Cover Crops, Cattle, and Cash Flow

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Here’s My Operation

800 acres

63 Cow/Calf pairs

Custom Graze another 150 Cow/Calf pairs

Cover crop seed

Trucking Company

How I Got Started Farming

SW Missouri Soils

A little more background

Started no-tilling in 2012. Started with soybeans

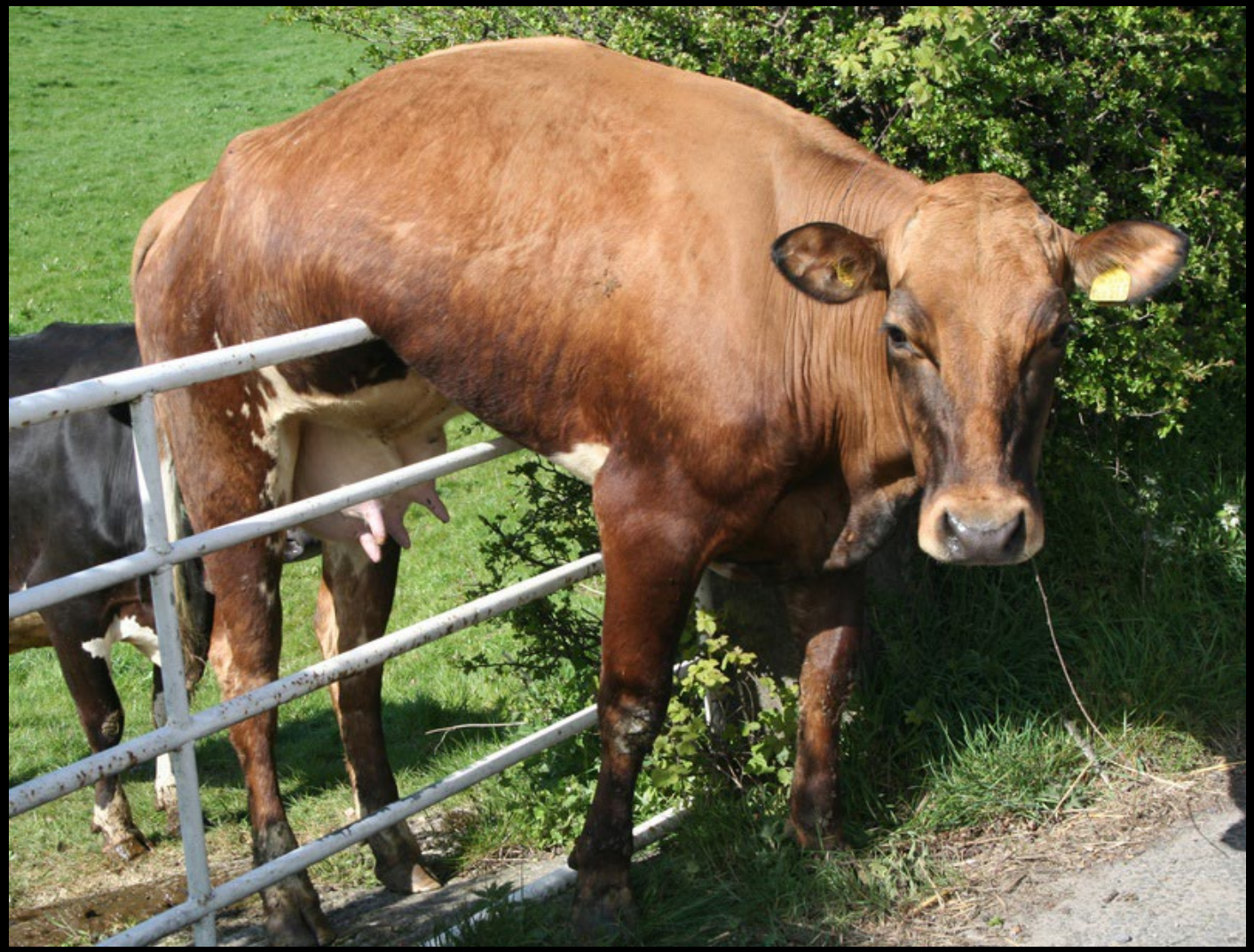
My first cover crop was in 2013 in a prevent plant situation.

First no-till corn in 2016

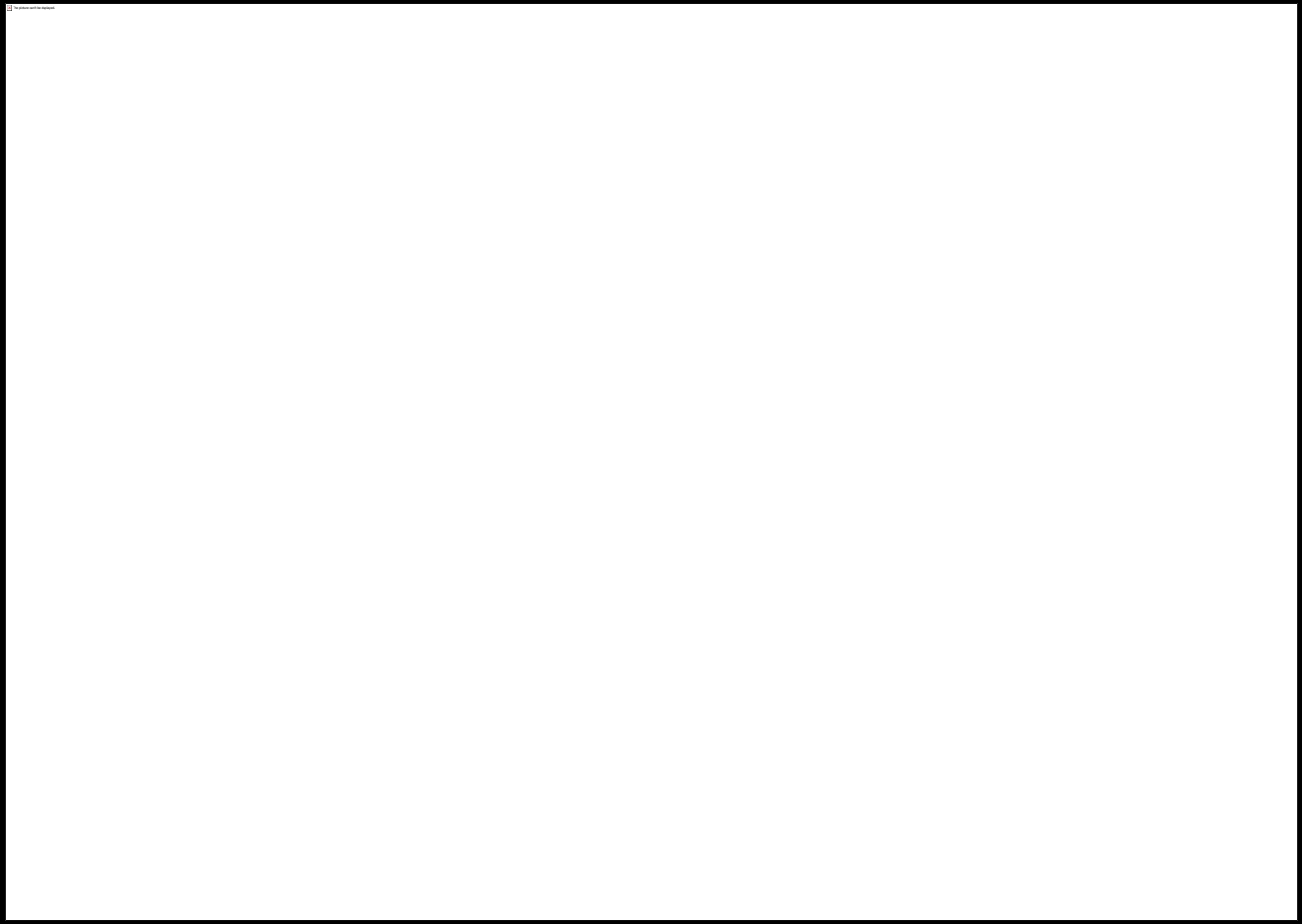
2016
No-till Corn

Not very good corn.

Well Crap, I Think I'm Stuck



I had to CHANGE



I Focus on Principles and Not Practices or Products

Context

Minimize Disturbance

Living root as long as possible

Keep The Soil Covered

Diversity

Animal and insect integration

I Was Committed 100% by Fall 2016

Double crop soybeans gone
Every acre was covered
Stretched my rotation
Adjusted planting dates
Changed maturities
Created a farm budget
Diversified my cash crops
Started building fence
I became intentional
Cattle moved daily

Research done by University of Minnesota Extension

Operation	No-till	Vertical-till or field cultivation	Chisel plow plus field cultivation	Strip-till
Planter (tillage-specific)	$20.15 per acre	$19.90 per acre	$19.90 per acre	$20.15 per acre
Primary tillage	$0 per acre	$14.05 per acre	$16.45 per acre	$17.15 per acre
Secondary tillage	$0 per acre	$0 per acre	$14.05 per acre	$0 per acre
Combine	$34.75 per acre	$34.75 per acre	$34.75 per acre	$34.75 per acre
Total cost	**$54.90**	**$68.70**	**$85.15**	**$72.05**
Number of passes	2 passes	3 passes	4 passes	3 passes

Fall Tillage

Worms!

Worm Casting

26% Carbon

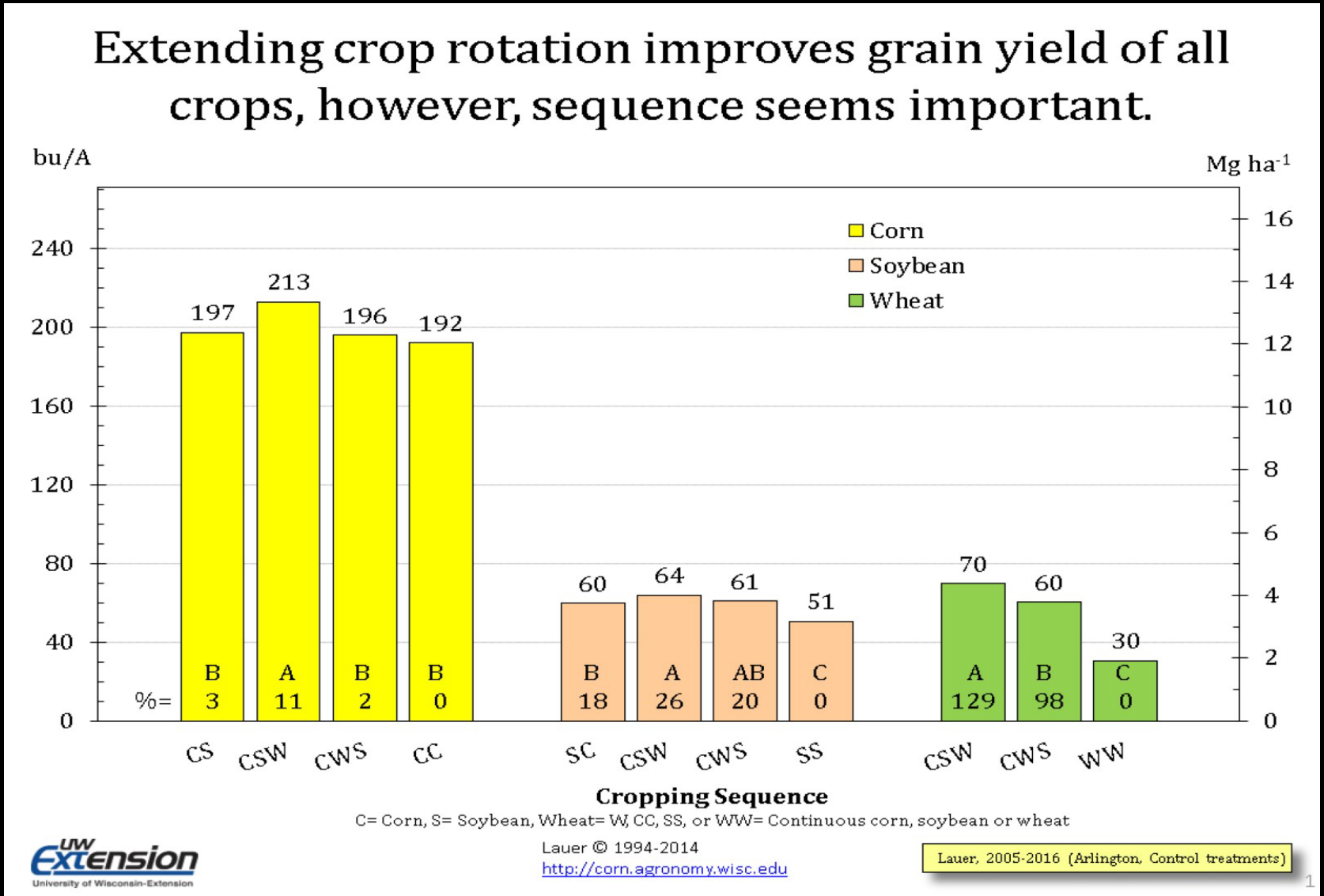
1.9% Nitrogen

1.4% Potassium

1.6% Phosphorus

3.7% Calcium

10 Year study done by Professor Joe Lauer



Plant Diversity
Three and Four year Rotations

Cash Crops

Non GMO Corn
Grain Sorghum
NON GMO Soybean
Korean Lespedeza
Sunflower**

Soft Red Winter Wheat
Winter Barley
Spring Oats
Lupines*

Cover Crops

Rye
Barley
Black Oats
Winter Oats
Lupines
Radish
Turnips
Kale
Rapeseed
Collards
Crimson Clover
Balansa
Hairy Vetch
Winter Peas

Sorghum Sudan
Pearl Millet
Guar
Cowpeas
Sunn Hemp
German Millet
Goards
Pumpkins
Sunflowers
Safflower
Buckwheat

Understand your Resource Concerns

Nitrogen fixation
Scavenging of nutrients
Surface compaction
Nutrient cycling
Grazing
Erosion reduction
Increase Soil Organic Matter
Weed suppression
Winter stock piling

Cover Crops NPK Savings

I've reduced my NPK by 80%

- Carbonic acid
- Root exudates
- Mycorrhiza Fungi
- Scavenging leftover nutrients
- Rhizobia bacteria on legumes
- Residue decomposition

LET THE COVERS GROW!

Biomass=Armored Soil

2022 Milo

Very Drought Tolerant

Cheaper Seed Cost over Corn

Lower Phosphorus needs

300% higher yield in 2022 over corn

Nature is Powerful!

Haney Test Results

- Soil PH 6.8
- Organic Matter 3.9
- %Mac 203
- Available N 47lbs
- Available P 11lbs
- Available K 18lbs
- SOIL HEALTH SCORE 25

Hay Prairie Field

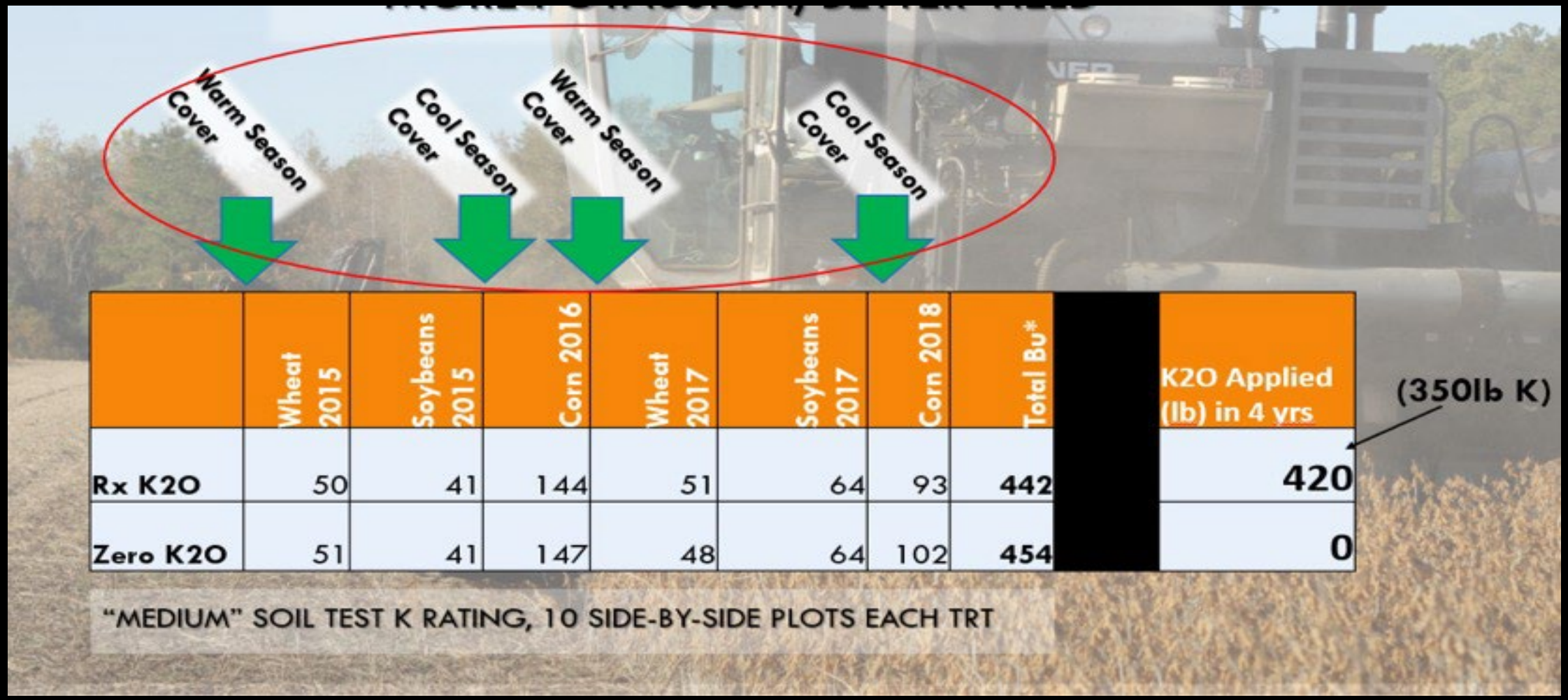
- Nutrient Value Units Nutrient
- 0.86 % N Nitrogen 0.07 % P Phosphorus 0.53 % K Potassium 0.87 % Ca Calcium 0.15 % Mg Magnesium 0.09 % S Sulfur 0 % Na Sodium 20.9 ppm Zn Zinc 100 ppm Fe Iron 23.9 ppm Mn Manganese 4.2 ppm Cu Copper 6.3 ppm B Boron
- Nitrogen Deficient
- Phosphorus Deficient
- Potassium Deficient
- Calcium High
- Magnesium Deficient
- Sulfur Deficient

Every Micronutrient was sufficient

Except Manganese

Same Tonnage of Hay Since 1934

How Much Fertilizer Do We Really Need?



	Wheat 2015	Soybeans 2015	Corn 2016	Wheat 2017	Soybeans 2017	Corn 2018	Total Bu*		K2O Applied (lb) in 4 yrs
Rx K2O	50	41	144	51	64	93	**442**		**420**
Zero K2O	51	41	147	48	64	102	**454**		**0**

Slide: From Dr. Buz Kloot

No Such Things as Weeds

Results For MACAULEY KINCAID
Location : FOXTAIL
Sample ID :

Plant Type : No Type
Stage : No Stage

	Result Dry Basis
Total Carbon,% C	40.85
Nitrogen,% N	1.49
Phosphorus, % P	0.492
Potassium, % K	2.79
Calcium, % Ca	0.504
Magnesium, % Mg	0.288
Sulfur, % S	0.150
Zinc, ppm Zn	57
Iron, ppm Fe	80
Manganese, ppm Mn	59
Copper, ppm Cu	9.8
Boron, ppm B	6.6
Molybdenum, ppm Mo	1.05

Results For MACAULEY KINCAID
Location : JOHNSON GRASS
Sample ID :

Plant Type : No Type
Stage : No Stage

	Result Dry Basis
Total Carbon,% C	42.68
Nitrogen,% N	1.27
Phosphorus, % P	0.261
Potassium, % K	1.81
Calcium, % Ca	0.575
Magnesium, % Mg	0.242
Sulfur, % S	0.120
Zinc, ppm Zn	101
Iron, ppm Fe	72
Manganese, ppm Mn	23
Copper, ppm Cu	7.1
Boron, ppm B	6.4
Molybdenum, ppm Mo	1.17

Results For MACAULEY KINCAID
Location : PIGWEED
Sample ID :

Plant Type : No Type
Stage : No Stage

	Result Dry Basis
Total Carbon,% C	37.06
Nitrogen,% N	2.15
Phosphorus, % P	0.705
Potassium, % K	5.42
Calcium, % Ca	2.144
Magnesium, % Mg	1.189
Sulfur, % S	0.411
Zinc, ppm Zn	42
Iron, ppm Fe	169
Manganese, ppm Mn	139
Copper, ppm Cu	6.9
Boron, ppm B	35.8
Molybdenum, ppm Mo	6.21

Results For MACAULEY KINCAID
Location : NUTSEDGE
Sample ID :

Plant Type : No Type
Stage : No Stage

	Result Dry Basis
Total Carbon,% C	40.50
Nitrogen,% N	1.51
Phosphorus, % P	0.470
Potassium, % K	2.62
Calcium, % Ca	0.642
Magnesium, % Mg	0.271
Sulfur, % S	0.207
Zinc, ppm Zn	35
Iron, ppm Fe	155
Manganese, ppm Mn	398
Copper, ppm Cu	16.0
Boron, ppm B	11.5
Molybdenum, ppm Mo	11.12

$140 Land payment
$10 Property Tax
$15 Miscellaneous expenses

$20 Crop Insurance
$0 Cover crop
$0 NPK
$22 Soybean seed
$20 Planted Green into Johnsongrass, Pigweed, Foxtail, and more
$25 Herbicide
$35 Combing and hauling

$287 Soybean Cost per acre of production

Non GMO Soybeans yielded 45 bushel to the acre

Non GMO Soybeans $11

Net Income $208 an acre

2021 Erin Silva Method Minimizing Disturbance

2021 Soybeans 74 Acres

$0 Land payment
$10 Property Tax
$15 Miscellaneous expenses
$20 Crop Insurance
$32 cover crop mix sown on Nov. 5th
(80lbs Elbon Rye, 10lbs Secretariat Barley)
$8 Broadcast cover
$0 NPK
$18 Non Gmo Soybeans
$20 Planting Green
$8 Roller Crimper
$18 Herbicide(Includes Application)
$35 Combing and hauling

$184 Soybean Cost of Production

Soybeans yielded 74.2 bushel to the acre

Non Gmo Soybean Market $14.63 a bushel

Net income $901.55 an acre

My Favorite Cover Crops

Annual Ryegrass
Rye
Barley
Oats
Vetch
Collards
Phacilia
Sorghum Sudangrass
Sunflowers
Cow peas
Pumpkins

I’m Essentially Raising Giant Food Plots

AMP Grazing

Do we need to feed hay for 6 months?

Nasty and Inefficient

Smarter not Harder

Cows have four legs! So far this Winter we have only fed 4 bales.

High Stock Density Grazing!

No Mineral, No Feed, No Insecticides

Diversity!

Turning Covers into Cash

2019 Cattle and Row Crop Land

Fungal to Bacterial
Near 1:1

How I Custom Graze

I graze other producers cattle

They supply mineral

Charge a $1 per animal unit per day
(Calf, Cow) $2 per bull

74 head for 93 days on 59 acres = $6882($116.64

That's another $100 an acre!

ALWAYS HAVE A CONTRACT!

	Water holding percentage			
	Corn		Soybeans	
	Cover Crop	No till	Cover Crop	No till
Original weight (g)	1114	1030	1204	1053
After heat weight (g)	912	898	951	899
% Water	18.13%	12.82%	21.01%	14.62%
% increase	41%		44%	

Credit: Austin Campbell

2020 98a Corn Field

$140 Land payment
$10 Property Tax
$15 Miscellaneous expenses
$15 Crop Insurance
$18 cover crop mix sown on Oct. 4th
(Phacilia, Annual Ryegrass, Cereal Rye, Barley, Balansa, Crimson, Hairy Vetch, Winter Peas, and Rapeseed)
$15 Drilling cover
$35 Litter
$24 80 units of Nitrogen
$15 Application cost of N
$39 Non Gmo Corn
$20 Planting Green
$18 Herbicide(Includes Application)
$35 Combing and hauling

$399 Corn Cost of Production

Corn Hybrid yielded 160 bushel to the acre

Non Gmo Corn Market $5 a bushel

Net income $401 an acre

New for 2023

The First True Regenerative Product
Bloody Butcher Corn
$4 Over Chicago per Bushel
TDN 88-91
Protien 8-14%

Which System is Better for the Environment?

Soils Are Less Than 5ft Apart

Thank you! PN: 417-660-9207
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