS Yield Response	# of Trials in the FS System	FS System Yield Response	Gross Income @$9.40
Narrow Row SB	5	7.4Bu/ac	5	7.4Bu/ac	$69.56
Early Planting Date	1yr. 4 replicates	5.7Bu/ac	1yr. 4 replicates	5.7Bu/ac	$53.58
R3 Fungicide & Nutrition	19	5.7Bu/ac	17	5.6Bu/ac	$53.58
Soybean Foliar Nutrition	4	5.3Bu/ac	35	3.1Bu/ac	$49.82
R3 Fungicide & Insecticide	15	5.1Bu/ac	52	5.0Bu/ac	$47.94
Full Maturity	10	4.6bu/ac	10	4.6bu/ac	$43.24
Seed Treatments	32	2.2Bu/ac	51	2.0Bu/ac	$20.68
Soybean Starter	3	0.8Bu/ac	21	3.2Bu/ac	$7.52

*Three Year Yield Response by Trial Type					
Trial Type	# of Trials in the PRLFS System	PRLFS Yield Response	# of Trials in the FS System	FS System Yield Response	Gross Income @$9.40
Narrow Row SB	9	7.5Bu/ac	9	7.5Bu/ac	$70.50
Early Planting Date	1yr. 4 replicates	5.7Bu/ac	1yr. 4 replicates	5.7Bu/ac	$53.58
R3 Fungicide & Nutrition	36	5.3Bu/ac	81	5.7Bu/ac	$49.82
R3 Fungicide & Insecticide	34	3.9Bu/ac	116	4.0Bu/ac	$36.66
R3 Fungicide	14	2.7Bu/ac	161	4.2Bu/ac	$25.38
Soybean Foliar Nutrition	34	1.7Bu/ac	83	1.9Bu/ac	$15.98
Seed Treatments	59	1.6Bu/ac	86	1.7Bu/ac	$15.04
Soybean Starter	6	1.2Bu/ac	45	4.1Bu/ac	$11.28

FS Soybean Yield Roadmap



Impact of Soybean Yield Components - Seed Number

- **Fixed in July R3 – R4** **July 12-27 2018**
- **60% of Yield from Mid-plant N7-13**
- **Yield is a function of**
  - **Population**
  - **Pod number/plant (E)**
  - **Seeds per pod (G)**
  - **Seed Weight (E)**

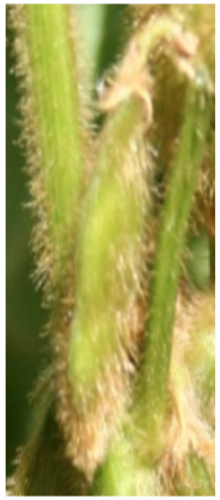
Fertility and Plant Health influenced (E)

Influence by Genetic Factor- (Variety)

Late resources = big yield gains

R4: Full Pod

- A **3/4 inch pod at one of the four uppermost nodes** on the main stem
- Rapid pod growth & beginning seed development
- From R4 to middle R5 critical for yield
  - Rapid and steady dry matter accumulation
  - Flowering is complete
  - Young seeds & pods are most prone to abortion
- **Yield reduction based on total pod #** is the main yield limiting factor
  - ↓ Seed # per pod and seed size may also occur



~Days to R7 - 45

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SOYBEAN STATION

Jim Spect. Setting Yield in Soybean and avoiding End-of-Season Plant Stress. UNL

Impact of Soybean Yield Components-Seed Size/weight

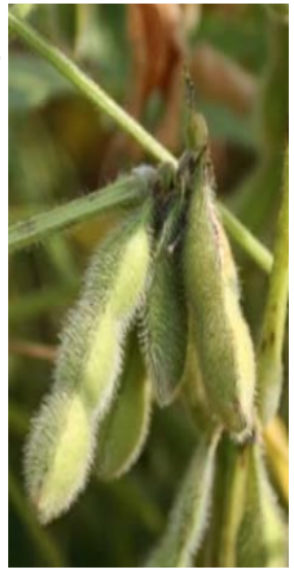
- Fixed in August-Sept R5-R6
- Begins @ Rapid Seed Fill
  - Re-mobilization nutrients/DM
  - **Max height & Nodes & Leaves**
  - **N fix. Peaks, then declines rapidly (R5.5)**
  - **Function of (E) environment**
  - **Plant Health-disease protection**

Late resources = big yield gains

R6: Full Seed

- A pod containing a **green seed that fills the pod capacity** is located at one of the four uppermost main stem nodes.
- **Total plant pod weight is maximized**
- **Rate of dry weight and nutrient accumulation slows**
- Root growth is complete between R6 and R7

Days to R7 - 20



SOYBEAN STATION

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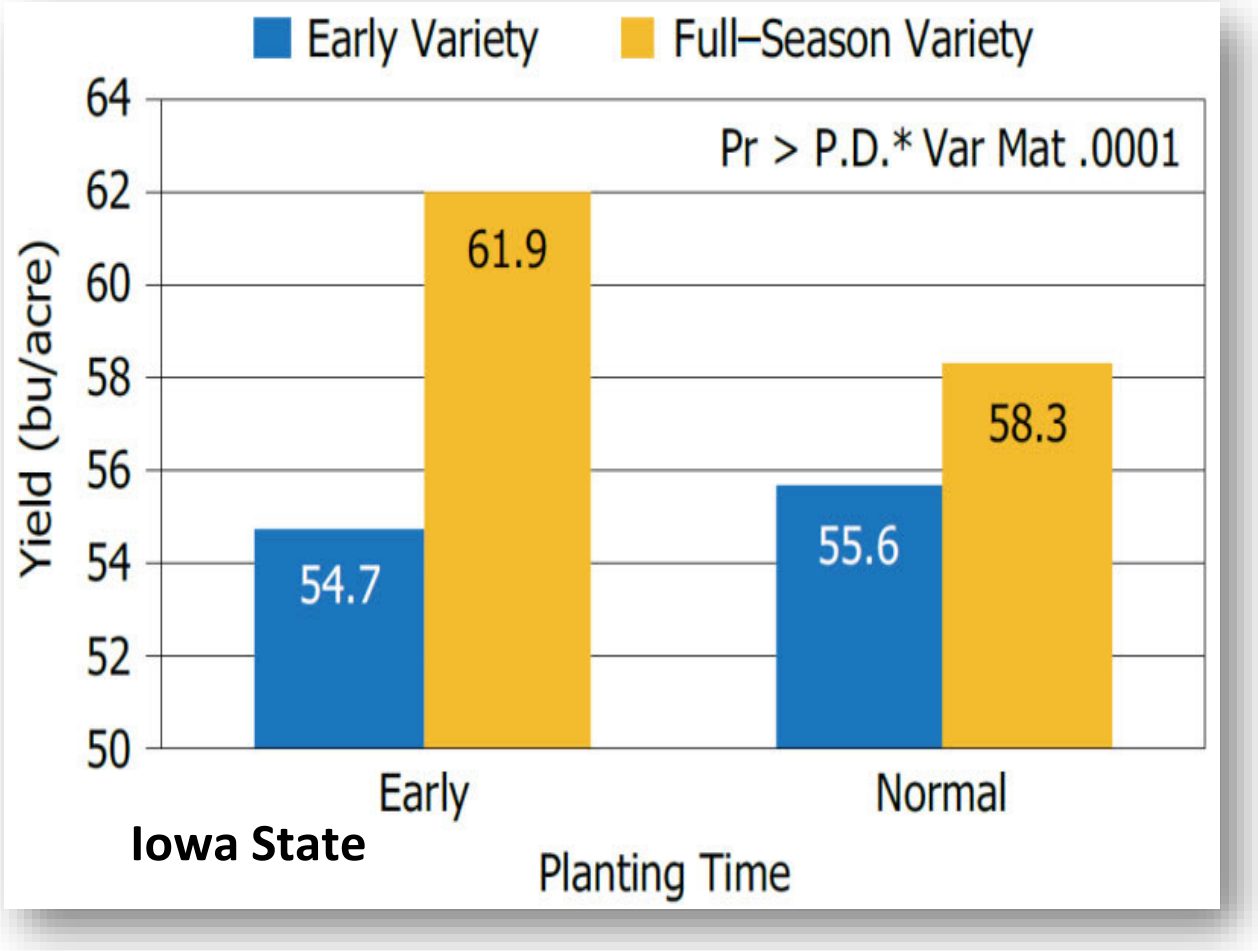
Maturity Group Selection

Full season soybean advantage

- More biomass accumulation
  - Fuller season stays in V stages longer
- Longer R stage development means more flowers and pods
- More days for grain fill period



Both Early planting and full-season var. allow opportunity for yield

2018 Soybean Stand x Treatment