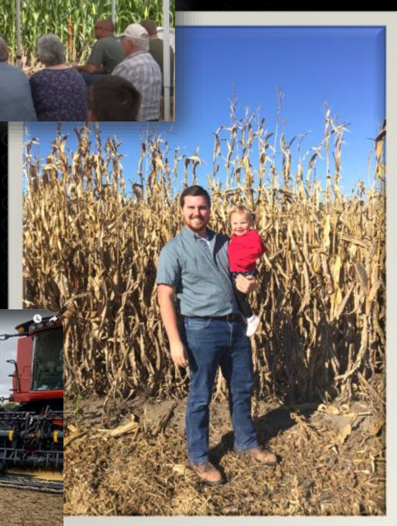
1

Dave Murphy

- University of Illinois
  - Farm Management Major
  - Crop Science Minor
- 7 years as a seed sales agronomist
- 3 years as an equipment agronomist with 360
  - Manage 80 dealers across IL & WI
- IL Soybean Association Ambassador 2016-2018
- Family farmer in Bureau, Marshall, & Peoria Co.



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Welcome to 360 YIELD CENTER

WHO WE ARE

360 Yield Center is a team of farmers, agronomists, and engineers who develop solutions to help you get more from less inputs.

360 Yield Center, founded by Gregg Sauder, began with a question. How can we prevent nature and inefficiencies from negatively impacting a farm's season? After a 2012 drought caused the worst season in the history of the Sauder family farm, Gregg launched 360 Yield Center. He set out to equip his farm, and farms across the Midwest, with the tools and resources needed to make the most of every season.

HOW WE DEFINE SUCCESS

Successful nutrient management starts with harvest and continues through tassel. Starting with a new and more efficient nitrogen strategy, called the base-plus approach to nitrogen management, we've developed and tested new processes and products on our family farm. In just a few years, we've been able to develop tools and attachments that add value to the equipment you already own. Each tool we introduce must meet these three criteria:

- Increase yield in the most efficient way possible
- Lower input costs
- Have the ability to pay for itself in the first year

The farmer is at the heart of everything we do. Our team is focused on creating new solutions to capture more yield, and ultimately returns, for your farm.

"The greatest feeling in the world for me is when I know that I've helped increase a farm family's yield, which in turn increased their net profit."

GREGG SAUDER, FOUNDER & PRESIDENT

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MONTH	OPEN	HIGH	LOW	LAST	CHANGE	SETTLE	EST. VOLUME
DEC 21	584'0	589'4	579'4	586'4B	+2'6	586'2	1,885
MAR 22	584'0	588'6	578'4	586'0	+2'4	586'0	105,469
MAY 22	586'4	590'6	581'2	588'4	+2'4	588'4	30,092
JLY 22	587'0	590'6	581'2	588'4B	+2'6	588'4	27,359
SEP 22	563'0	566'4	560'0	564'6	+2'6	565'4	11,333
DEC 22	553'2	557'0	550'6	554'0	+2'4	555'0	15,447
MAR 23	559'2	564'0	558'0A	561'4	+2'4	562'2	1,283
MAY 23	561'0	566'0B	560'4A	562'0A	+2'6	564'2	152
JLY 23	560'0	564'2B	558'6A	562'0A	+2'6	562'6	62

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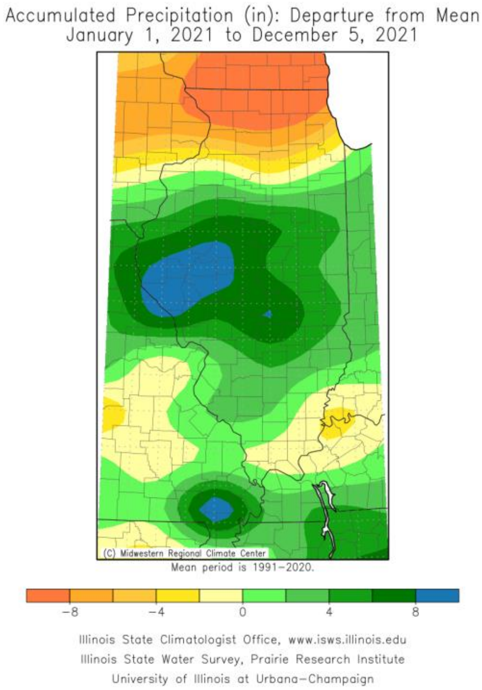

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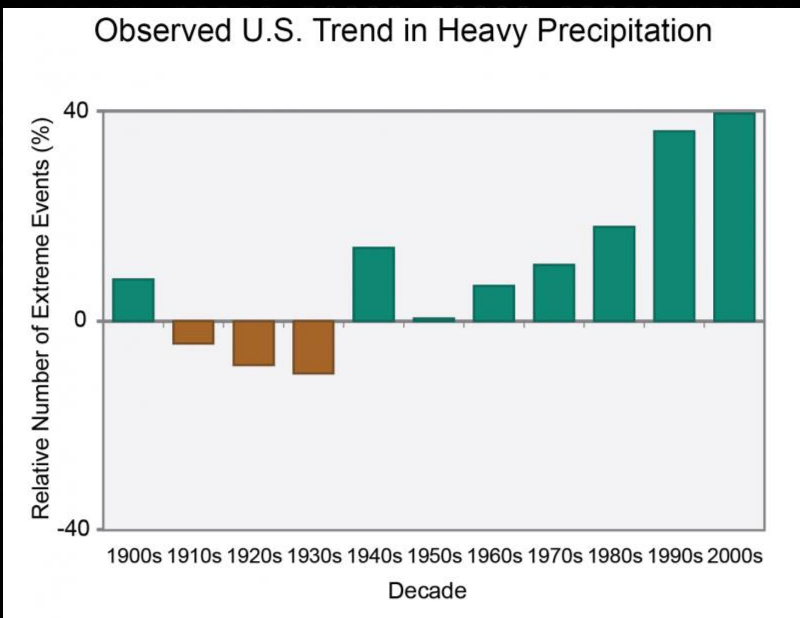

National Climate Assessment

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ILLINOIS

farmdocDAILY

Table 1. Corn and Soybean Returns, Central Illinois, High-Productivity Farmland

	Corn 2020	Corn 2021P	Corn 2022P	Soybeans 2020	Soybeans 2021P	Soybeans 2022P
Yield per acre	214	222	220	72	69	69
Price per bu	$4.33	$5.25	$4.50	$11.22	$13.60	$12.35
Crop revenue	$927	$1,166	$990	$808	$938	$852
ARC/PLC	0	0	0	0	0	0
Ad hoc Federal payments	68	0	0	45	0	0
Crop insurance proceeds	9	0	0	4	0	0
Gross revenue	**$1,004**	**$1,166**	**$990**	**$857**	**$938**	**$852**
Fertilizers	143	153	193	42	45	63
Pesticides	78	61	66	47	50	54
Seed	112	115	124	71	74	80
Drying	22	22	24	0	0	2
Storage	15	15	15	5	5	5
Crop insurance	21	24	24	14	16	16
Total direct costs	**$391**	**$390**	**$446**	**$179**	**$190**	**$220**
Machine hire/lease	16	17	19	14	14	16
Utilities	5	5	6	5	5	6
Machine repair	28	30	33	24	21	23
Fuel and oil	15	18	20	13	12	13
Light vehicle	2	2	2	1	1	1
Mach. depreciation	65	68	71	56	55	58
Total power costs	**$131**	**$140**	**$151**	**$113**	**$108**	**$117**
Hired labor	20	21	22	20	22	23
Building repair and rent	6	7	8	5	6	7
Building depreciation	13	14	15	11	12	13
Insurance	11	11	12	11	11	12
Misc	10	10	11	10	10	11
Interest (non-land)	17	14	12	15	12	10
Total overhead costs	**$77**	**$77**	**$80**	**$72**	**$73**	**$76**
Total non-land costs	**$599**	**$607**	**$677**	**$364**	**$371**	**$413**
Operator and land return	**$405**	**$559**	**$313**	**$493**	**$567**	**$439**
Land costs	279	279	289	279	279	289
Farmer return	**$126**	**$280**	**$24**	**$214**	**$288**	**$150**

farmdocDAILY

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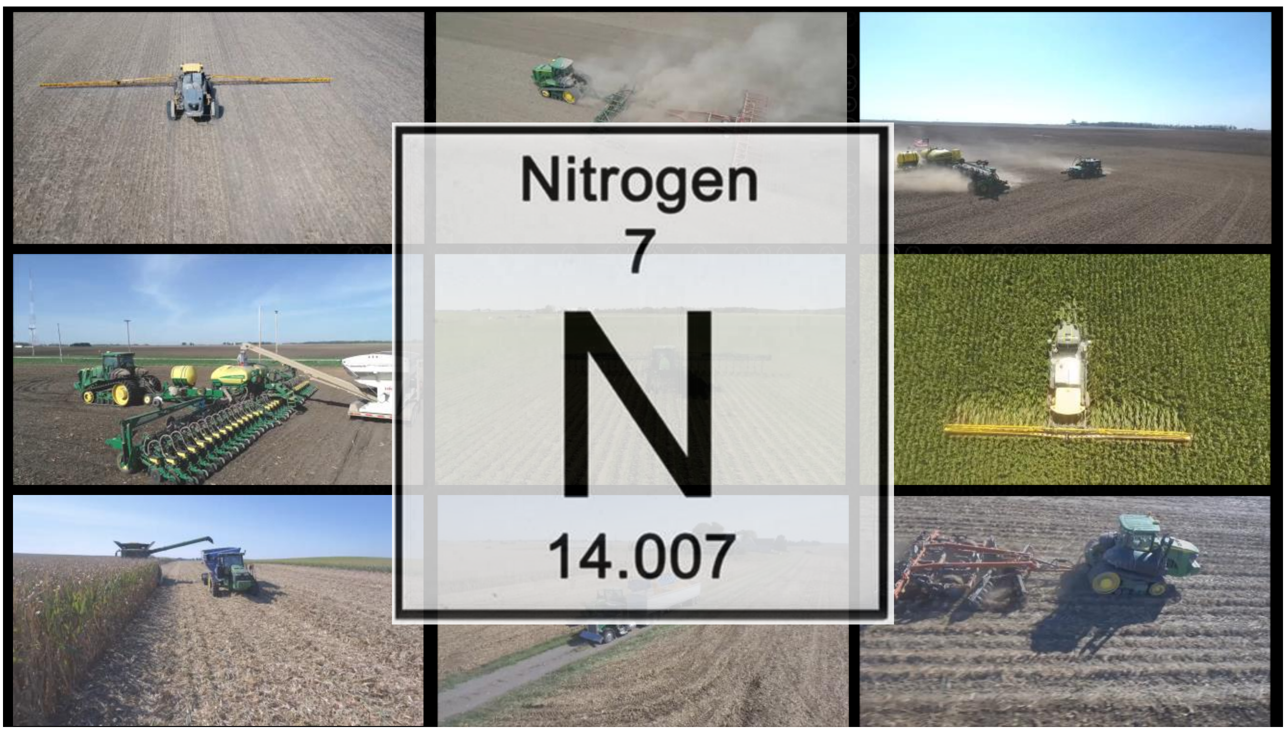

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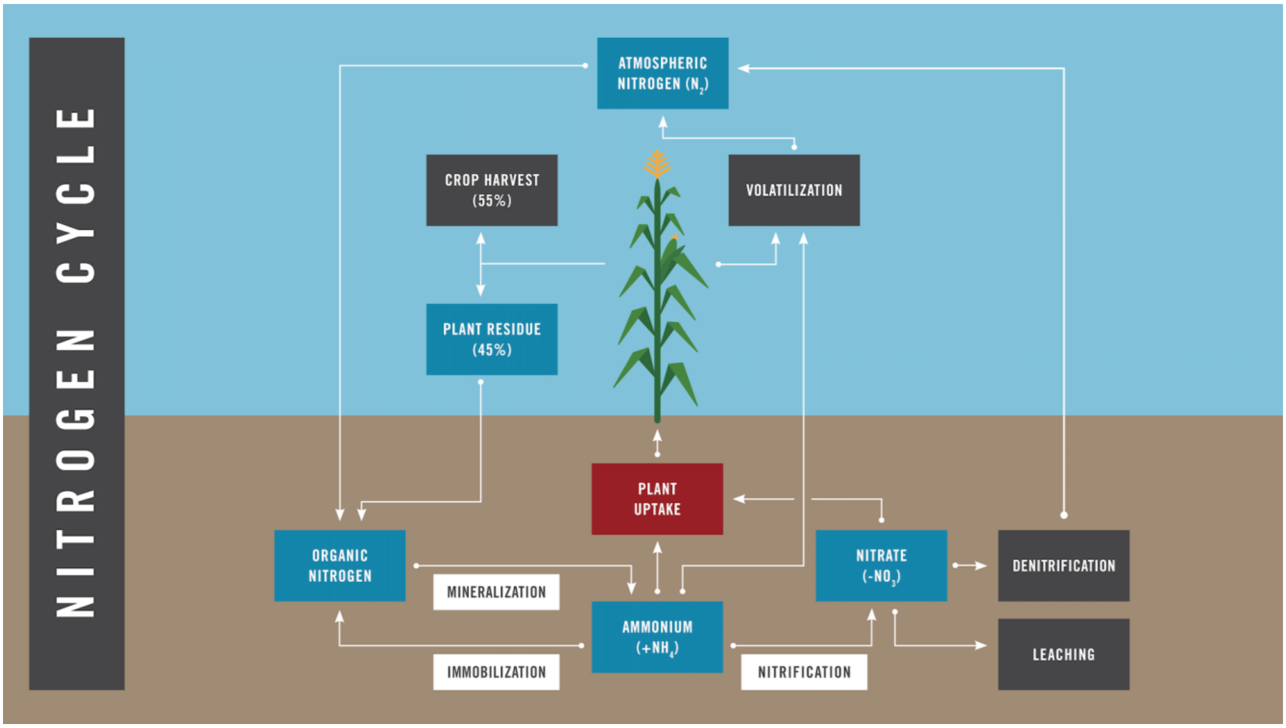
NITROGEN CYCLE
ATMOSPHERIC NITROGEN (N_2)
CROP HARVEST (55%)
VOLATILIZATION
PLANT RESIDUE (45%)
PLANT UPTAKE
ORGANIC NITROGEN
NITRATE (-NO_3)
DENITRIFICATION
MINERALIZATION
AMMONIUM (+NH_4)
LEACHING
IMMOBILIZATION
NITRIFICATION

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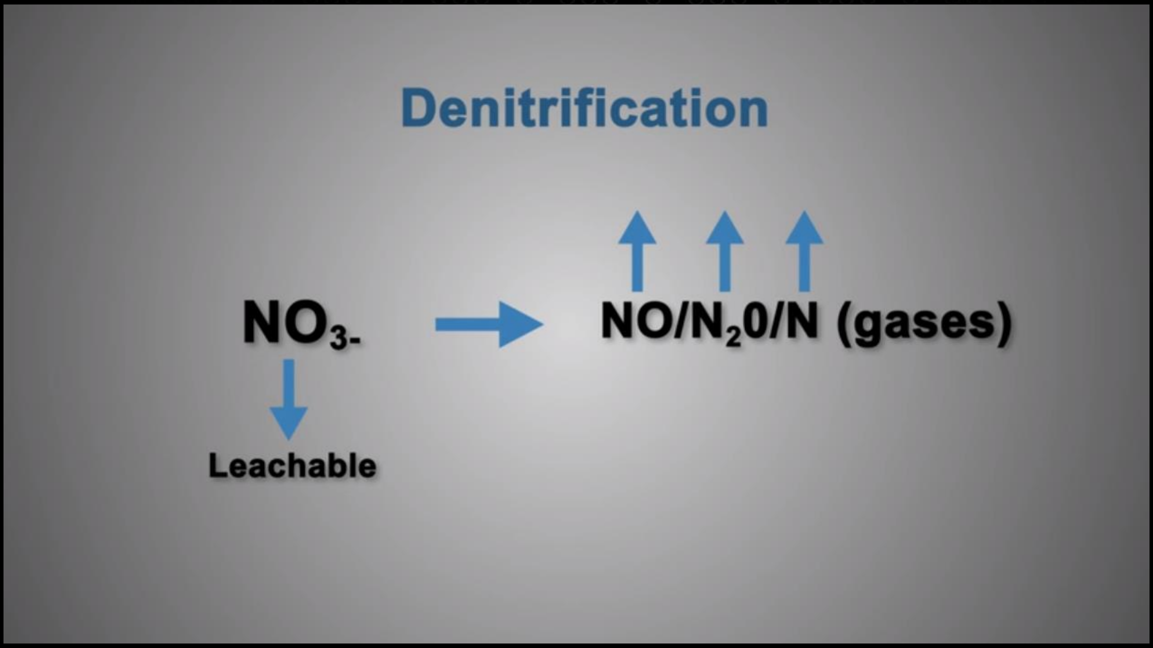
Is this a nitrogen problem?

$NH_{4+} \Rightarrow NO_{3-}$

11



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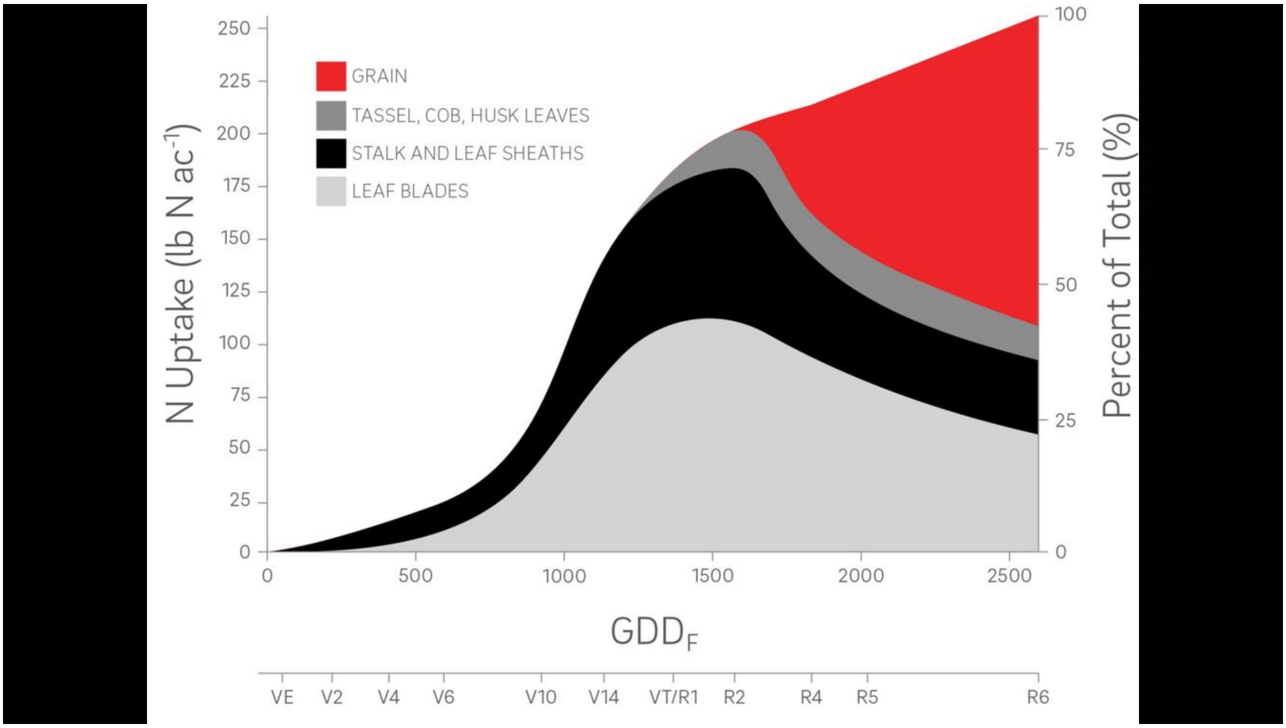
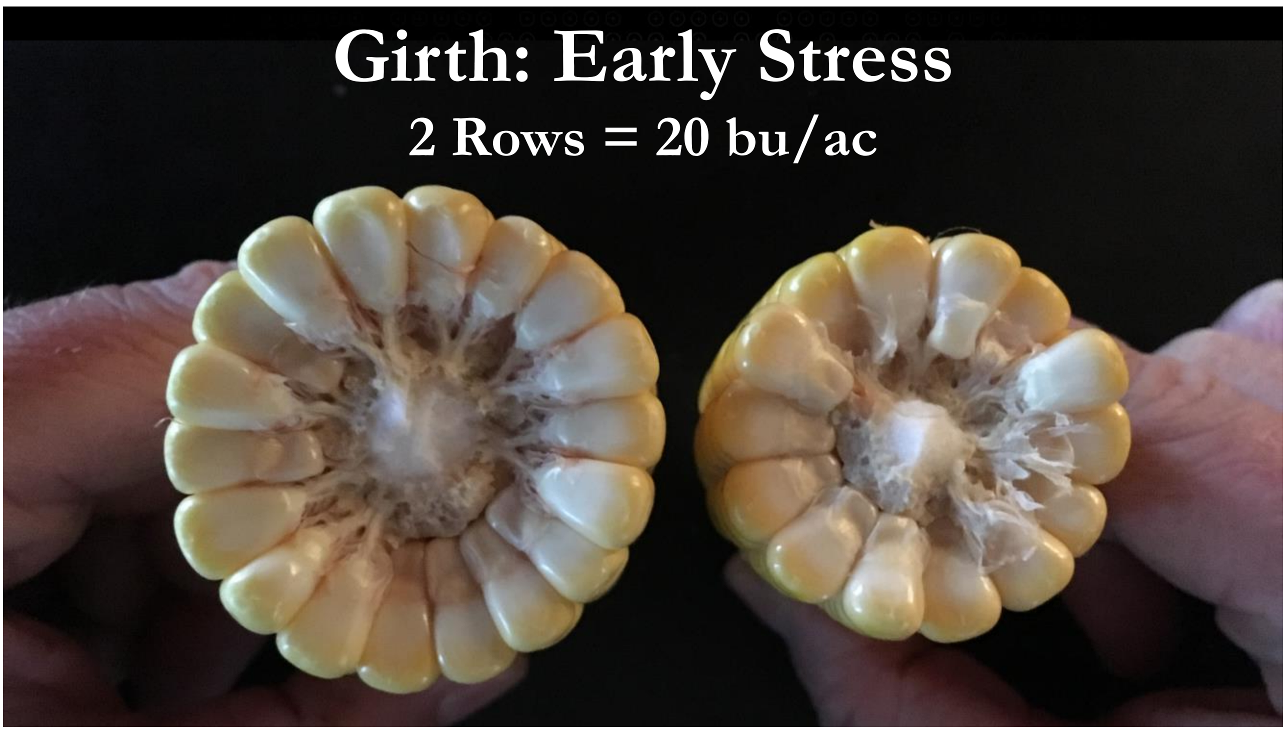


N Uptake (lb N ac^{-1})
250
225
200
175
150
125
100
75
50
25
0
GRAIN
TASSEL, COB, HUSK LEAVES
STALK AND LEAF SHEATHS
LEAF BLADES
Percent of Total (%)
100
75
50
25
0
0
500
1000
1500
2000
2500
GDD$_F$
VE
V2
V4
V6
V10
V14
VT/R1
R2
R4
R5
R6

13



Girth: Early Stress
2 Rows = 20 bu/ac

14

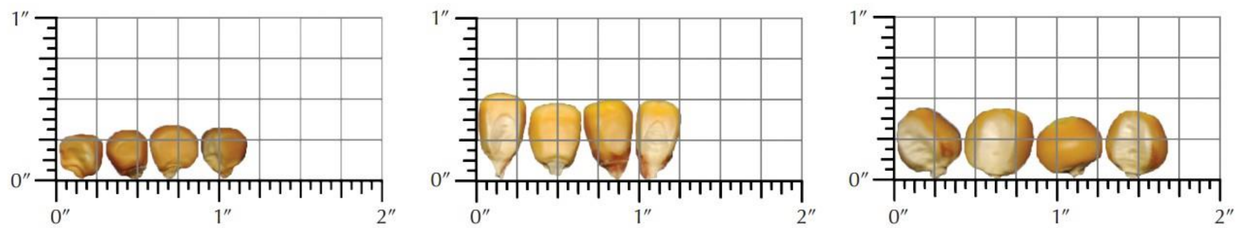
Length: Mid-Season Stress

1 Kernel = 6 bu/ac

15

Depth: Late Stress

5k Kernels = ~9.5 bu/ac



Small kernels
110,000 kernels per bushel

Medium kernels
90,000 kernels per bushel

Large kernels
70,000 kernels per bushel

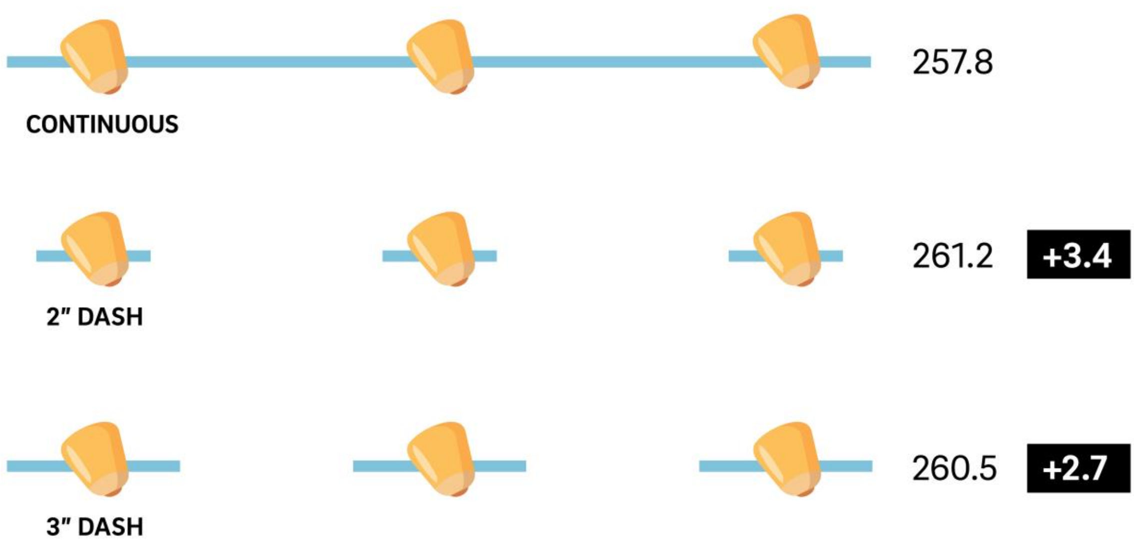
16

17

18

19

5 GALLON PER ACRE APPLICATION



20

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TOTAL RETURN

BUSHEL INCREASE WITH 2" DASH ....+3.4 BU/AC

BUSHEL INCREASE X $4/BUSHEL CORN PRICE................+$13.60/AC
(CORN PRICES WILL VARY)

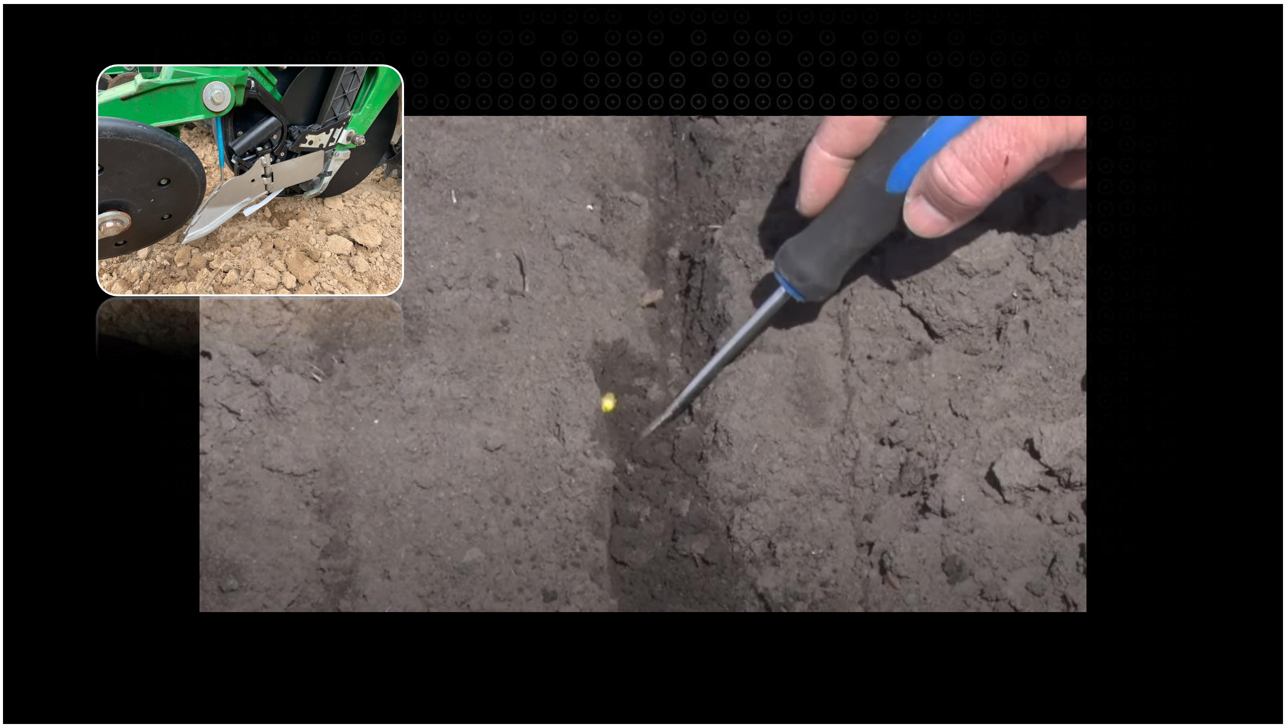
2" DASH = 2/3 LESS STARTER COST .... +$21.00/AC
(CONSIDER $30 PROGRAM)

TOTAL RETURN WITH 2" DASH............................+$34.00/AC

22

23

24



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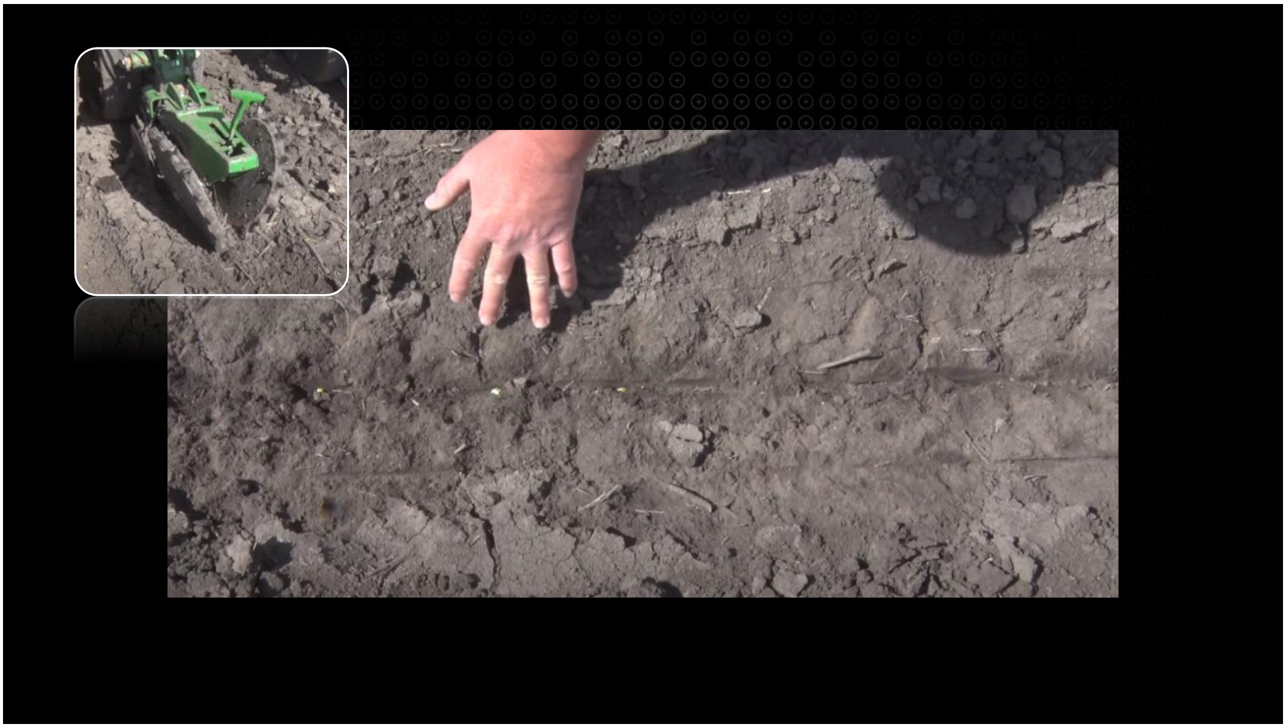

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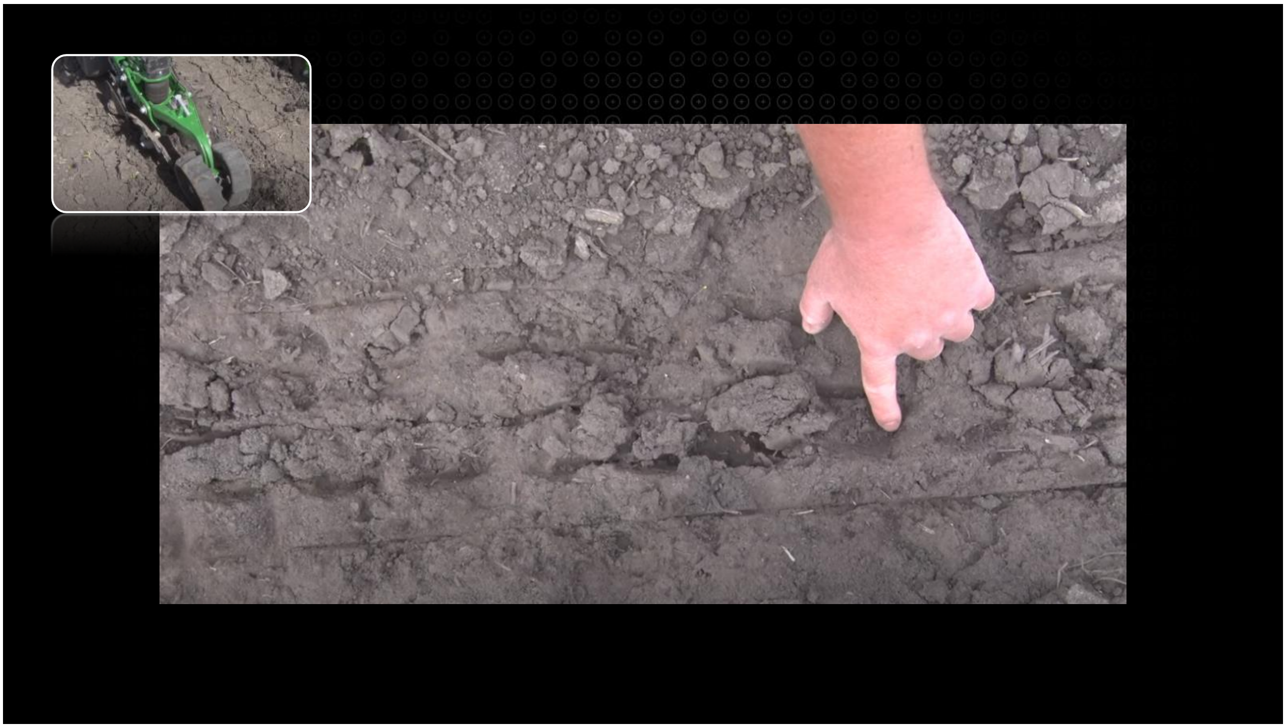

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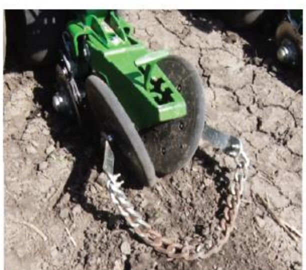
RESULTS

CLOSING SYSTEM	FIRMING SYSTEM	YIELD	DIFFERENCE FROM CONTROL
Rubber Wheels	Keeton Seed Firmer	225.2	Control
Furrow Cruiser	Keeton Seed Firmer	227.1	+ 1.9
Cast Wheels	Keeton Seed Firmer	231.4	+ 6.2
2-Stage Controlled	Keeton Seed Firmer	232.1	+ 7.4
2-Stage Controlled	FurrowJet	236.7	+ 11.6
Rubber Wheels	**360 WAVE**	239.1	+ 14.0
Cast Wheels	**360 WAVE**	239.6	+ 14.5



RUBBER WHEELS

FURROW CRUISER

CAST WHEELS

2-STAGE CONTROL

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33

34

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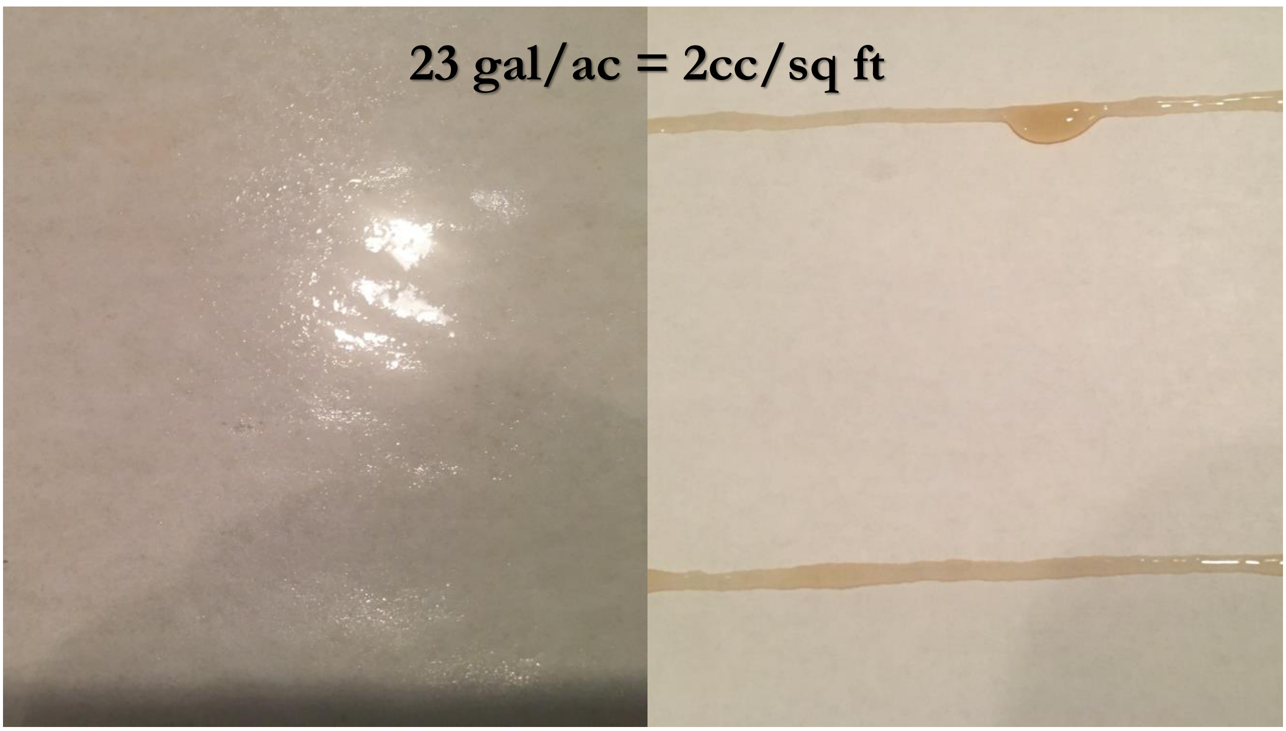

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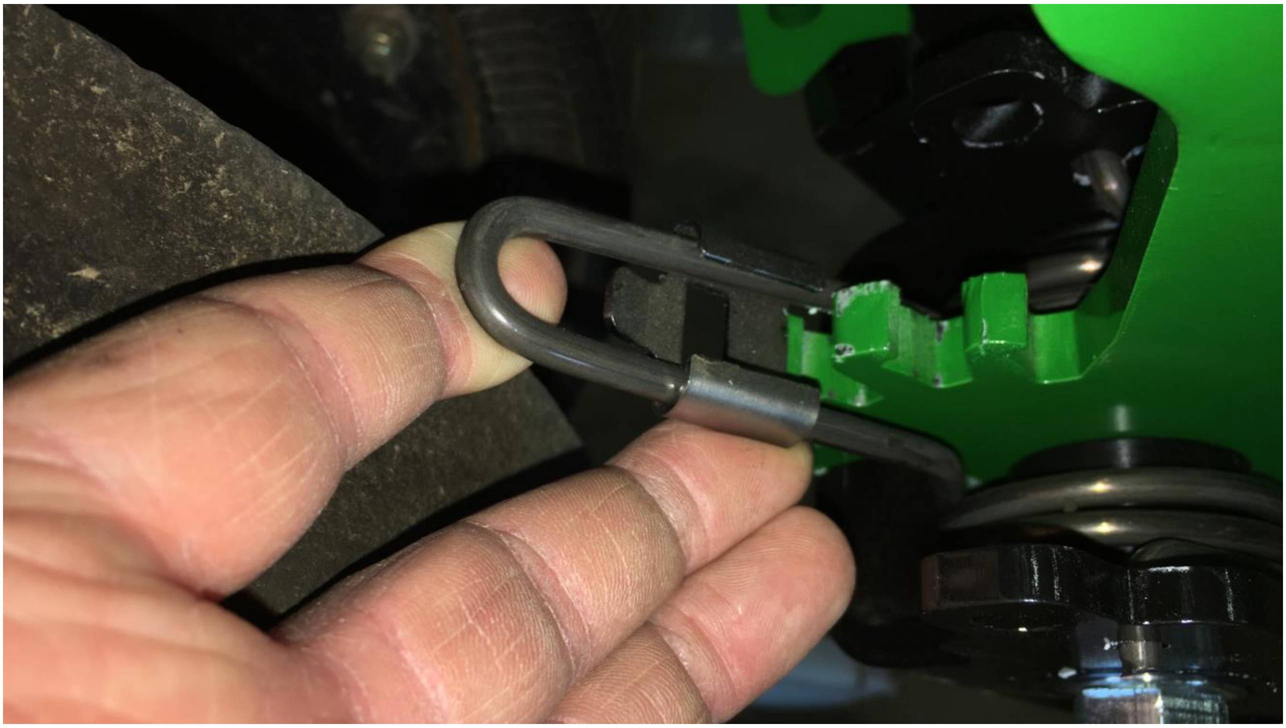

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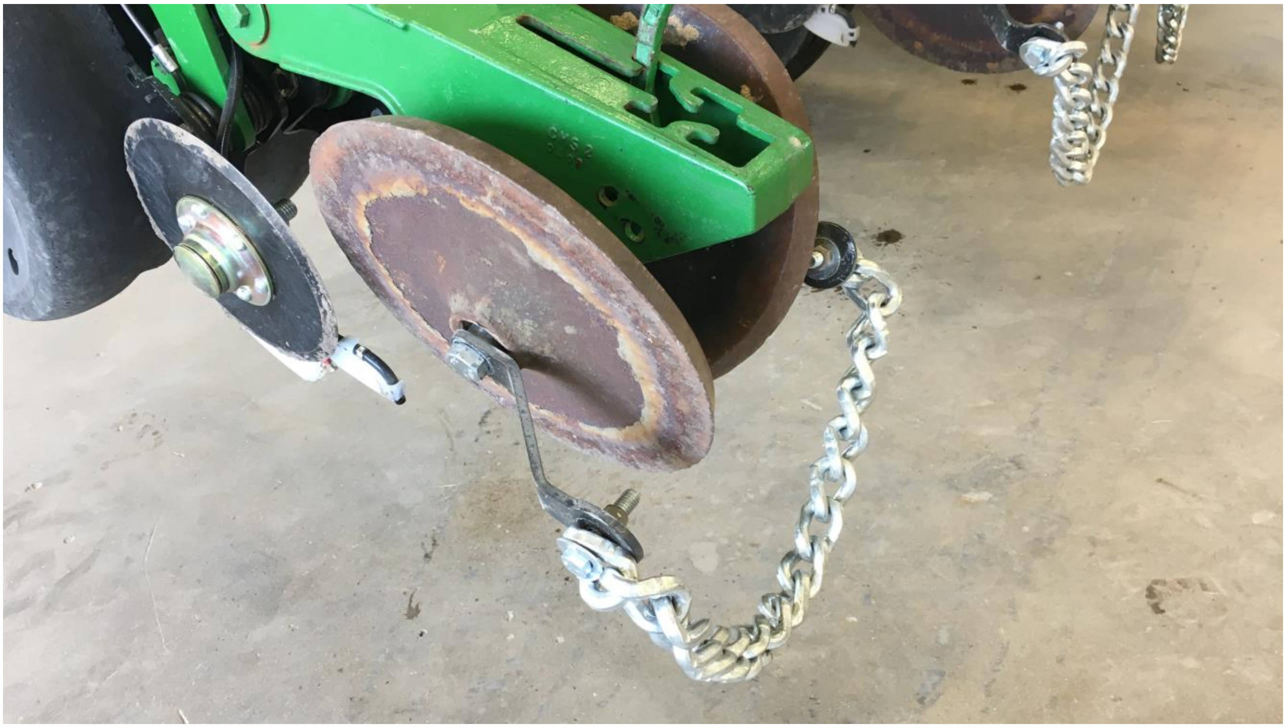

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PLANTER BRANDS
• JD MAXEMERGE & EXACT EMERGE
• CASE IH 1200 & 1250
• HARVEST INTERNATIONAL
• KINZE 3000
• KINZE 2000/JD 7000
• WHITE – 8000 & 9000

46

Corn on Beans | Corn on Corn

Corn on Beans		Corn on Corn	
Broadcast	Bandit	Broadcast	Bandit

275.8 bu/ac	282.0 bu/ac	240.9 bu/ac	257.0 bu/ac

+ 6.2 bu Two Year Average + 16.1 bu

47

LIQUID SYSTEM PROFIT CALCULATOR
ROI FOR ADDING LIQUID SYSTEM TO PLANTER

YIELD ADVANTAGE: 7
CORN PRICE: $ 4.75
BANDIT COST/ROW: $ 350
TANK COST: $ 15500
PUMPS AND PLUMBING COST: $ 8000
NUMBER OF ROWS: 16
ACRES PER YEAR: 1200
TOTAL SYSTEM COST: $ 29100.00

Calculate

YEAR #1

BUSHEL INCREASE	ADDITIONAL REVENUE	LIQUID SYSTEM COST	NET PROFIT	YEAR 1 ROI	ACRES TO BREAKEVEN
8,400	$39,900.00	$29,100.00	$10,800.00	37 %	875.19

LIQUID SYSTEM PROFIT CALCULATOR
ROI FOR ADDING LIQUID SYSTEM TO PLANTER

YIELD ADVANTAGE: 7
CORN PRICE: $ 4.75
BANDIT COST/ROW: $ 350
TANK COST: $ 15500
PUMPS AND PLUMBING COST: $ 8000
NUMBER OF ROWS: 24
ACRES PER YEAR: 1800
TOTAL SYSTEM COST: $ 31900.00

Calculate

YEAR #1

BUSHEL INCREASE	ADDITIONAL REVENUE	LIQUID SYSTEM COST	NET PROFIT	YEAR 1 ROI	ACRES TO BREAKEVEN
12,600	$59,850.00	$31,900.00	$27,950.00	88 %	959.4

360roicalculators.com

48

360 SPRINT SYSTEM

49

50

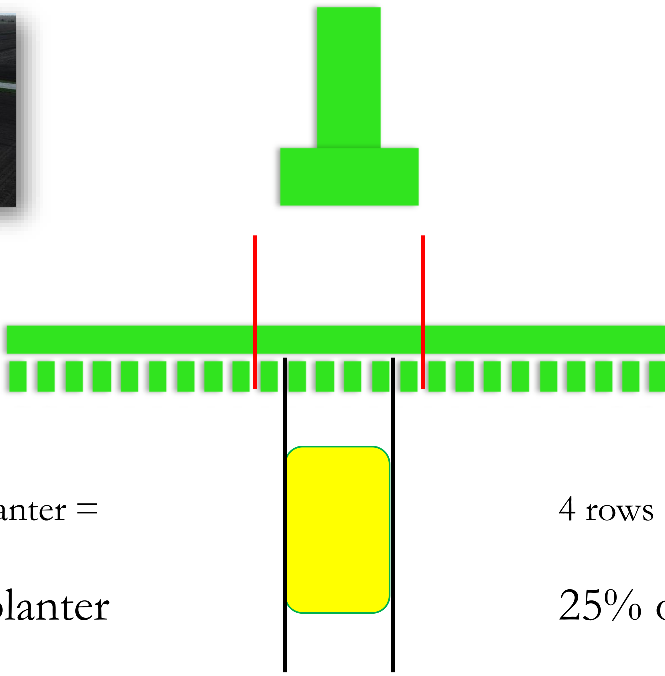
Weight of liquid on the planter

32% = 11 lbs / gal

SPECS

- Single-tank capacity: 1,600 gallon
- Dual-tank capacity: 1,600 + 400 gallon
- Maximum load: 30,000 lbs. (including cart)

51



4 rows / 24 row planter =

16.7% of the planter

4 rows / 16 row planter =

25% of the planter

52


360 SPRINT

53


360 SPRINT
PUMP
START
VALVE
PURGE
RELEASE
CLOSE
LOCK

54

360 Tanks

55

Weight Balance

56

57

58

59

60


TRACTOR MODELS
JOHN DEERE 8R SERIES
JOHN DEERE 8030 SERIES
CASE IH MAGNUM

61


Length: Mid-Season Stress
1 Kernel = 6 bu/ac

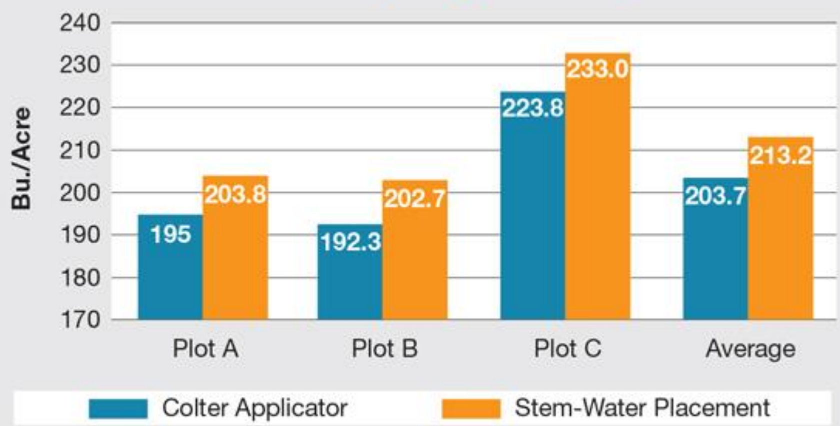
62

63

64

65

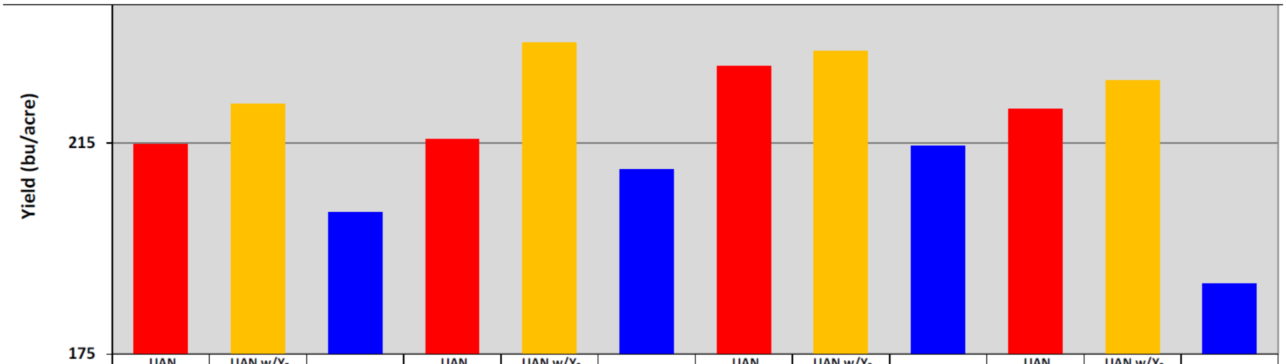
Placement Pays Big in a Dry Year



In a study conducted by Farm Journal Field Agronomist Ken Ferrie, using 360 Y-Drop attachments to place nitrogen in the stem-water zone next to corn plants yielded about 10 bu. more per acre than a colter-equipped sidedress bar. "Placing fertilizer in the stem-water zone makes it less dependent on rainfall to move it into the soil," Ferrie says.

SOURCE: FARM JOURNAL TEST PLOTS

66



	UAN w/Coulter	UAN w/Y-Drop	Urea	UAN w/Coulter	UAN w/Y-Drop	Urea	UAN w/Coulter	UAN w/Y-Drop	Urea	UAN w/Coulter	UAN w/Y-Drop	Urea
Yield Average	214.8	222.4	201.8	215.8	234.0	210.0	229.6	232.4	214.5	221.5	226.9	188.4

Yield Average for All Individual Treatments (bu/acre)	UAN w/Coulter	UAN w/Y-Drop	Urea	Applications:
	220.4	228.9	203.7	70 lbs on 5/7 70 lbs on 6/13

+ 8.5

+ 25 bu

67

68

360 Y-DROP SIDEDRESS CALCULATOR
COULTER VS 360 Y-DROP: PLACEMENT COMPARISON

PLACEMENT ADVANTAGE:	6
CORN PRICE:	$ 4.75
360 Y-DROP/ROW:	$ 475
NUMBER OF ROWS:	16
NUMBER OF DROPS:	15
ACRES/YEAR:	800

Calculate

YEAR #1

BUSHEL INCREASE	ADDITIONAL REVENUE	COST TO UPGRADE	NET INCOME	YEAR 1 ROI	ACRES TO BREAKEVEN
4,800	$22,800.00	$7,125.00	$15,675.00	220 %	250

69

70

71

2019 PG Plot

250# Broadcast
- At Planting

218 bushels / acre
NUE: 1.1# / bushel

ROI
$100 fertilizer cost
$8 application cost

$108

215# Split Applied
- Planter & Y-drop

240 bushels / acre (+22 bu)
NUE: 0.9# / bushel

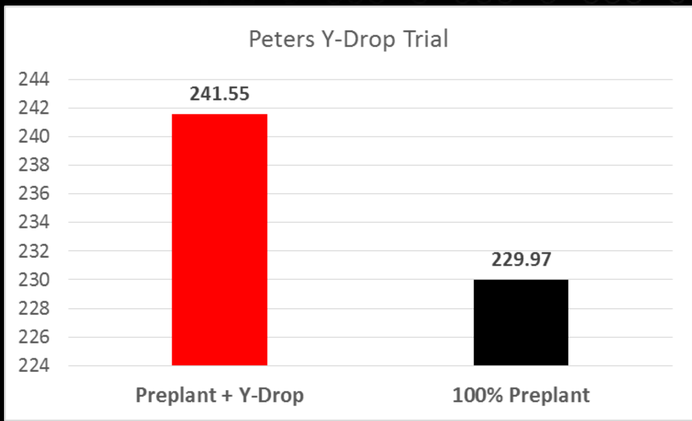
ROI
$86 fertilizer cost
$22 application cost

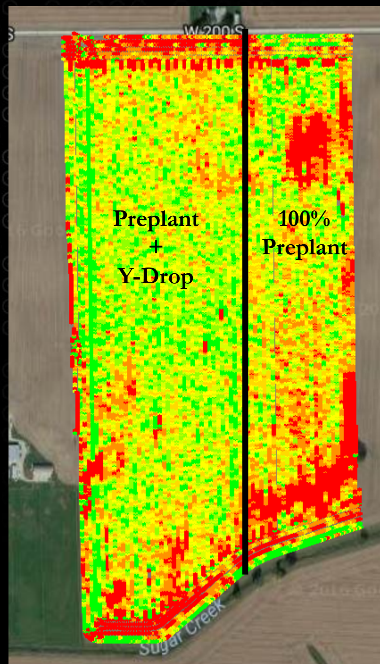
$3.75 cash corn and $0.40 per # N cost

$3.75 X 22 bu. = $82.50

$82 gain / acre

72



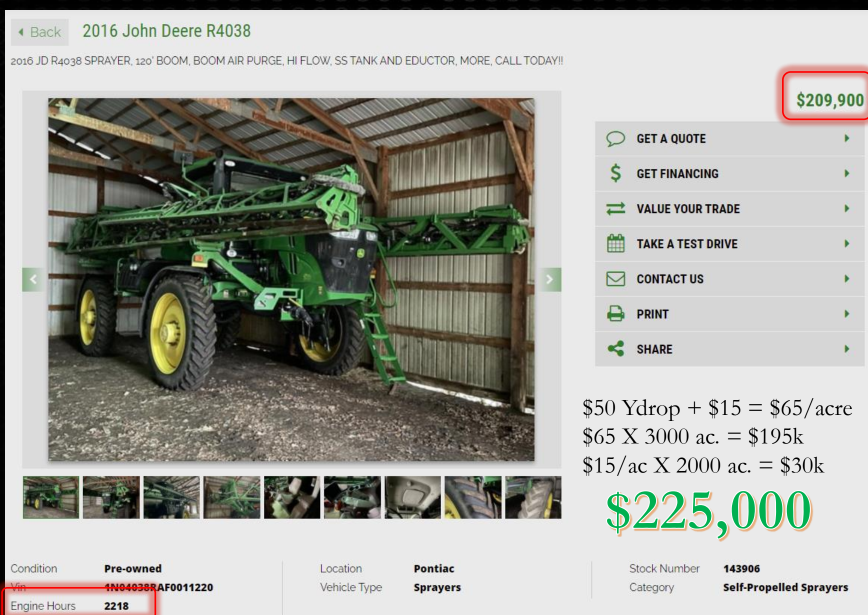


All preplant N: 255 lbs / 229.9 bu = 1.1 lbs per bu
Base Plus: 180 lbs / 241.5 bu = .74 lbs per bu

All preplant N: 180 lbs. N NH3 + 75 lbs. N Planter: 255 total
Base Plus: 75 lbs. N planter + 105 lbs. Y-Drop: 180 total

73

JOHN DEERE PRAIRIE STATE TRACTOR



$50 Ydrop + $15 = $65/acre
$65 X 3000 ac. = $195k
$15/ac X 2000 ac. = $30k

$225,000

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360 Guide

75

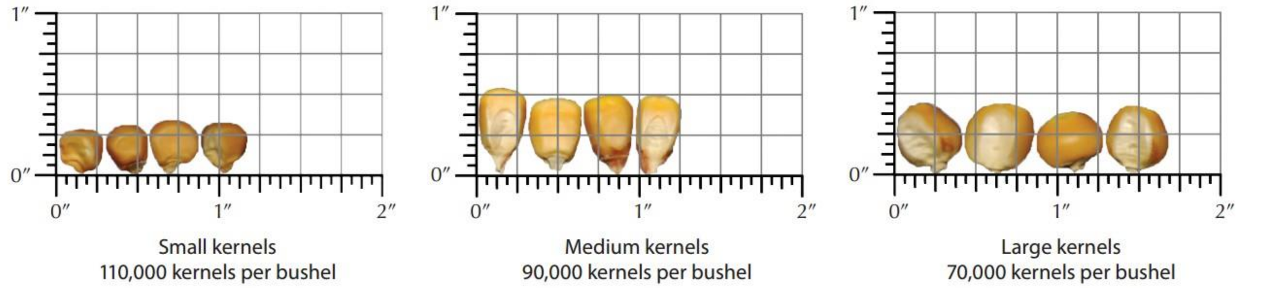
76

360 Glide

77

78

Depth: Late Stress
5k Kernels = ~9.5 bu/ac



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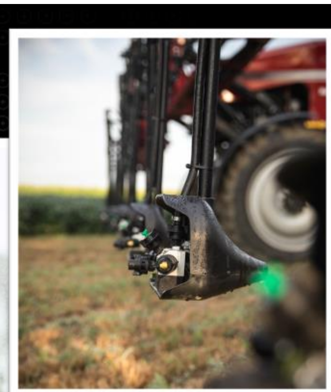
360 UNDERCOVER



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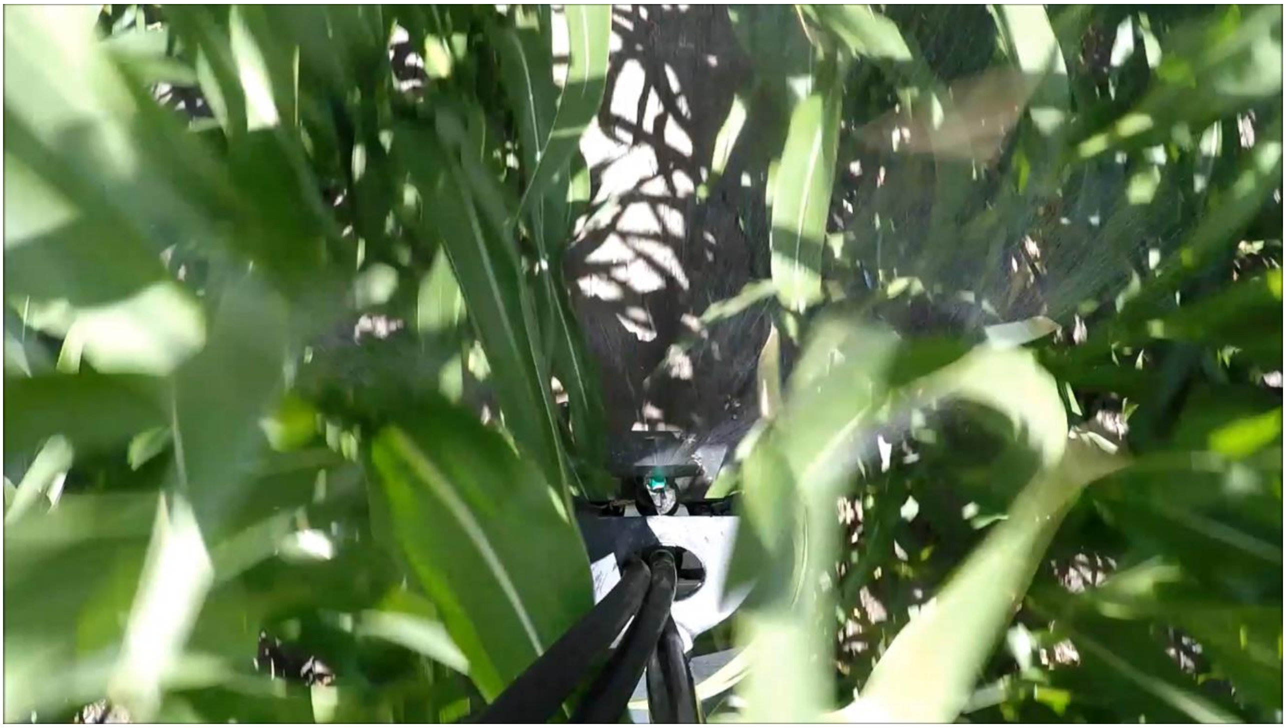

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82

Yield
263 bu/ac

83

Yield
263 bu/ac
193 bu/ac
- 70 loss

84

85

86

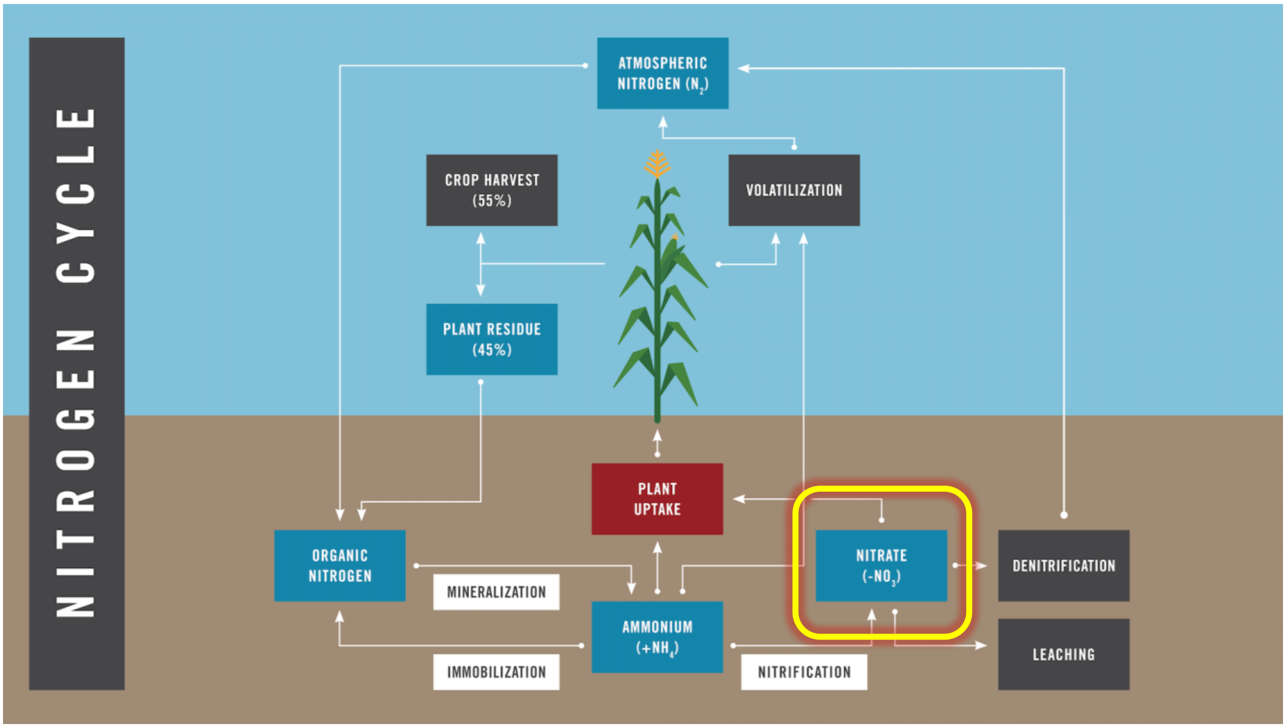

360YIELDCENTER.COM

87


Fungicide: 259 bu/ac
No Fungicide: 232 bu/ac
27
Bu

88

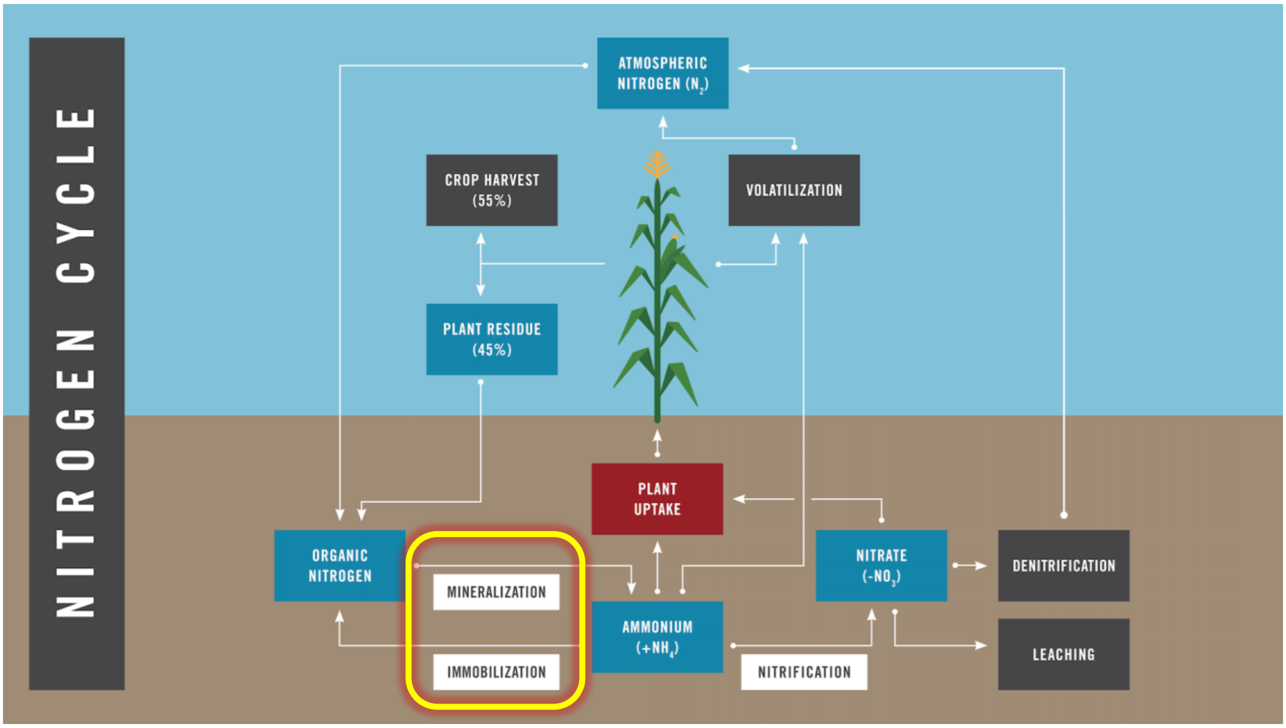
89


NITROGEN CYCLE
ATMOSPHERIC NITROGEN (N_2)
CROP HARVEST (55%)
VOLATILIZATION
PLANT RESIDUE (45%)
PLANT UPTAKE
ORGANIC NITROGEN
NITRATE ($-NO_3$)
DENITRIFICATION
MINERALIZATION
AMMONIUM ($+NH_4$)
IMMOBILIZATION
NITRIFICATION
LEACHING

90

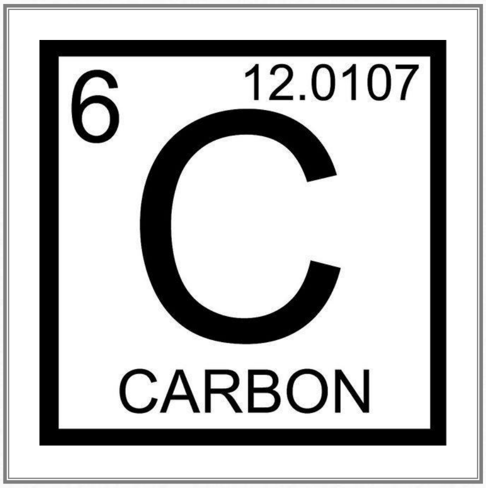
Nitrate PPM
25
20
15
10
5
0
5-Jun
12-Jun
19-Jun
26-Jun
3-Jul
North
West
Low Spot
Soil Analysis
Analysis in progress
9%
Nitrate (NO3-N)
60
214

91



NITROGEN CYCLE
ATMOSPHERIC NITROGEN (N_2)
CROP HARVEST (55%)
VOLATILIZATION
PLANT RESIDUE (45%)
PLANT UPTAKE
ORGANIC NITROGEN
MINERALIZATION
IMMOBILIZATION
AMMONIUM ($+NH_4$)
NITRATE ($-NO_3$)
DENITRIFICATION
LEACHING
NITRIFICATION

92



Control your residue or it controls you

- Nutrient Tie Up
- C/N Ratio

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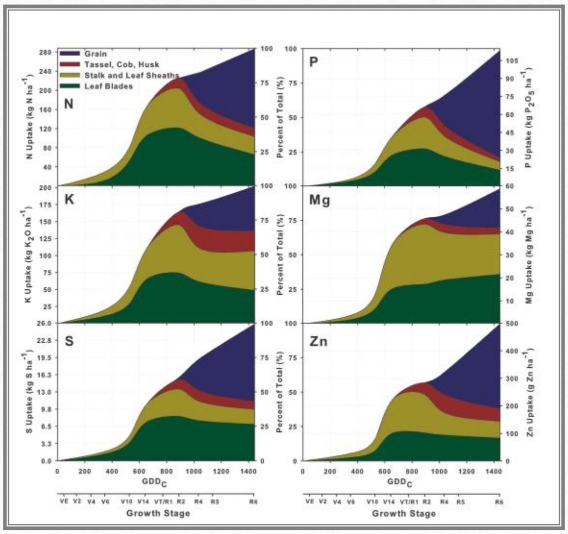
Nutrient Tie Up



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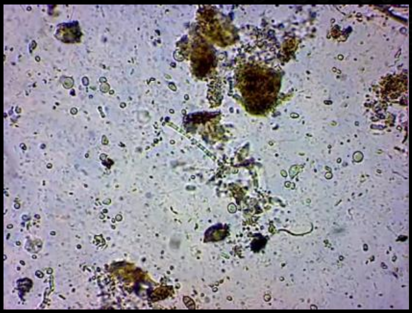
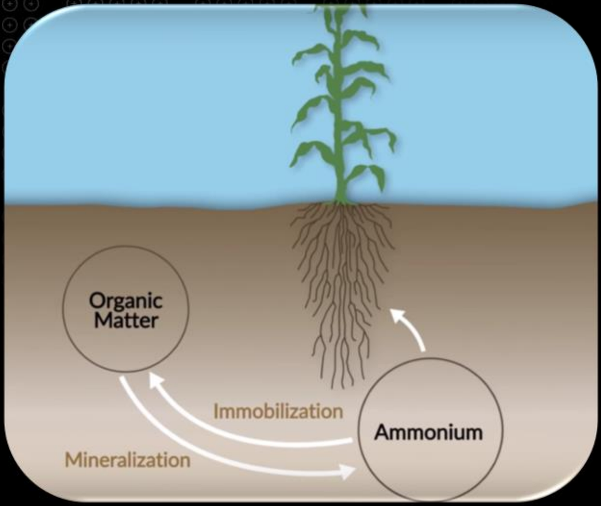
Carbon / Nitrogen Ratio

- Need a ratio of 24:1
- Corn stalks are 60:1
- pH





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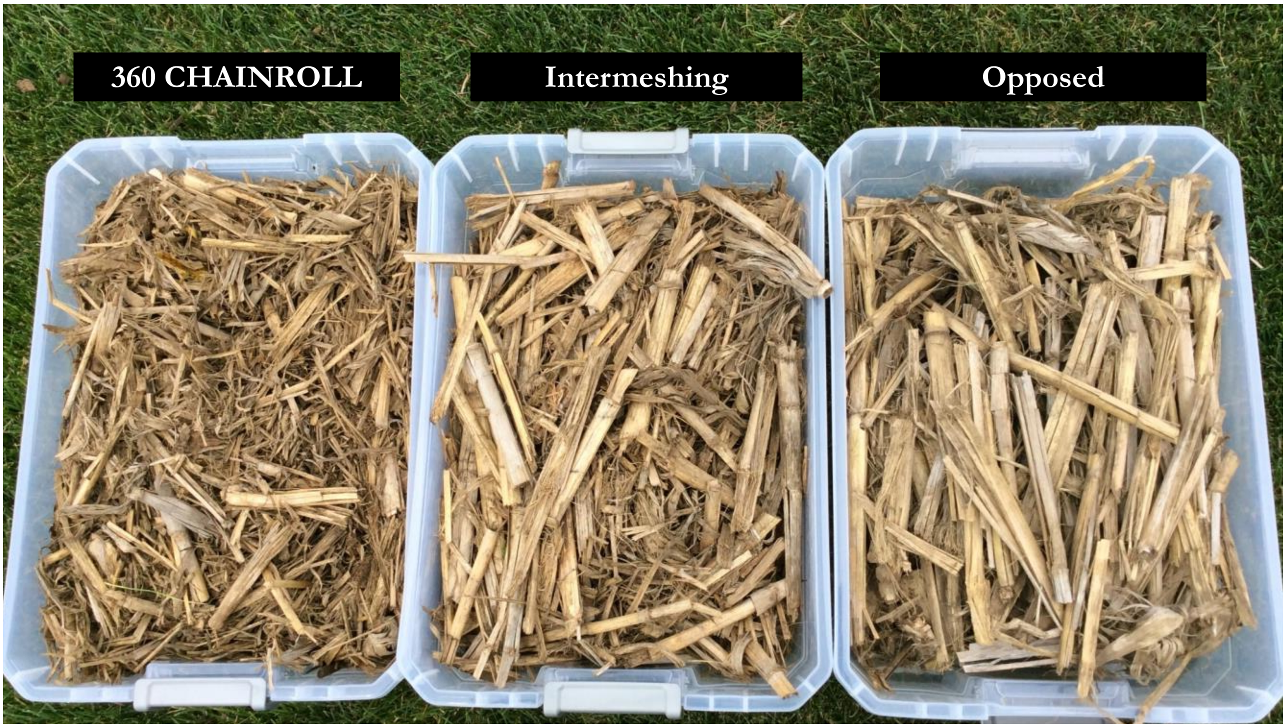
96

97

Potassium PPM (mg/kg)		
	Mehlich Extraction	Water Extraction
360 CHAINROLL	1,100	11,113
OEM Head	455	4,868

2x Faster
Nutrient Release

98



99

100

Chopping Roll

101

150' Test

360 Chainroll: 200 Ears
Chopping Roll: 195 Ears

870 less ears per acre

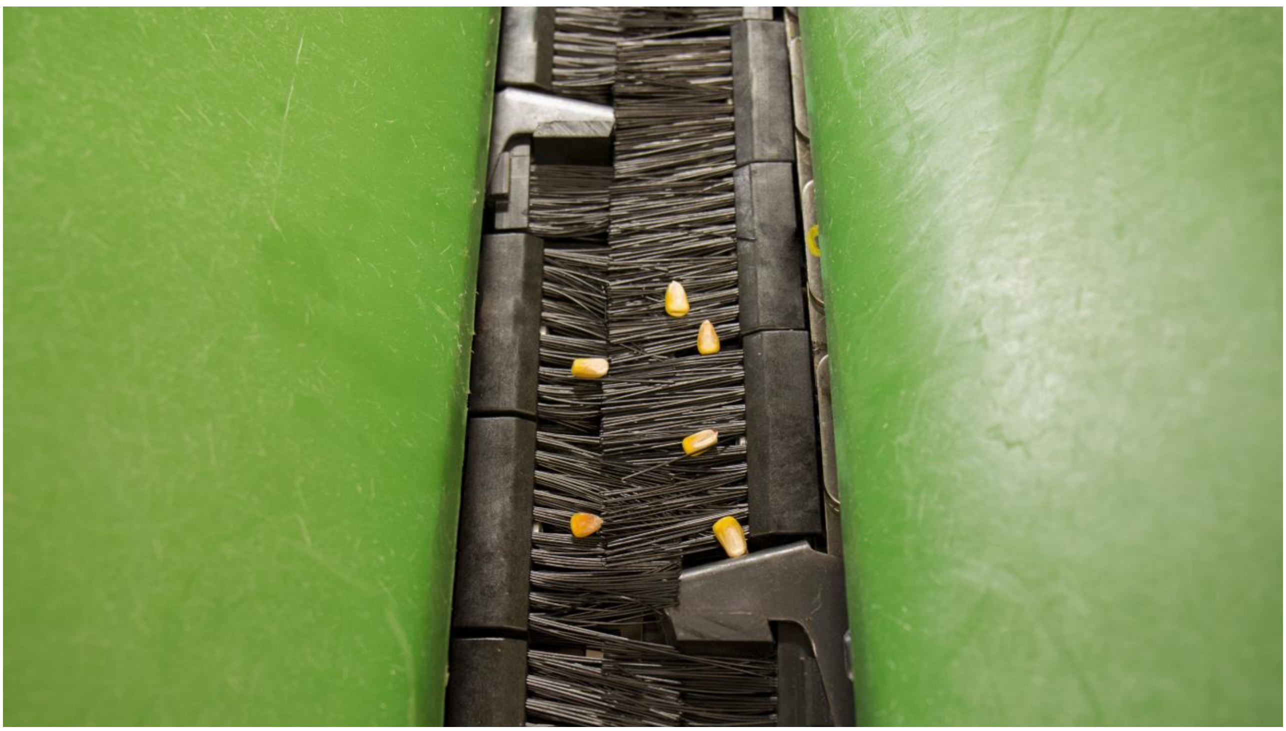
Projected 6 bushel loss

102

103

104

105



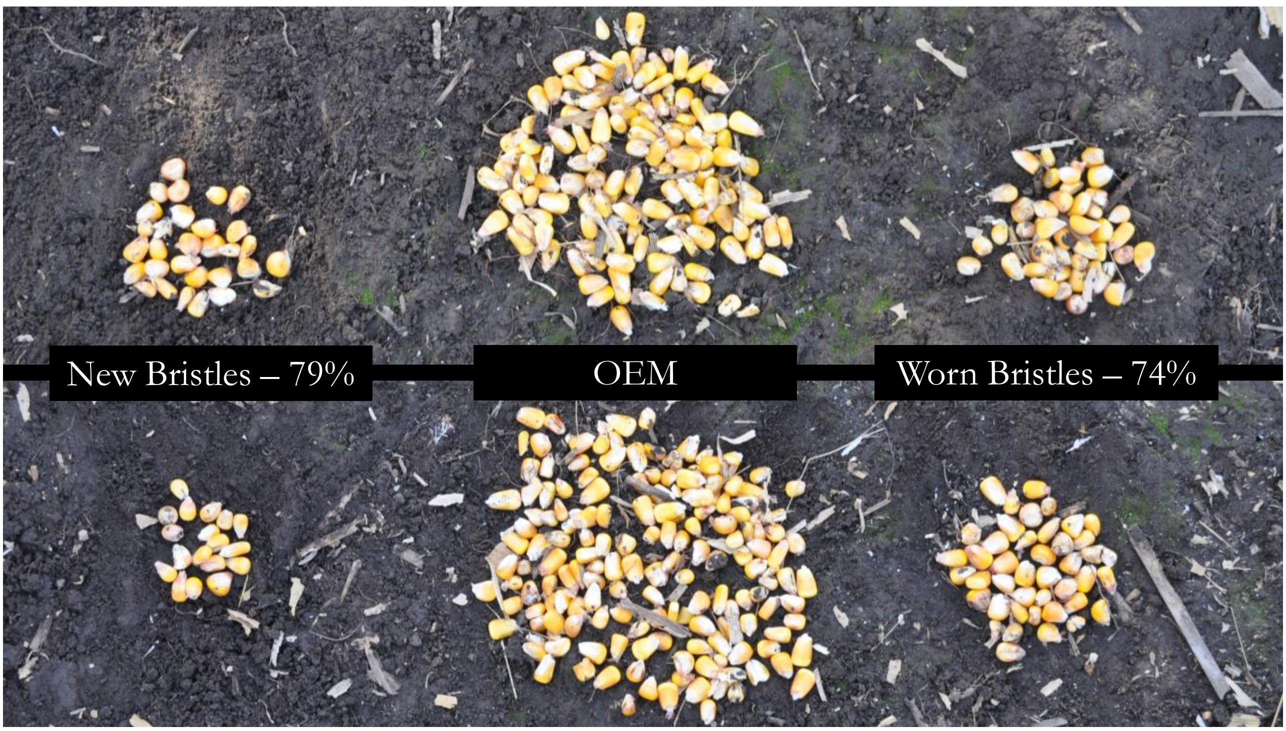
106

107

108


OEM
New Bristles
150 ac/row

109


New Bristles – 79%
OEM
Worn Bristles – 74%

110

Yield Saver Return on Investment

1200 acres per year / 8 row head = 150 acres per row

Year1
- $4,800
- New gathering chains and brushes

Year 2
- $2,200
- New brushes

Year 3
- $2,200
- New Brushes

- 2 bushel X 1200 acres = 2400 bu.
- 2400 bu. X $4.03 = $9,672
- $9,672 X 3 years = <u>$29,016</u>

$19,816

111

112

113

114

115

TILLAGE STUDY
360 BULLET®

PURPOSE

To evaluate the effects of 360 BULLET ripper points on fall tillage prior to corn, and their impact on yield and profitability.

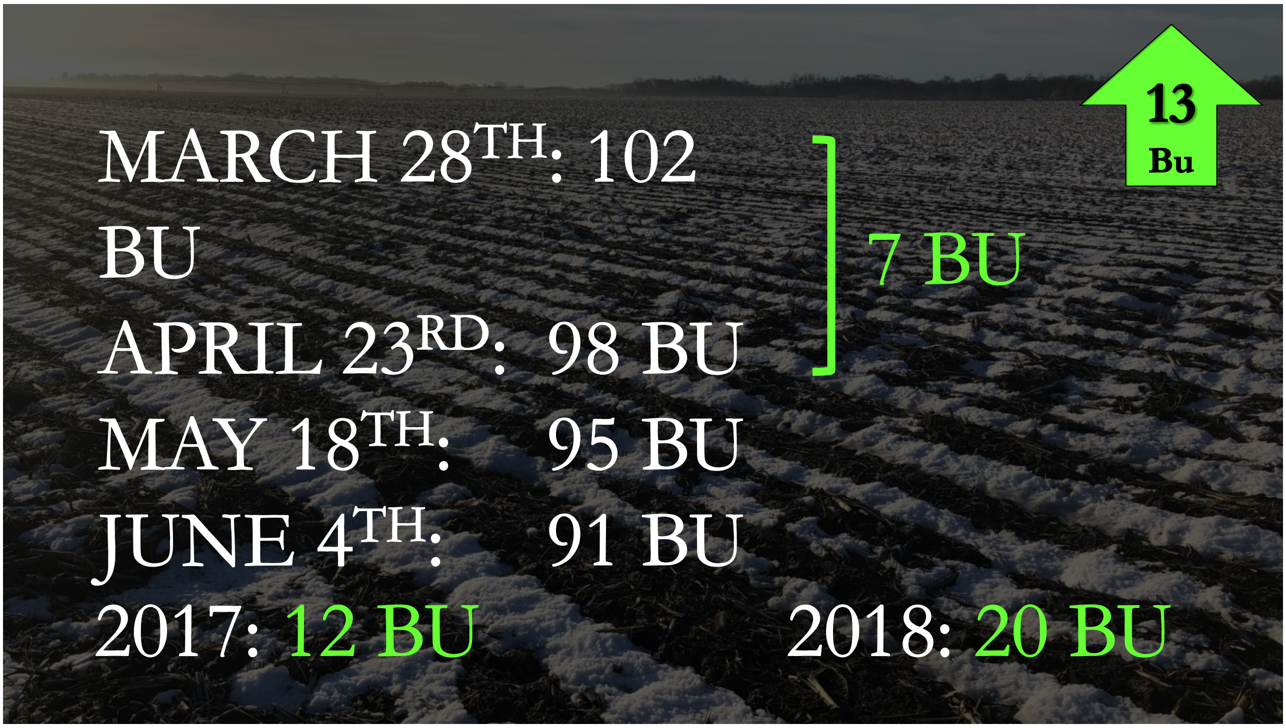
2017 RESULTS

TREATMENTS	PERCENT MOISTURE	BU./A.	BU./A. DIFFERENCE
Control: CIH 7 in. Tiger Point	21.1	235.6	--
360 BULLET®	21.1	242.5	+6.9
Corn $3.86/Bu. Individual results may vary.			

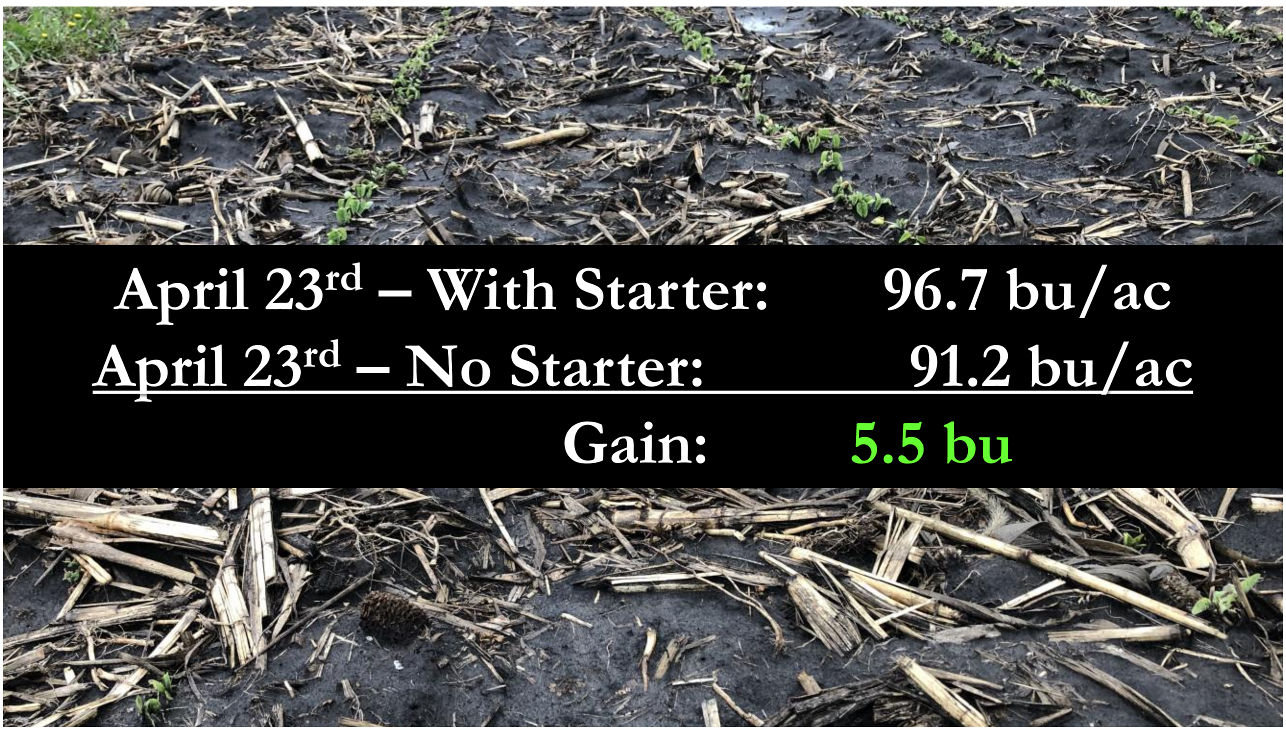
116

117

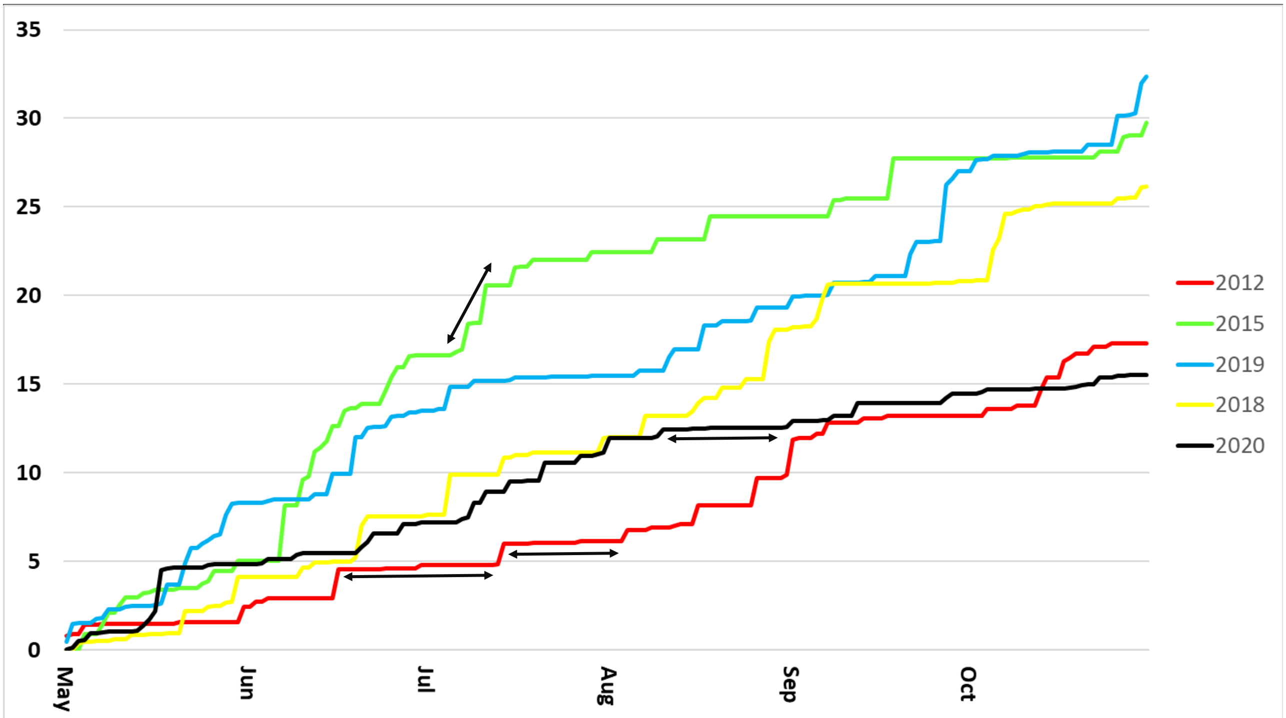
118


MARCH 28TH: 102 BU
APRIL 23RD: 98 BU
MAY 18TH: 95 BU
JUNE 4TH: 91 BU
7 BU
13 Bu
2017: 12 BU
2018: 20 BU

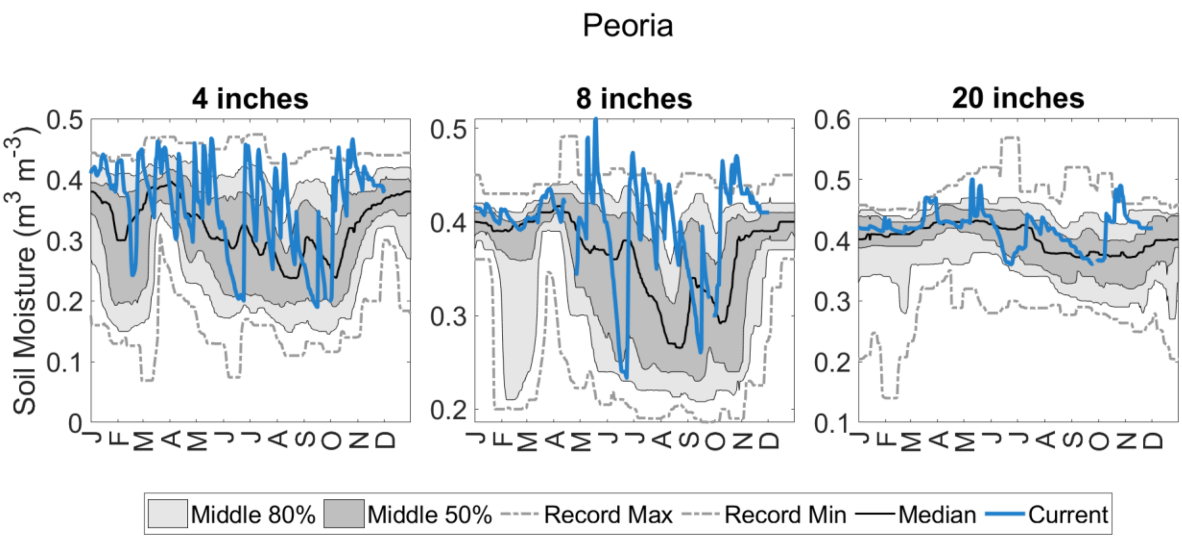
119


April 23rd – With Starter: 96.7 bu/ac
April 23rd – No Starter: 91.2 bu/ac
Gain: 5.5 bu

120



121



ILLINOIS
Illinois State Water Survey
PRAIRIE RESEARCH INSTITUTE

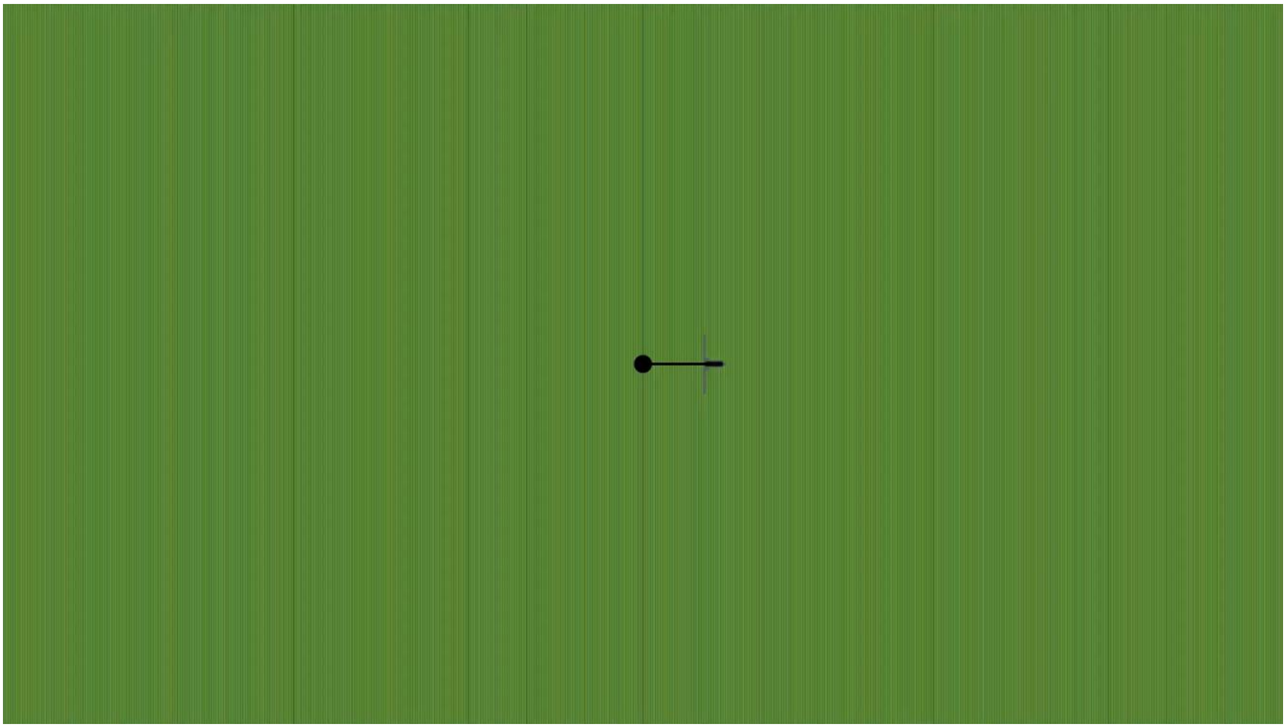
122

123

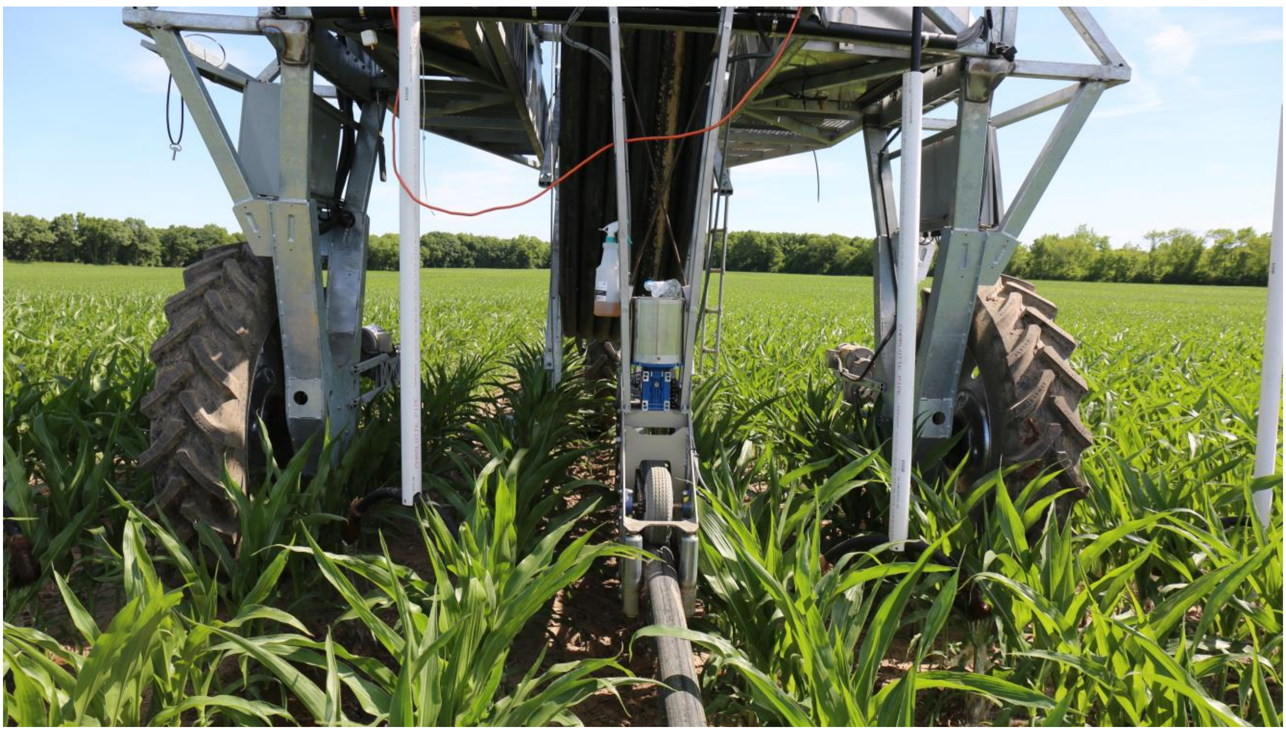
124

125

126



127

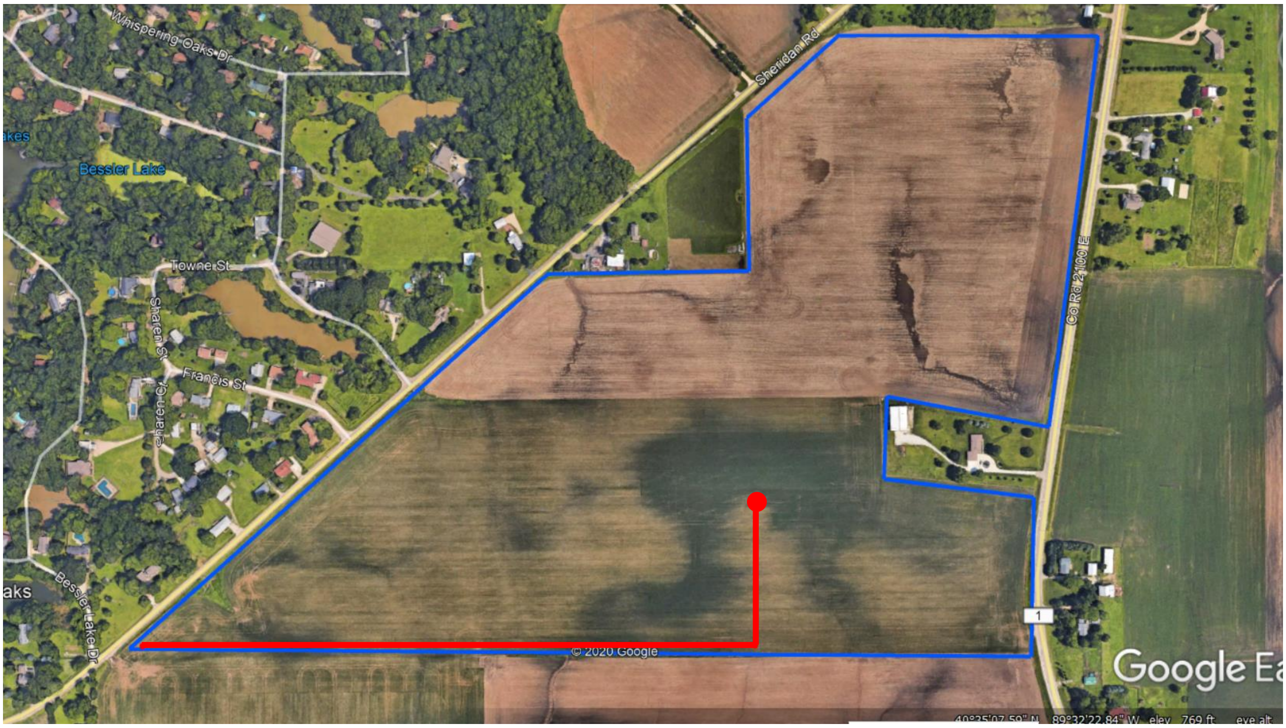


128

129


Whispering Oaks Dr
Sheridan Rd
akes
Bessler Lake
Towne St
Sharen St
Sharen Ct
Francis St
Co Rd 2100 E
1
aks
Bessler Lake Dr
© 2020 Google
Google Ea
40°35'09.77" N 89°31'57.77" W elev 769 ft eye alt

130


Whispering Oaks Dr
Bessler Lake
Towne St
Francis St
Sheridan Rd
Co Rd 2100 E
Bessler Lake Dr
© 2020 Google
Google Ea

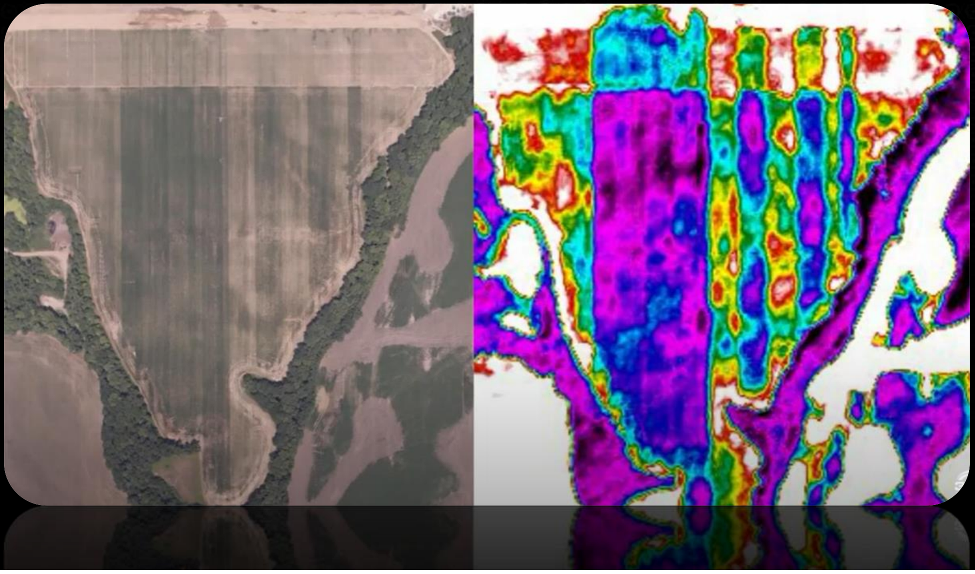
131

132

Weed Control

133

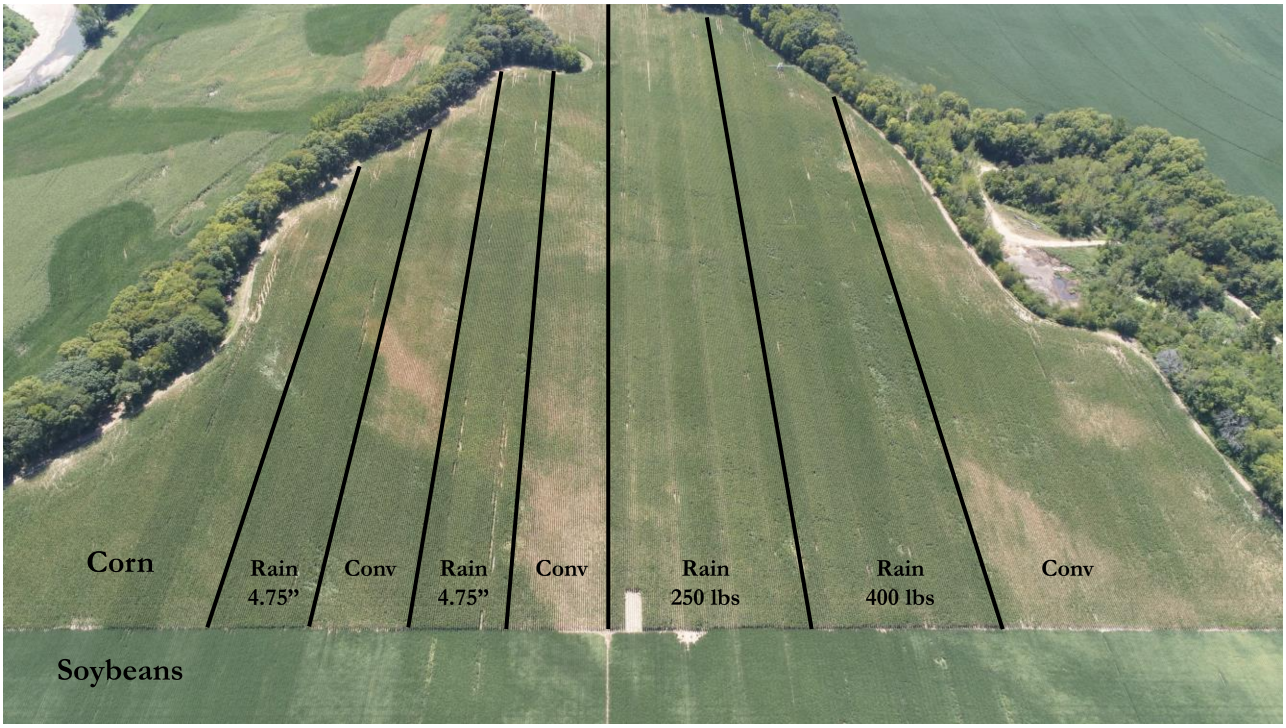
Stress Management



134


In Crop Seeding

135


Corn
Rain 4.75"
Conv
Rain 4.75"
Conv
Rain 250 lbs
Rain 400 lbs
Conv
Soybeans

136

137

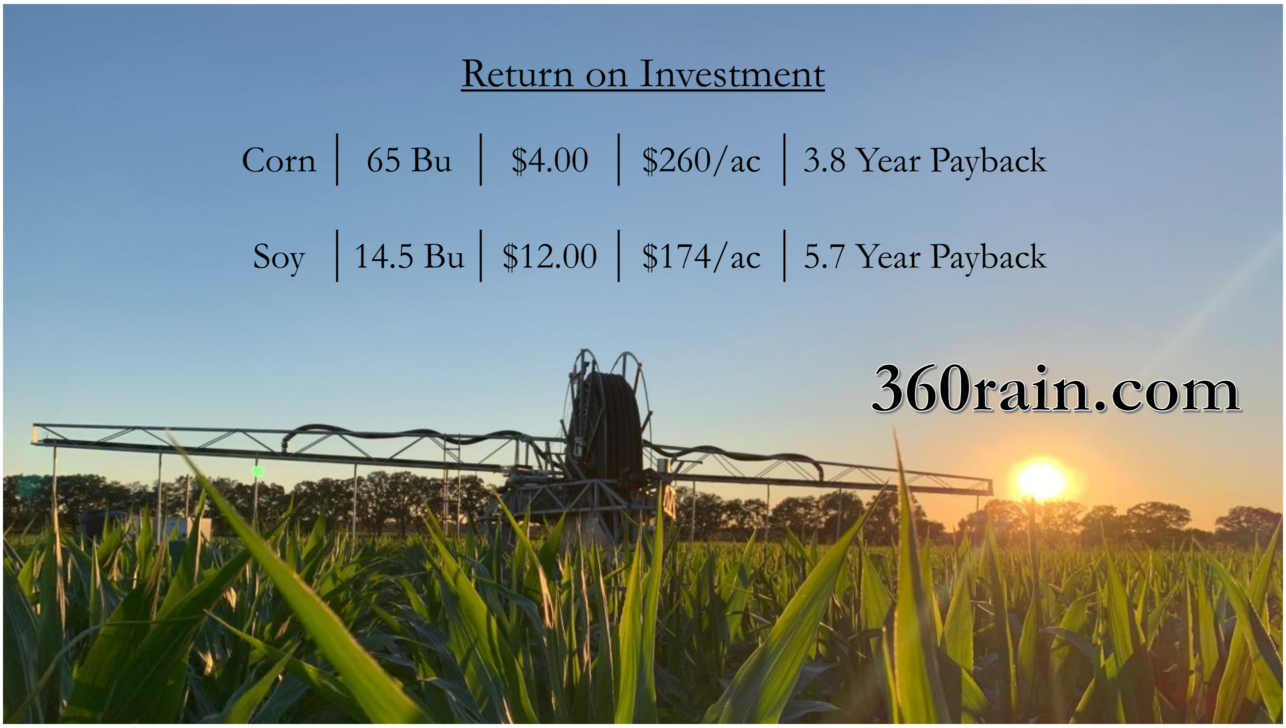
138


2020 Corn Plot
Conv: 199 Bu | Rain: 264 Bu | Gain: 65 Bu

139


2020 Soybean Plot
Conv: 64.3 Bu | Rain: 78.8 Bu | Gain: 14.5 Bu

140


Return on Investment
Corn | 65 Bu | $4.00 | $260/ac | 3.8 Year Payback
Soy | 14.5 Bu | $12.00 | $174/ac | 5.7 Year Payback
360rain.com

141

142

143