Cracking No-Till Yield Gaps with Strip-Till

Jeff Morgan

Background and History

- **Worked in Farm Machinery Business- Entire Life**
- **Not an Agronomist or Soil Scientist**

Brief Walk through My No-Till History

Good Place to Grow Up

Tillage practices

- Nucleus of no-till-Howard Martin, Eugene Keeton, Harry Young

Harry Young, Marie Young and Shirley Phillips, UK agronomist, pose next to the No-Tillage Historical Marker on the Youngs' farm

Very popular item

Driver of No-Till Practices-1960s
CONSERVATION MEASURE

Practices to Reduce/Control Erosion

Reduced tillage
Contoured farming
Terraces
Waterway construction and management
Cover crops
Other regional practices

Planters of the Era

All Brands looked Very Similar

No Side depth gauge wheels
Closing/Gauge wheels combo unit
Transmission/Population settings- clunky
Sketchy seed selection
Small seed hoppers
Retro fit no-till conversions

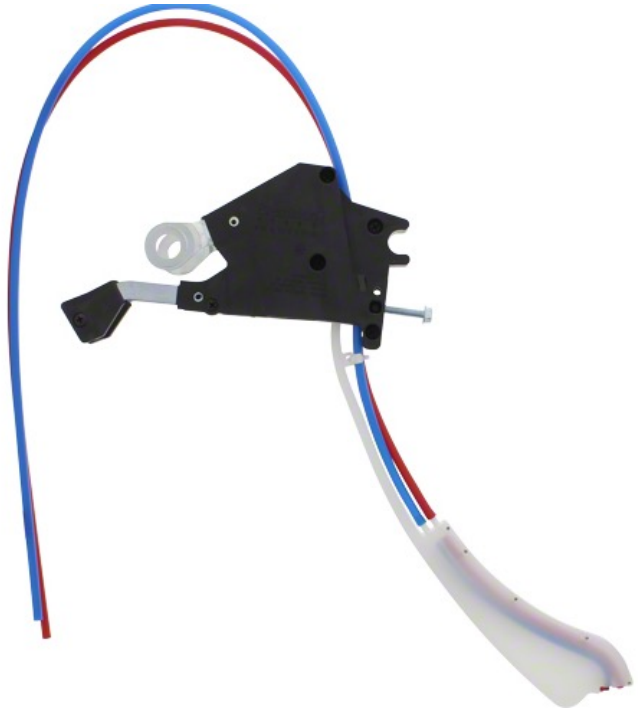
Customers demanded a change

Better *colter penetration*
Better *seed to soil contact*
Better *seed selection*
Better *seed delivery*
Better *depth control*
Better/Easier *population control*
Better *markers*

Milestone Changes

Industry Response

Aftermarket Opportunities



Result after 40-50 years of Evolution

“Standardization” of:

Planting Equipment
Attachments
Crop rotations and practices
Fertilizer programs
Herbicides, seed genetics, etc..

We “MASTERED” no-till practices in our region

Other Results

Agronomy Driven vs *Pure Conservation* based decisions
Improved yields (equipment and seed)
Better weed/pest control (chemical availability)
Better soil conservation
Better run-off control (pollution)

Are We 100% No-Till?

Do we continue to sell?

Do We Sell?

Do We Sell?

Do We Sell?

Situations that need to be addressed

- Remediation
  - Tile lines
  - Irrigation tracks
  - Wash outs
- Compaction
- Residue Incorporation
- Seedbed preparation
- “Reset the Profile”

Actual Tillage practices

- Pure No-till-20-30% (Most common in double crop soybeans)
- Conventional-20-30%
- Minimum Tillage- 20-30%
- Strip Till- less than 5%

Positioning Statement

Producers Today-

Great soil and property stewards (Protect their investment and future)
Environmentally aware and concerned
Environmentally responsible

SITUATIONS THAT REQUIRE TILLAGE STILL EXISTS

Growers Manage Better Today

Minimize time without growing crop, cover crop or residue protection
Creatively manage higher volumes of residue (rotations, combine enhancements, tillage)
Aware of microbial management
Selectively utilize no-till, min-till, conventional till, VT AND

STRIP TILL

Strip Till

Driven by:

Economics

Conservation

Why Strip Till?

- Since 2013
  - Weather patterns have been really good (hardly any exceptions)
  - Seed (hybrid) selection- very good and adapted to our climate and soils
  - Population/Variety Prescriptions-very good
  - Weed/Pest chemicals and practices-very good
  - Fertilizer Programs- NPK-micros-split rates-very good
  - Soil Health-compaction, organic matter, erosion, etc.-very good
  - Planter technology-very good

- We are doing all we can do
- We are using everything the industry has to offer
- We have reached a Yield Cap

Strip till –Long term

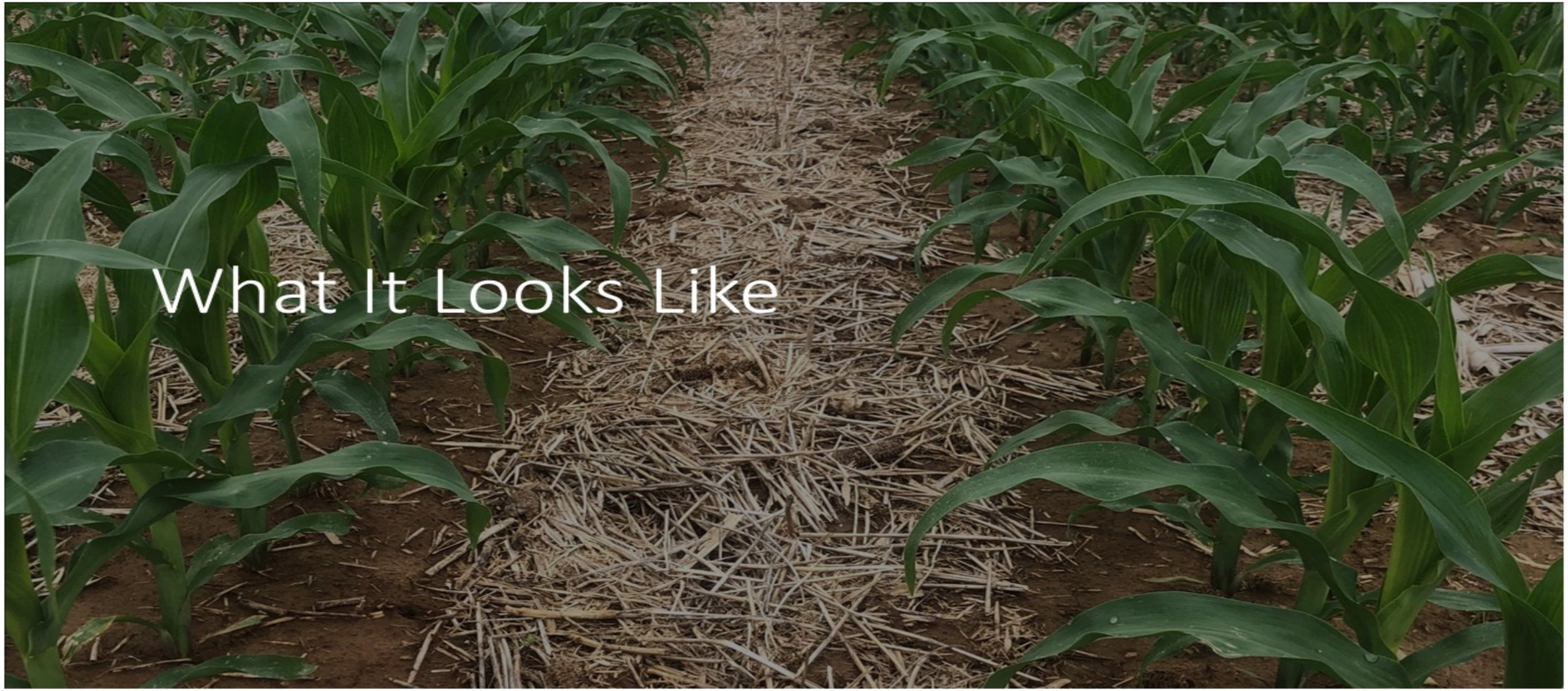
Mandated/Legislated?- may be practical solution to reduced fertilizer rates

Best economic solution?-

Same yield- less overall production cost
Increased yield beyond additional inputs- within point of diminishing returns

Strip Till-
Will It Work For You?

Jeff Morgan
Sales Development
H & R Agri-Power



Crop Rotation

- Corn
- Soybeans (80% double crop: 20% full season)
- Wheat
- Tobacco (burley, dark fired, dark air cured)

Normal Yield Potential

- Corn- 170-190 bushel- very dependent on July soil moisture and pollination temperatures
- Soybeans- 50 bushels- Gap is getting pretty close between full season and double crop
- Wheat-80-90 bushel- due to the influence of English consultants and their adopted practices

Producer Philosophy

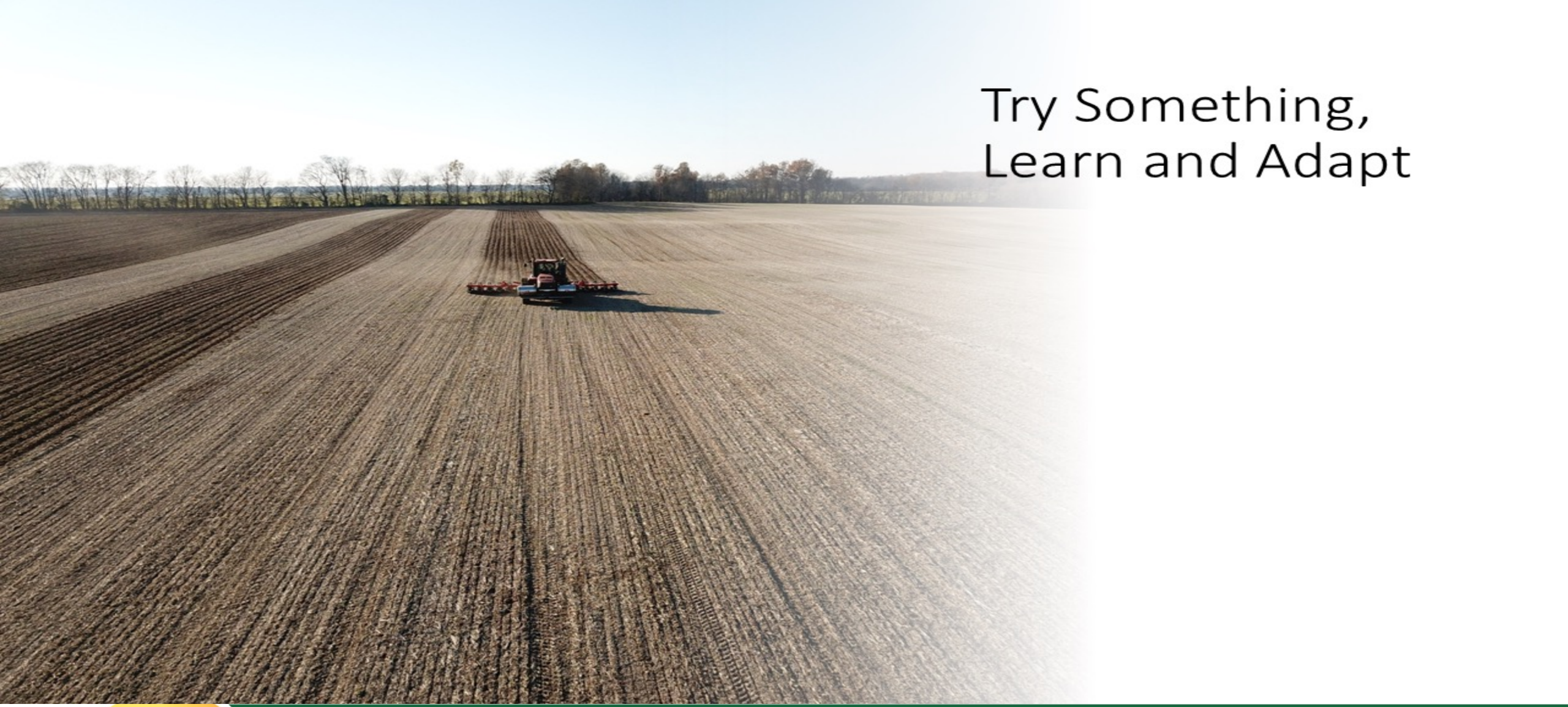
- Accepts Change-Very Good
- Technology Utilization-Very Good

- Overall-Pretty Progressive

Better results=New/Different Practice

- 2015 New Process brought to our area
- New for us-not for other regions
- Adapt a practice/process to our environment
  - Make someone else's process work for us

Product Evaluation



Initial Findings
Small Test Group

- Fall Strips (October thru December)
- Shank Style strip till
- Three-point hitch mounted
- 6”-7” shank depth
- Into soybean stubble

Spring Planting Environment

- Really nice “Road” for the planter
- Several days earlier planting date (drier, warmer soil= Great seed to soil contact and even emergence)
- Earlier planting dates-avoid/minimize July heat stress and yield loss
- No-till environment between the strips-
  - Minimize erosion
  - Supports planter tractor/future passes with sprayer, etc..

Yield Response

- Good (10-30 bushels gain)
- Could not isolate the response exactly
  - Deep tillage?
  - Seed bed?
  - Emergence?
  - Combination?
  - ?

Erosion Limitations

Expanding the Acres-Avoiding Erosion

- Cover Crops
  - Which Crops?
  - What rate?
  - Broadcast or drilled?

- Another Learning Curve

2015-2018

- Built Fall Strips
- Improved cover crop program (crops and placement)
- 10-12 growers collaborating
- Had not manipulated fertilizer programs

- Stalled out
- Lost passion
- Satisfied/Complacent

Reignite and Expansion (2020-current)

- Dealership saw upside potential to strips
- New Customers Became Curious
- Program to provide equipment to test growers (rental)
- Include agronomist
- Work with fertilizer programs

- No Baby Steps-All In

Qualifying Candidates

- Conservatively promote yield improvements
- Encourage involvement of local agronomist
- Offer services of our Precision Dept.
- Warn of timing sensitivity
- Warn of general unknowns

- Undersell the process-Be Very Realistic

Customized Approach

- What are your goals?
  - Input management?
  - Yield Chaser?
  - Seeking point of diminishing returns?
  - Achieving an earlier planting date?

Customized Approach- We Ask Some Questions?

- What are your ideas?
- Why are we invited to your party?
- Who Is In your Brain Trust?
  - Are they on board?

- No 2 programs are the same
- No standardization initially
- Some Standardization starting to develop

Let's Determine Some Feasibility

- **Take Their Data/Situation**
  - **Fertilizer Input Cost**
  - **Historical Yield Data**
  - **Acreage**
  - **Crop Rotation**
  - **Available HP**
  - **Etc..**

Knowing The Input Cost

Corn Input 2023

			Cost Per Acre	Bushels Per acre Based on 5.50 Per bushel
Fall Ripping			$25	4.5
	Case ih 580 & 9 Shank ripper			
	Case ih 620 & 9 Shank ripper			
Burn Down			$34	6.2
	Roundup 32oz per acre	$12.50		
	Leadoff 1.5 oz per acre	$4.50		
	Havoc 24D 20 oz per acre	$5.47		
	Verimax Surfactent	$3		
	Case Ih 4440 Sprayer	$9		
Post Emerge	Roundup 32oz per acre	$12.50	$61.50	11
	Atrazine 2qt per acre	$10		
	Status 2 oz per are	$9		
	Collisto 3 oz per are	$3		
	Accent Q .9 oz per acre	$15		
	Verimax Surfactent	$3		
	Case Ih 4440 Sprayer	$9		
Fertilizer 1st Shot	Urea 46% 140 Units at $640	$97	$179	33
	Potash 60% 90 units 680 a t	$51		
	Dap 50lb per acre 875 Per tc	$21		
	Sprea with terra gator	$10		
Fertilizer 2nd Shot	32% 70.5 Units 615 Per ton	$74.41	$89.41	16
	Case Ih Sprayer Polor Tanker	$15		

Input Cost (cont)

Fertilizer 2nd Shot	32% 70.5 Units 615 Per ton Case Ih Sprayer Polor Tanker	$74.41 $15	$89.41	16
Land Rent	$200		$200	36
Seed	2.6 Acres per bag Case Ih Yield Trac planter	$115 $25	$140	25
Harvesting	Two Combines two corn hea Grain cart& 470 Tractor	$50 $10	$60	11
Storage Handling	.25 per bushel storage .50 per bushel hauling	$39.75 $79.50	$119.25	22
Farms Maintence	6145 R Tractor 20 ft Cutter	$10		1.8
			$918	166.90 Bushels to break even

N, P & K Inputs- $269/acre

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Quantifying the Program

- Feasibility Calculation
- Use live calculator

Does This Operation Qualify (on paper)?

- Yes-But the ROI is not enough
- Yes- But I'm not ready to make a change without more local info
- No-Acreage is not enough to support a change
- Yes-But I need a safety net
- Yes- But I want to take steps (tillage then covers then fert.)
- Yes- I'm All In

- Build a Plan Based on the above

Building a Plan

- Involve the Specialized Brain Trust
  - Equipment Guys
  - Fertilizer/Agronomy
  - Precision Ag Team
  - Manufacturer Support

Building A Unit

Building A Unit- Everything Is a Custom Build

Custom Build

Custom Build

32nd Annual
NATIONAL NO-TILLAGE CONFERENCE
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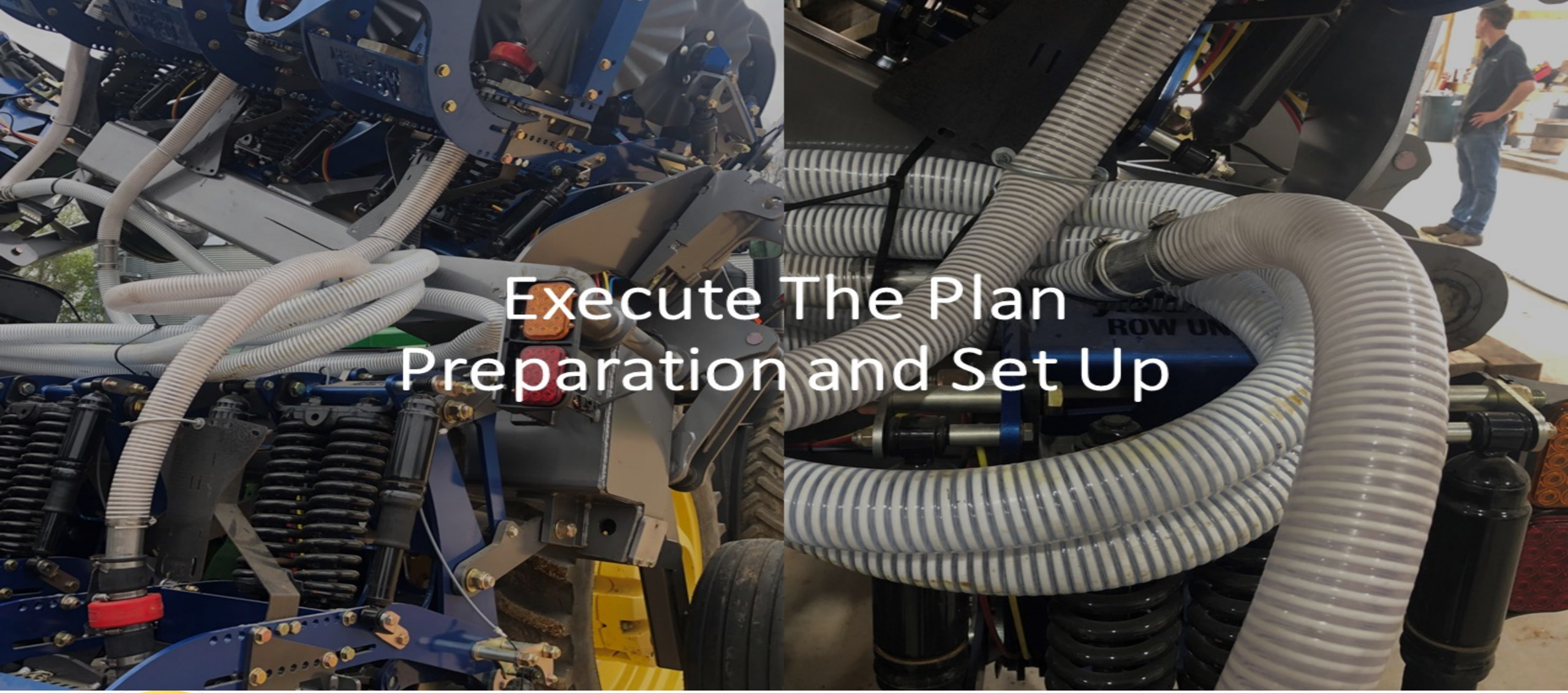
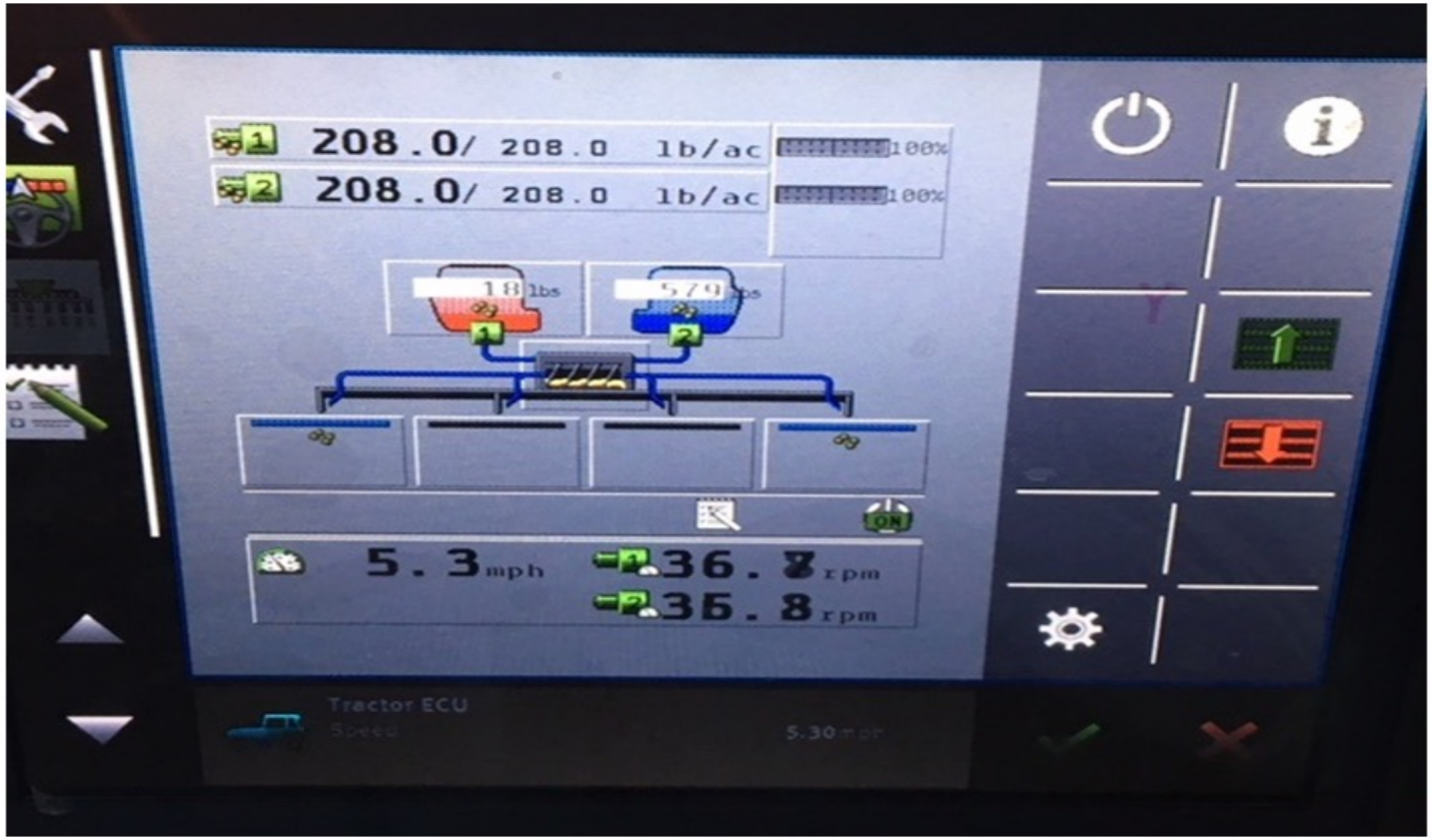
Precision Planting
Ag Leader
MidWest Bio-Tech Inc.
The Andersons
HOLGANIX Soil Nourishing Root Stimulating
APACHE SPRAYERS
ForGround by Bayer
LAFORGE
wearparts TILLAGE TOOLS Cultivating Solutions for Growth
Yetter FARM EQUIPMENT SINCE 1930
MonTag
GS3 QUALITY SEED
CopperheadAg PRODUCTS
Martin Till
Great Plains "Harvest Starts Here."
Sound



Execution Field Start



Execution
Field Start

Execution
Field Start

Execution
Field Start

Field Starts-
Mistakes are the Best Lessons

Planters On Mark?!

Follow Ups

Gather Yield Data From Partnerships

- Semi-Formal Off-Season Meetings
  - Share Experiences
  - What Worked
  - What Did NOT work
  - What Could Have/Should worked
  - Plans to address next year

- Summary- Improve/Accelerate the Learning curve

Instructions

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- ***We will have your presentation loaded on the computer and ready for you when you arrive. We will also arrange for printouts.***

- ***NTF* will provide the computer and projector. Plan on giving your presentation from the podium on the laptop computer**

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