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Yield Challenge ILLINOIS

SOYBEAN MANAGEMENT LESSONS LEARNED FROM THE 2018 ILLINOIS YIELD CHALLENGE

Bob Wells

Challenge Coordinator

Bement Illinois

Fluid Fertilizer Forum

February 19, 2019

Phoenix Arizona

1994

"If you have 100 farmers in a room, you will have 110 different ways to farm."

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1994

"If you have 100 farmers in a room, you will have 110 different ways to farm."

In 2018

"Make that 210 different ways to farm"

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FUN WITH NUMBERS !

1994

"If you have 100 farmers in a room, you will have 110 different ways to farm."

In 2018

"Make that 210 different ways to farm"

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MEY

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MEY

Maximum Economic Yield

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MEY

ROI

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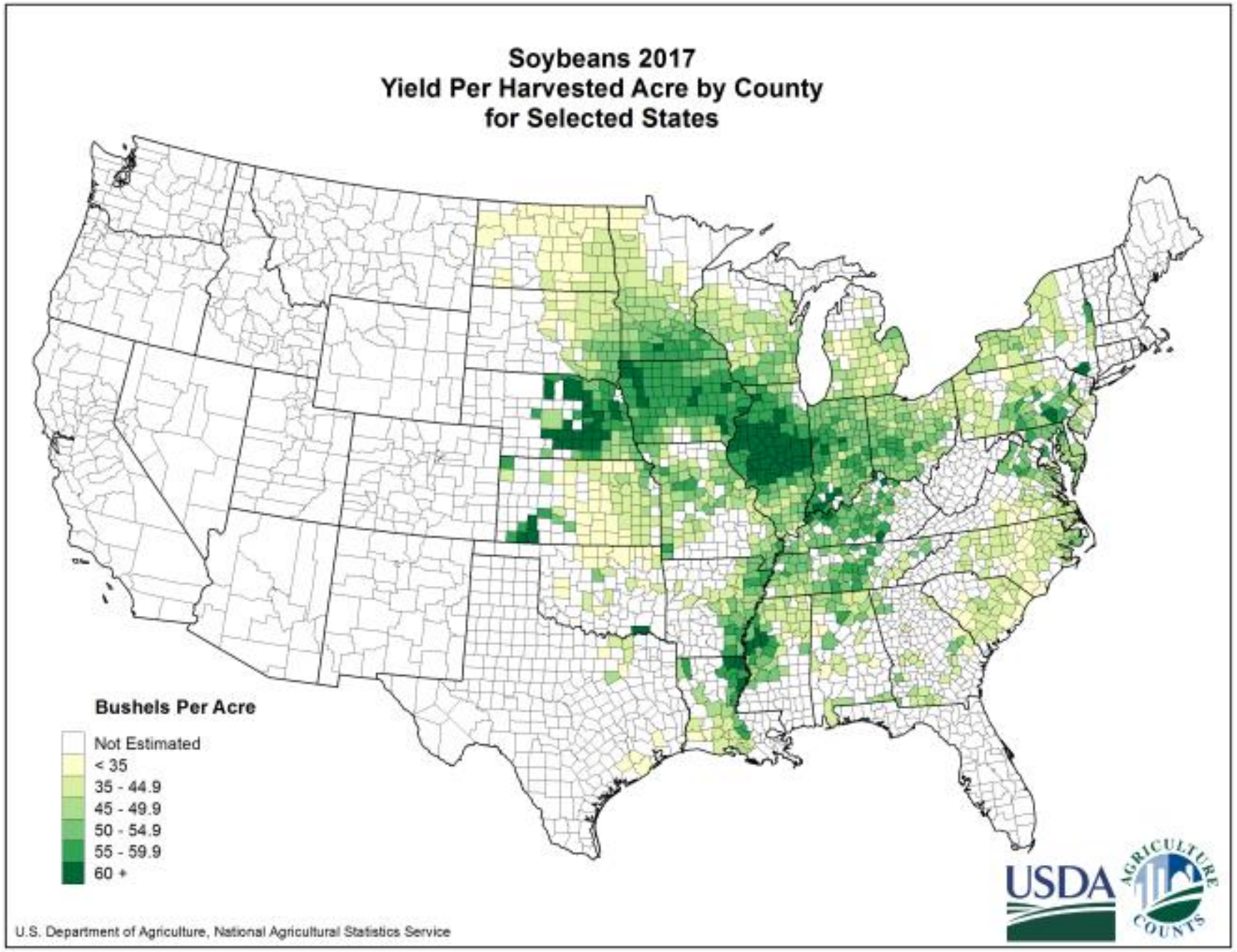

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2018 Yields

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2018 Yields

U.S. Avg – 51.8 bpa

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2018 Yields

U.S. Avg – 51.8 bpa

Illinois Avg – 65+ bpa

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2018 Yields

U.S. Avg – 51.8 bpa

Illinois Avg – 65+ bpa

Cent IL Counties – 80+ bpa avg?

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2018 Yields

U.S. Avg – 51.8 bpa

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Randy Dowdy (GA) – 156.84 bpa

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(irrigated / down from 2016 171.8 bpa)

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U.S. Avg – 51.8 bpa

Illinois Avg – 65+ bpa

Cent IL Counties – 80+ bpa avg?

Randy Dowdy (GA) – 156.84 bpa

(irrigated / down from 2016 171.8 bpa)

Nebraska grower – 138 bpa

(dryland)

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Illinois 100-Bushel Yields

Anonymous	121.67	Chuck Walsh (Reg. 2)	112.48
Paul Klein (State 100)	110.94	Greg McClure (St. Irr.)	110.19
Ken Elmore (Reg. 3)	108.31	Cameron McClure (Irr.)	108.06
Joe Klein	106.28	Greg McClure (dryland)	105.18
Dan Luepkes (Reg. 1)	103.46	Edward Logan	103.19
Duane Noland	102.50	Tom Elmore	101.89
Marc Padrutt	101.07	Travis Rovey (2)	100.78

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Illinois
90-Bushel Yields

Don Dugan	99.25	Zane Freeland (2)	98.47
Luke & Eric Heaton	97.46	Aaron Ehnle	97.00
Dick Haas (3)	96.98	Carl Luebchow	96.83
Grant Strom (2)	96.65	Daryl Keiser	96.07
Cory Utterback	95.88	Chad & Kyle Kuenstler	95.68
Michael Denton (3)	95.01	Jason Lakey	93.93
Robert Lakey (2)	91.95	Derek Martin	91.76
Bryan Severs	91.40	Mickey Williams	91.12
Mark Kannmacher	90.84	Barbara Zick	90.53
Matt Krausz (Reg. 4)	90.22	Jimmy Ayers	90.30
Kelsey Schwab	90.00		

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Illinois 80-Bushel Yields

Bob Jodts (s-b-s)	89.02
Kris Ehler	88.43
David Wessel (Irr.)	88.26
Jason Lay	87.47
Rex Schwartz	87.27
Eric Dolbeare	85.83
Brian Mansfield (s-b-s)	85.70
Alan Madison	84.65
Brad Crane	83.70
Gary Rapp	82.10
Jim Martin (s-b-s)	82.00

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Yields 68–79.9 bushels per acre

James Ryan	79.78
Vernon Mayer	75.24
Ralph Timpner	72.07
Fred Schirer	69.69
John Breedlove (Reg. 2 S-b-S)	68.26

Double Crop Yields

Matt & Mark Krausz (Reg. 3)	64.94
James Kight-Garlisch (Reg. 2)	62.68
Chad Kuenstler	61.64
Larry Garlisch	58.66

- No Region 1 Entries

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100+ Bu Yields

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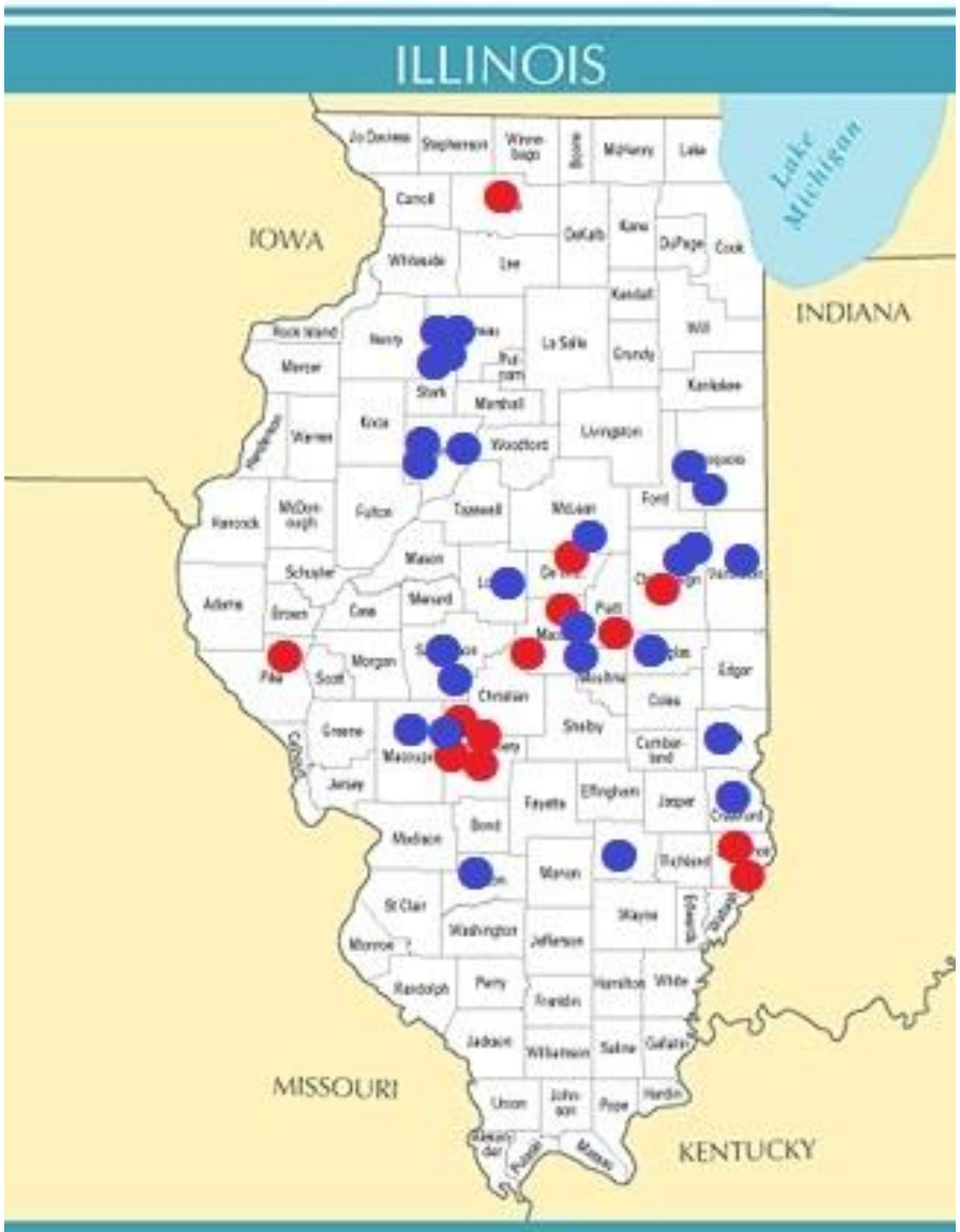
90+ Bu Yields



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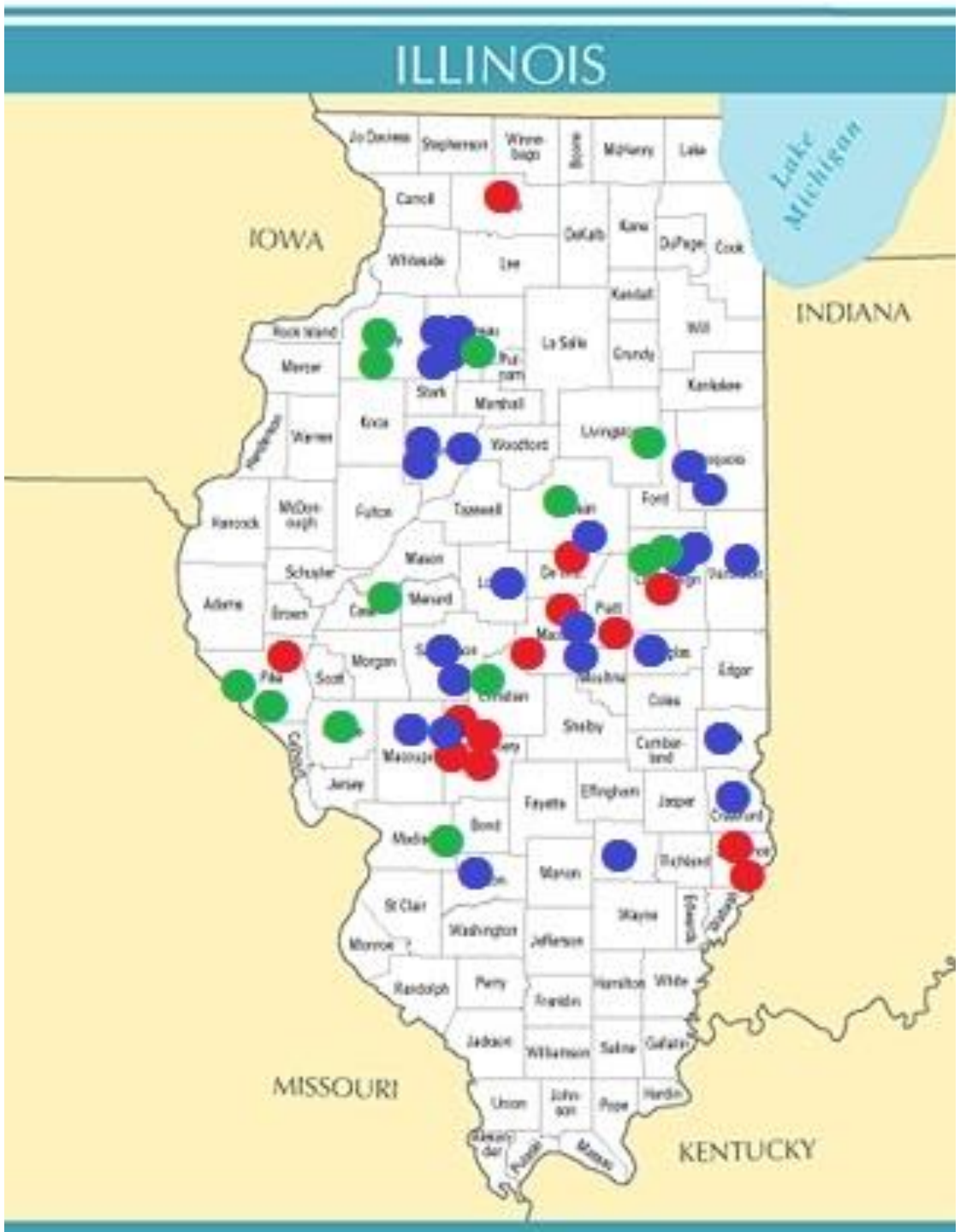
80+ Bu Yields



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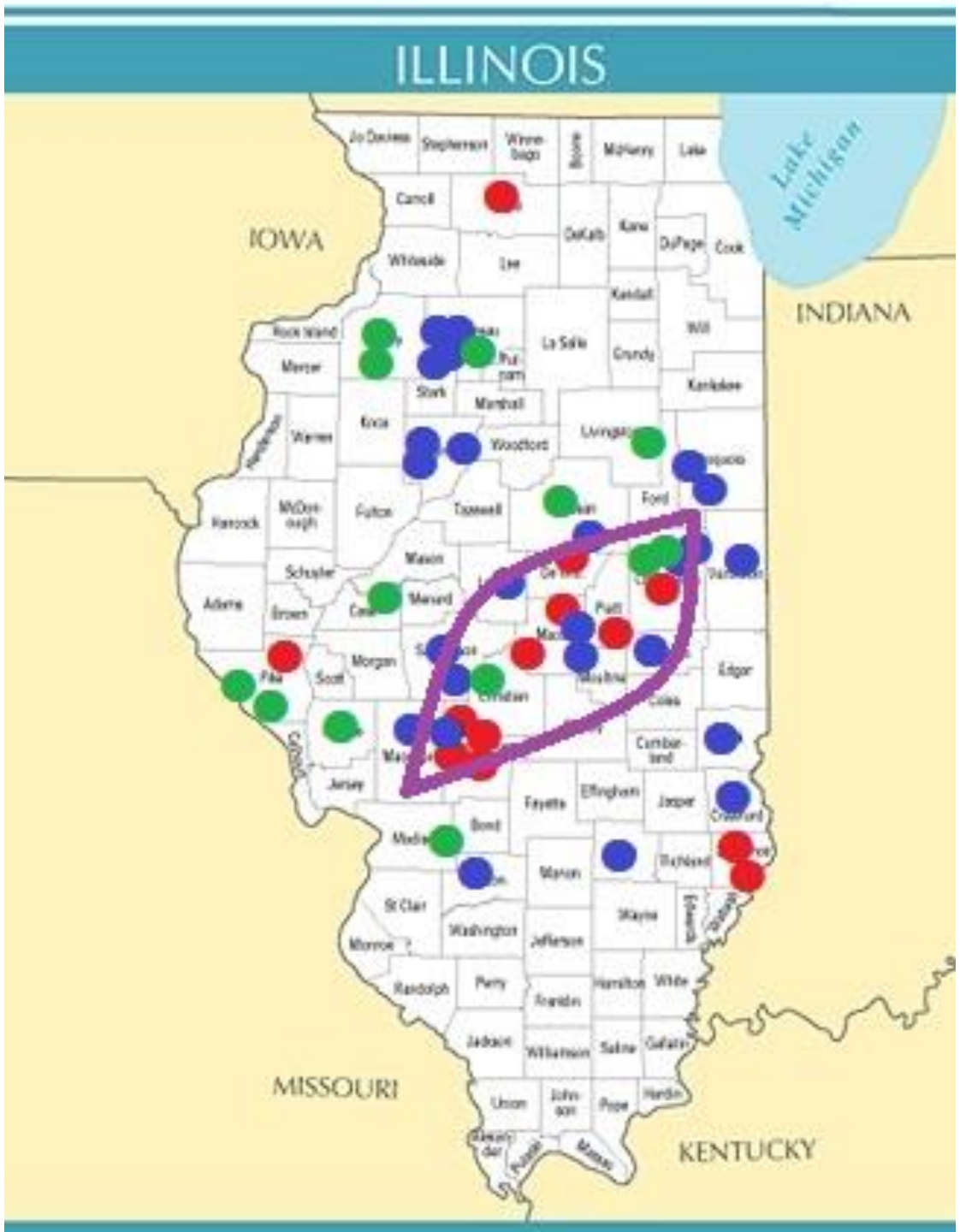
High Yield Zone



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Yields by Region

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Yields by Region

97.32 bpa

79.18 bpa

95.15 bpa

95.92 bpa

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In 2012, your Illinois Soybean Association (ISA) checkoff program established a goal of utilizing (producing and selling) 600 million bushels of Illinois soybeans by 2020 — a 25% increase over typical soybean levels of that time. While many felt soybean yields had plateaued, the ISA Board believed our farmers could increase yields and generate better profits with smarter, more intensive management and the latest technology.

To help accomplish that goal, ISA started funding a first-of-its-kind study to look more holistically at intensive soybean management — to identify if better management leads to better yields and determine which of those practices are most critical to success.

After five years of research, we're pleased to share this summary of the Six Secrets of Soybean Success.

6 Secrets of Soybean Success

WHAT FIVE YEARS OF RESEARCH HAS TAUGHT US

1. **WEATHER:** The number one influence on soybean yields, but beyond our control
2. **FERTILITY:** Proactive fertilization can boost yields over 60 bushels
3. **FOLIAR PROTECTION:** Fungicides and insecticides protect foliage and prevent yield loss
4. **GENETICS:** The fullest maturities for the region produce the greatest yield increases
5. **ROW SPACING:** Narrower, 15- or 20-inch rows increase yield and respond better to more intense management
6. **SEED TREATMENT:** Early season protection protects yield potential

Fred E. Below, Ph.D., is a professor of crop physiology in the Department of Crop Sciences at the University of Illinois. His research is focused on understanding factors limiting crop productivity, particularly corn and soybeans. He is author or co-author on more than 85 peer-reviewed manuscripts, numerous abstracts, book and proceedings chapters, and he has advised more than 65 graduate and postdoctoral students. He developed the "Seven Wonders of The Corn Yield World" and the "Six Secrets of Soybean Success" as tools to teach farmers and agricultural professionals the value of their individual crop management decisions, and he has been actively using these concepts to develop cropping systems capable of sustainably producing high corn and soybean yields.

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- Weather
- Fertility
- Seed Treatment
- Foliar Protection
- Weed Control Practice
- Tillage

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- **Weather**
- **Fertility**
- **Seed Treatment**
- **Foliar Protection**
- **Weed Control Practice**
- **Tillage**

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What is the P1, K, pH???

- We don’t know!
- Questions on Entry Forms asked:
  - Fall application?
  - Spring application?
  - Starter used?
  - Manure applied?
  - Even then, no consistency from our survey to account for nutrient levels

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Fertilizer Applications

Manure used?	Yes = 15%	98.11 bpa
	No = 85%	95.24 bpa
Fall application?	Yes = 79%	95.69 bpa
	No = 21%	95.19 bpa
Spring application?	Yes = 31%	91.77 bpa
	No = 69%	96.13 bpa

* From all responding entry forms

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Fertilizer Applications

Both Fall & Spring?	93.09 bpa
Starter only	96.70 bpa
All 3 times (incl. Starter)	93.84 bpa
No fertilizer application at all	88.90 bpa

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Seed Treatments

Seed Inoculant Used	Yes = 53%	95.95 bpa
	No = 47%	94.23 bpa
Seed Fung / Insecticide	Yes = 84%	96.37 bpa
	No = 16%	88.53 bpa
Seed Nematicide	Yes = 27%	98.54 bpa
	No = 73%	93.85 bpa

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- **Weather**
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Foliar Applications

Foliar Fungicide Used	Yes = 90%	96.93 bpa
	No = 10%	83.44 bpa
Foliar Insecticide Used	Yes = 83%	96.67 bpa
	No = 17%	90.61 bpa
Foliar Stack Used	Yes = 70%	95.10 bpa
	No = 30%	97.09 bpa

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Weed Control Practices

Pre-Emergence Herbicide Used (all conducted a post-emerge appl)	96.85 bpa
No Pre-Emergence Herbicide Used	88.91 bpa
Burndown only w/ Post trip	89.24 bpa

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Weed Control Practices

Widest Used Post Emerge Chemistries

Glyphosate	50% of respondents
Key non-Glyphosate	37% of respondents
Dicamba	41% of respondents

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Tillage Practices

Fall Tillage Used	Yes = 85%	97.80 bpa
	No = 15%	84.10 bpa
Spring Tillage Used	Yes = 68%	97.09 bpa
	No = 32%	92.92 bpa
Fall Tillage Only	23%	96.85 bpa
Spring Tillage Only	6%	86.74 bpa
Strip-Till Only	19%	85.71 bpa

* Notes: 1 – No-Till (83.70 bpa)
2 – Minimum-Till (95.25 bpa, one grower)

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Genetics

• All Brands Avg	95.30 bpa
• Brand A	96.52 bpa
• Brand B	96.30 bpa
• Brand C	85.47 bpa
• Brand D	96.77 bpa
• Brand E	96.74 bpa
• Brand F	95.50 bpa
• Brand G	90.83 bpa
• Misc Brands (6)	97.66 bpa

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Row Spacing

42 Respondents Avg	94.96 bpa
7.5″ Rows (3)	81.59 bpa
10″ Rows (1)	95.68 bpa
15″ Rows (15)	95.16 bpa
20″ Rows (6)	98.94 bpa
30″ Rows (17)	95.70 bpa

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Planting Population

39 Respondents Avg	95.30 bpa
>120k (3)	95.45 bpa
125k (6)	100.22 bpa
130k (3)	98.54 bpa
135k (4)	104.93 bpa
140k (10)	92.95 bpa
140-155k (5)	95.18 bpa
160k (5)	92.33 bpa
+165k (3)	84.24 bpa

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Planting Dates

Avg Plant Date 4/28/2018 (38)	94.42 bpa
3/22 – 4/2 (3)	93.64 bpa
4/22 – 4/26 (12)	98.96 bpa
4/28 – 4/29 (11)	96.25 bpa
5/1 – 5/8 (5)	91.23 bpa
5/10 – 5/20 (7)	86.39 bpa
	(incls a 108.31)
	(82.74 bpa)

* Note – 3/22 - 4/2 yields: 103.19, 102.5, 75.24

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Crop Rotation

2016 / 2017 / 2018

42 Respondents Averaged 96.77 bpa

Soybeans / Corn / Soybeans	48%	95.66 bpa
Corn / Corn / Soybeans	43%	97.73 bpa
Corn / Soybeans / Soybeans	9%	98.03 bpa

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Maturity Groups

41 Entries averaged 95.91 bpa

2.9	(2)	90.58 bpa	
3.0	(4)	96.58 bpa	
3.1	(2)	95.36 bpa	
3.2	(1)	106.28 bpa	
3.3	(1)	87.47 bpa	
3.4	(3)	98.83 bpa	
3.5	(2)	98.29 bpa	
3.6	(10)	98.25 bpa	
3.7	(3)	96.70 bpa	
3.8	(4)	95.07 bpa	
3.9	(6)	96.84 bpa	
4.2	(2)	90.67 bpa	
4.3	(1)	72.07 bpa	

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Maturity Groups

40 Entries averaged 96.57 bpa

Lower 14	96.69 bpa
Middle 14	97.43 bpa
Higher 13	95.22 bpa

* Removing the 4.3 @ 72.07 bpa

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Maturity Groups

38 Entries averaged 96.83 bpa

2.9 – 3.3 (10)	95.19 bpa
3.4 – 3.6 (15)	98.37 bpa
3.7 – 3.9 (13)	96.26 bpa

* Removing the 4.2s & the 4.3

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What's Coming in the Future??

National Contest?

Higher Yields??

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Thank You

To the

Fluid Fertilizer Foundation

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