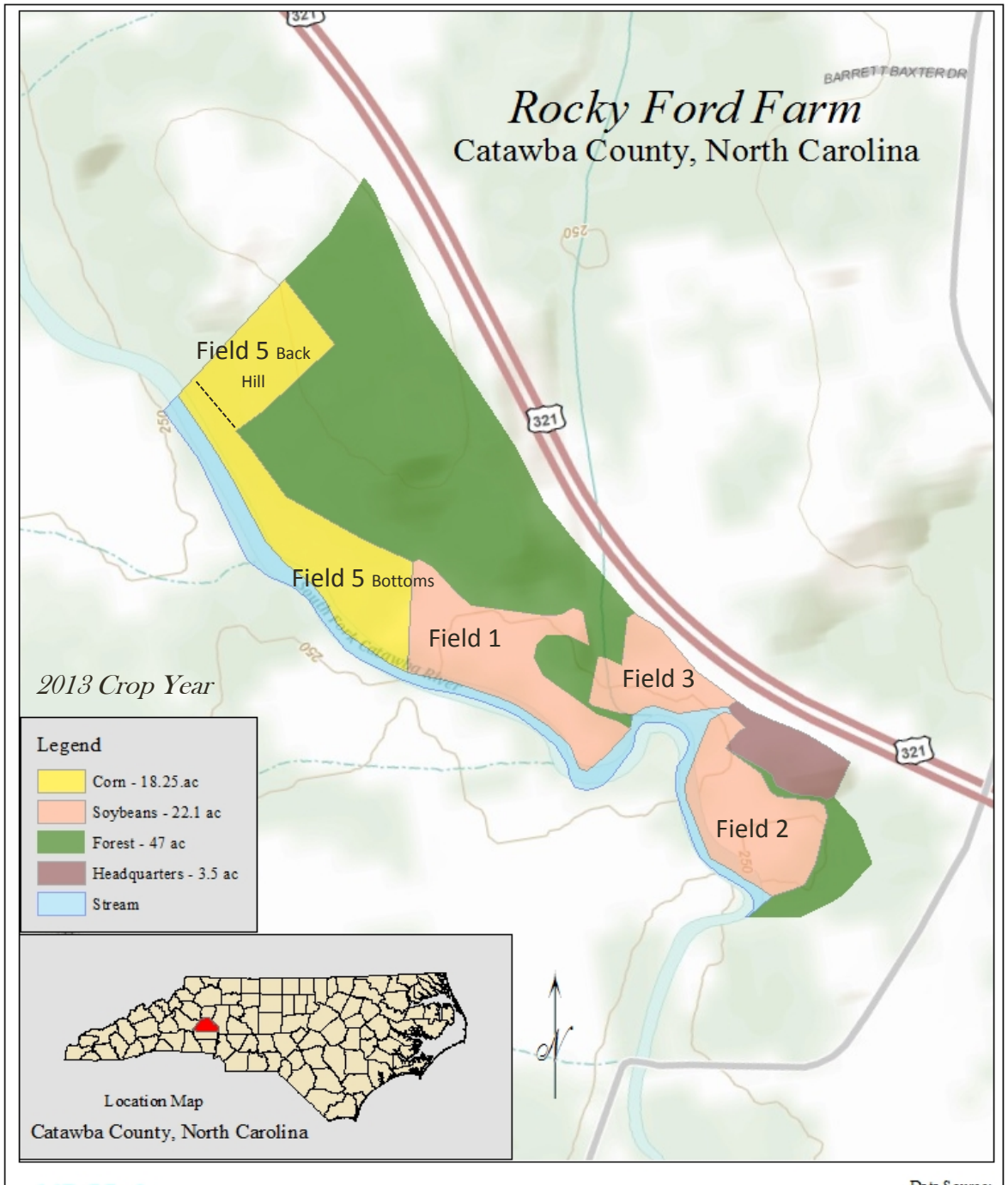
Madalene Ransom, Ph.D., Economist.
Russell Hedrick, Farmer, Hickory, North Carolina.
Lee Holcomb, District Conservationist, Newton F.O., NC.
March 28, 2014.

The Rocky Ford Farm

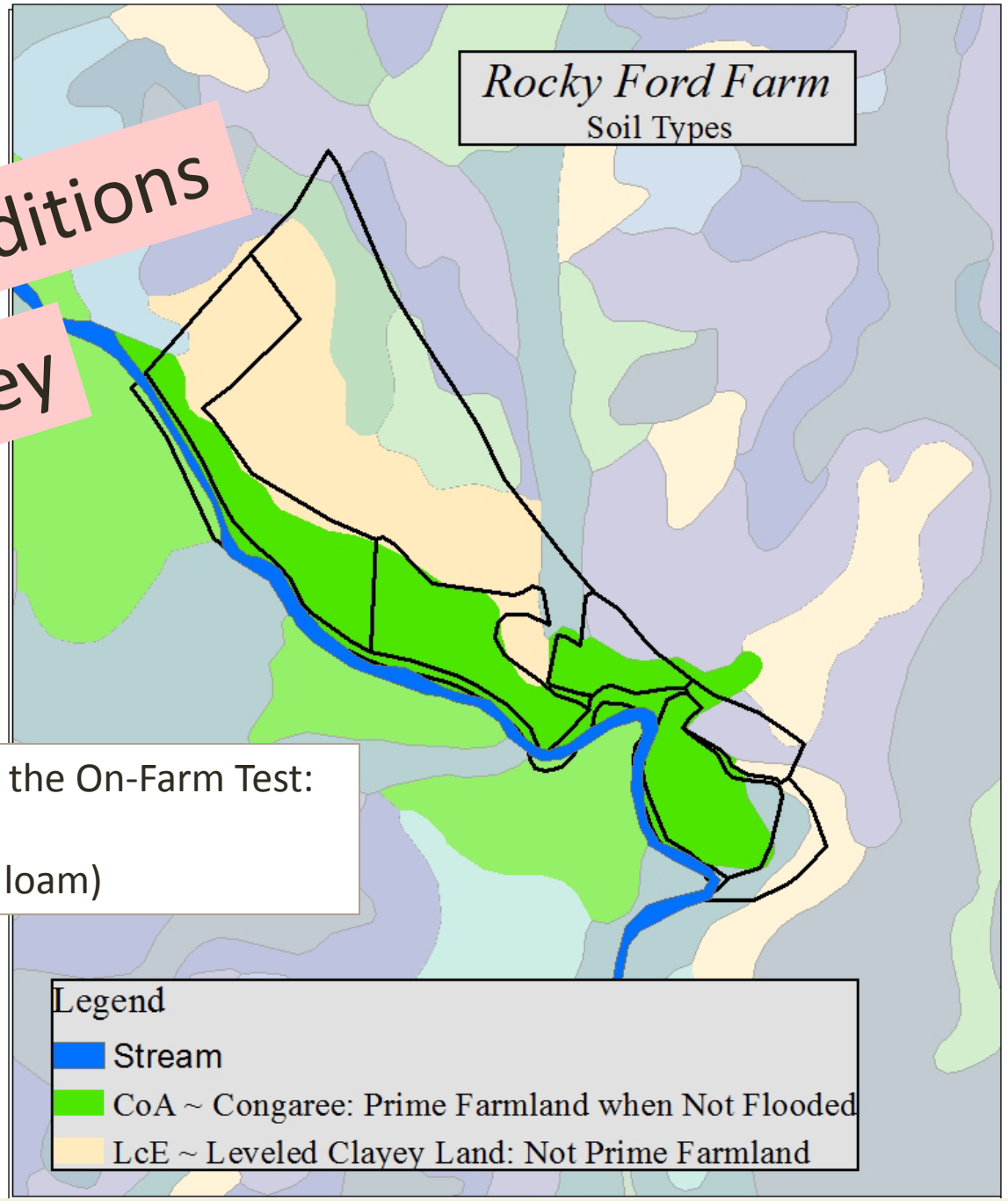


Corn	18.25 ac
Soybeans	22.1 ac
Forest	47 ac
Headquarters	3.5 ac
Total Crop	40.35 ac
Total Farm	90.85 ac

Initial Soil Conditions

Initial Soil Conditions

NRCS Soil Survey



Two Soil Types are relevant to the On-Farm Test:

Congaree and

Leveled Clayey Land (Lloyd loam)

Initial Soil Conditions

Soil Test

OM %

	Dominant Soil	2012 October	Soil Survey
Field 1	Congaree	4.32	2.50
Field 2	Congaree	4.82	2.50
Field 3	Pacolet, Congaree	3.56	1.50
Field 5 Back Hill	Lloyd	No Sample	1.25
Field 5 Bottoms	Congaree	No Sample	2.50

Initial Soil Conditions

Soil Test

	Dominant Soil		CEC 2012 October	CEC Soil Survey
Field 1	Congaree		10.2	10.00
Field 2	Congaree		9.8	10.00
Field 3	Pacolet, Congaree		8.5	7.20
Field 5 Back Hill	Lloyd		No Sample	8.30
Field 5 Bottoms	Congaree		No Sample	10.00

Initial Soil Conditions

Soil Test

	Dominant Soil	pH 2012 October	pH Soil Survey
Field 1	Congaree	6.6	5.90
Field 2	Congaree	6.0	5.90
Field 3	Pacolet, Congaree	6.0	5.70
Field 5 Back Hill	Lloyd	No Sample	5.90
Field 5 Bottoms	Congaree	No Sample	5.90

The On-Farm Test

The On-Farm Test

What was Russell Testing?

The On-Farm Test

What was Russell Testing?

- Weed Control
- Soil Erosion

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Why did he perform his own test?

The On-Farm Test

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Why did he perform his own test?

- Wanted to see for himself on his farm.

The On-Farm Test

What was Russell Testing?

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- Soil Erosion

Why did he perform his own test?

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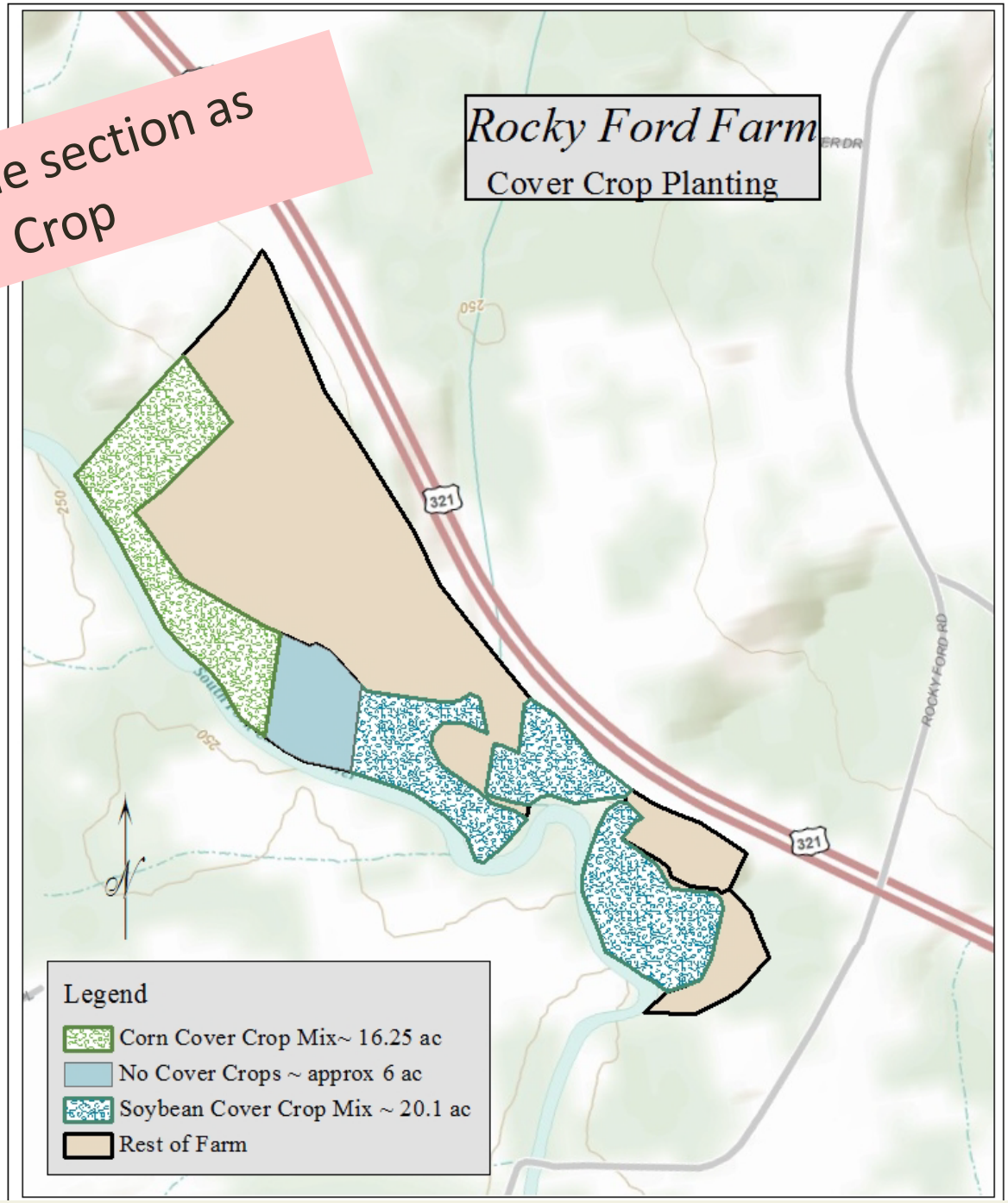
How did he test?

Blocked off middle section as No Cover Crop



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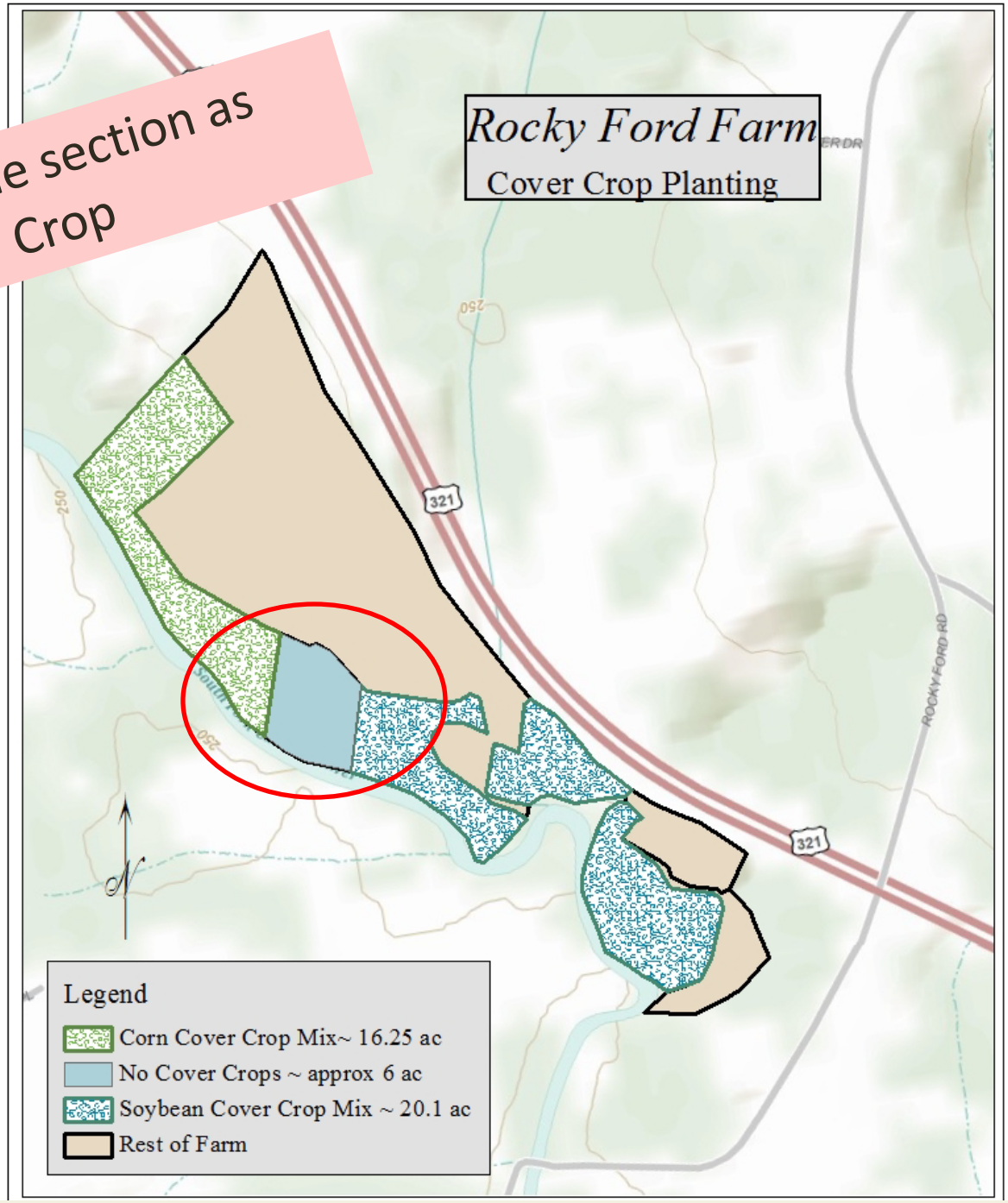
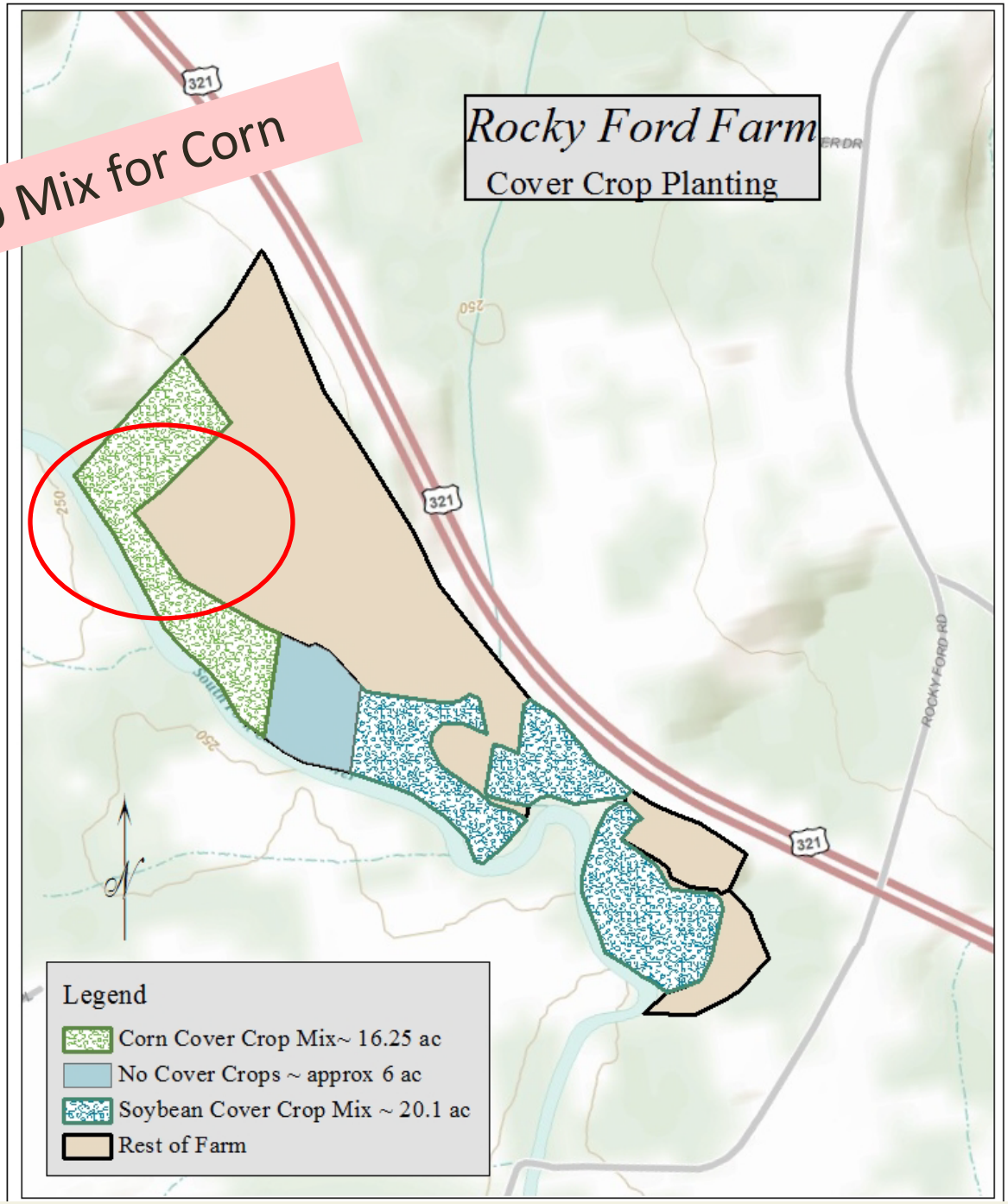
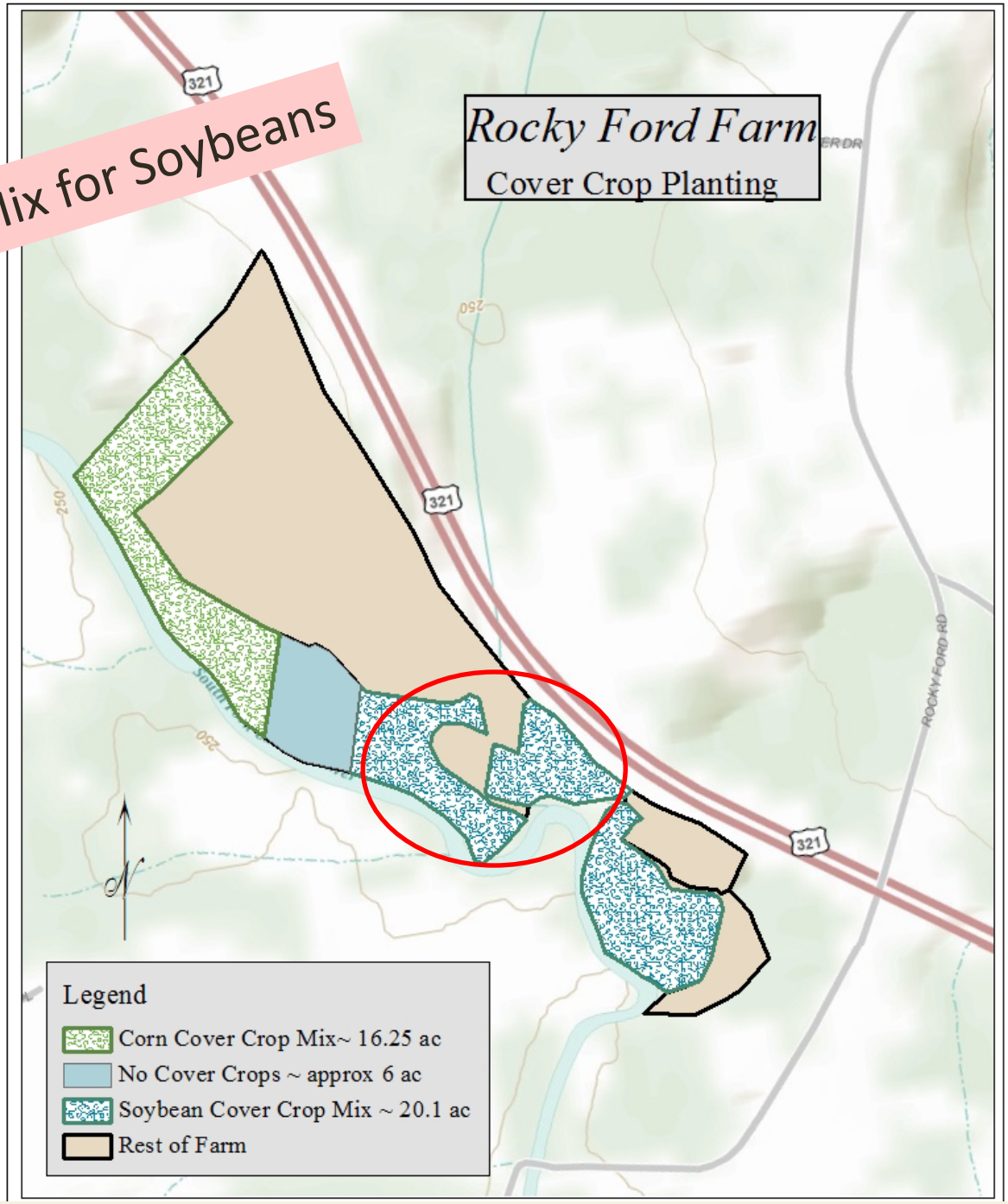


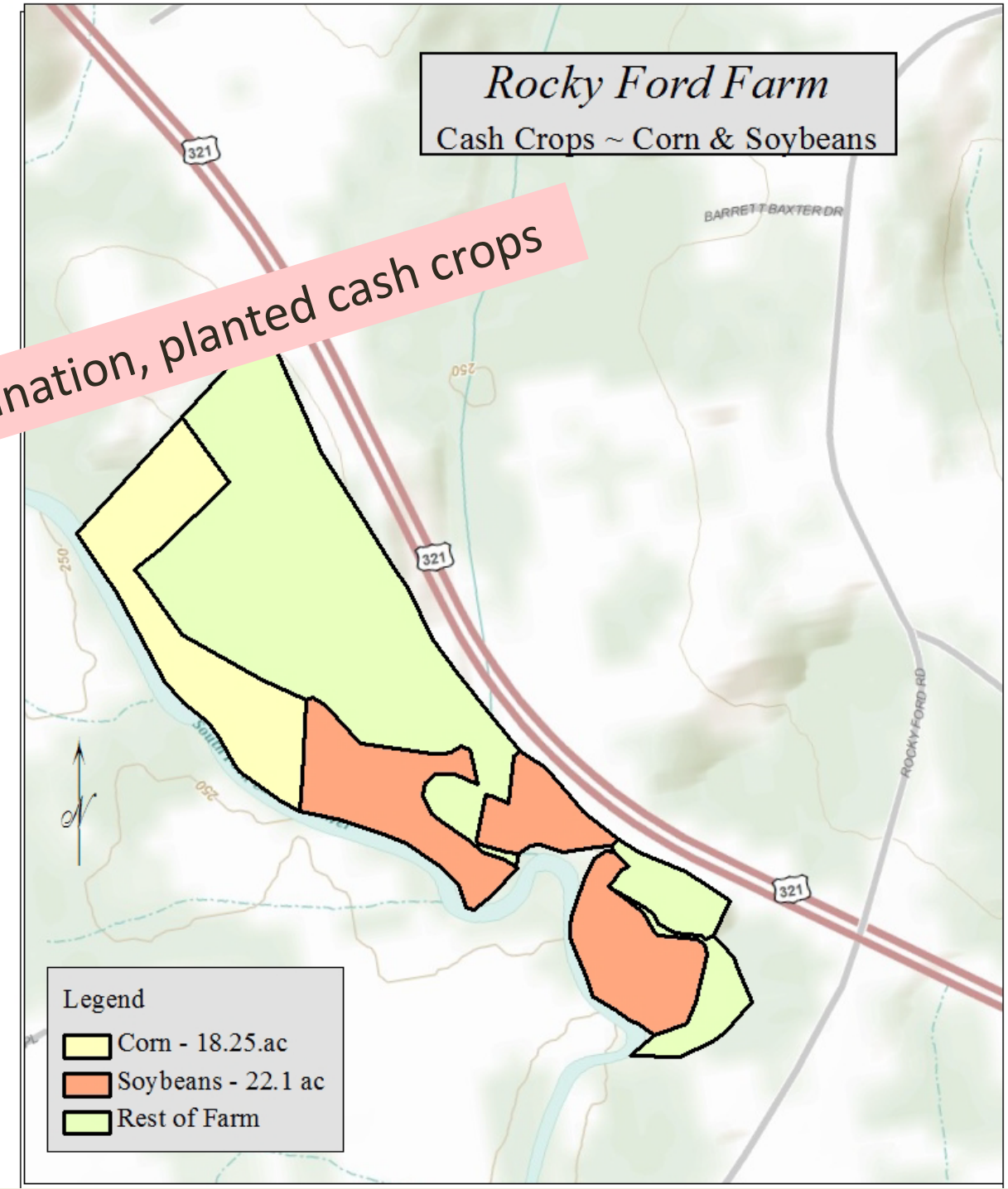
Drilled Cover Crop Mix for Corn

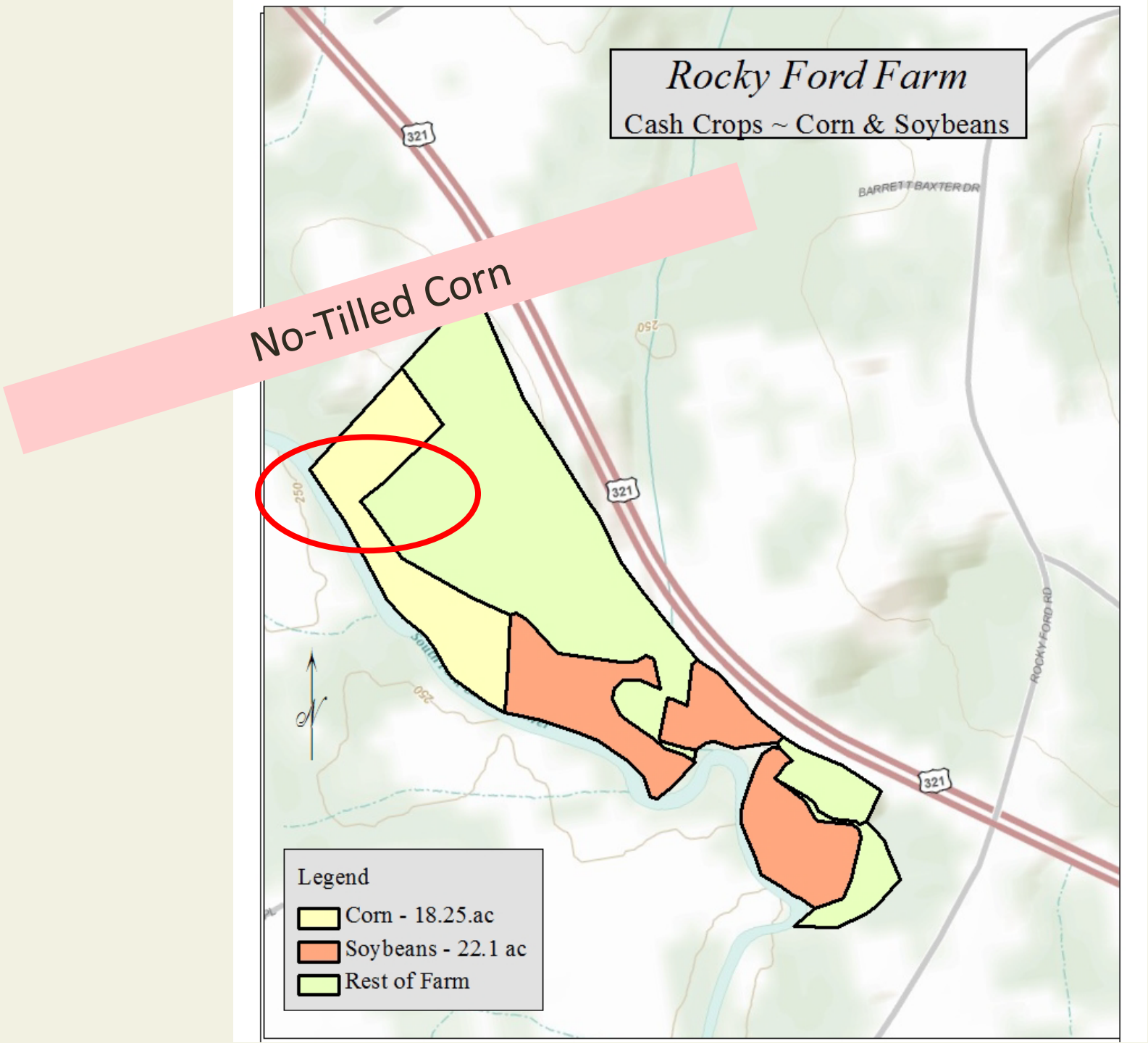


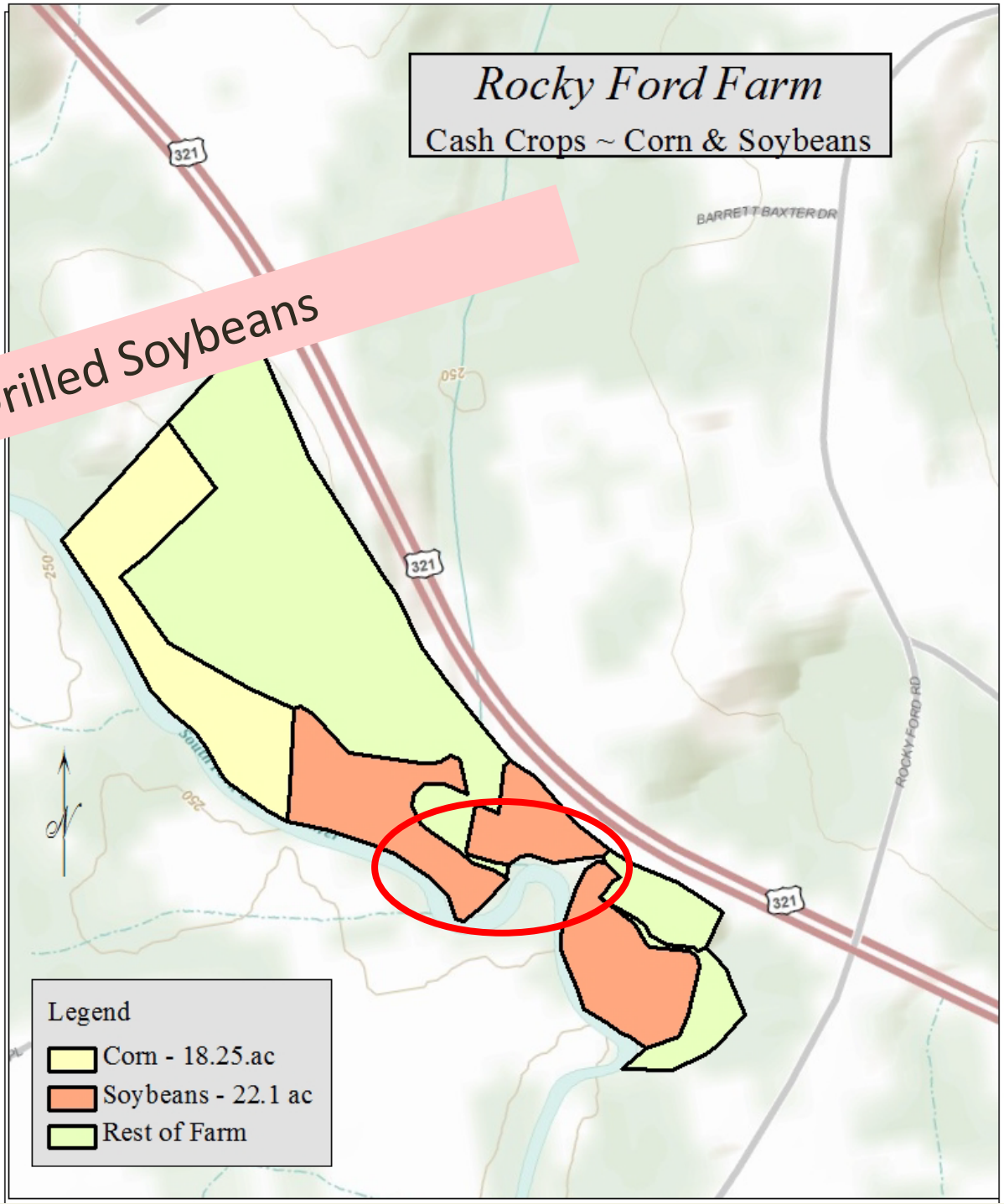
Drilled Cover Crop Mix for Soybeans



After termination, planted cash crops




Rocky Ford Farm
Cash Crops ~ Corn & Soybeans
No-Tilled Corn
321
BARRETT BAXTER DR
ROCKY FORD RD
250
Legend
Corn - 18.25.ac
Soybeans - 22.1 ac
Rest of Farm


Rocky Ford Farm
Cash Crops ~ Corn & Soybeans
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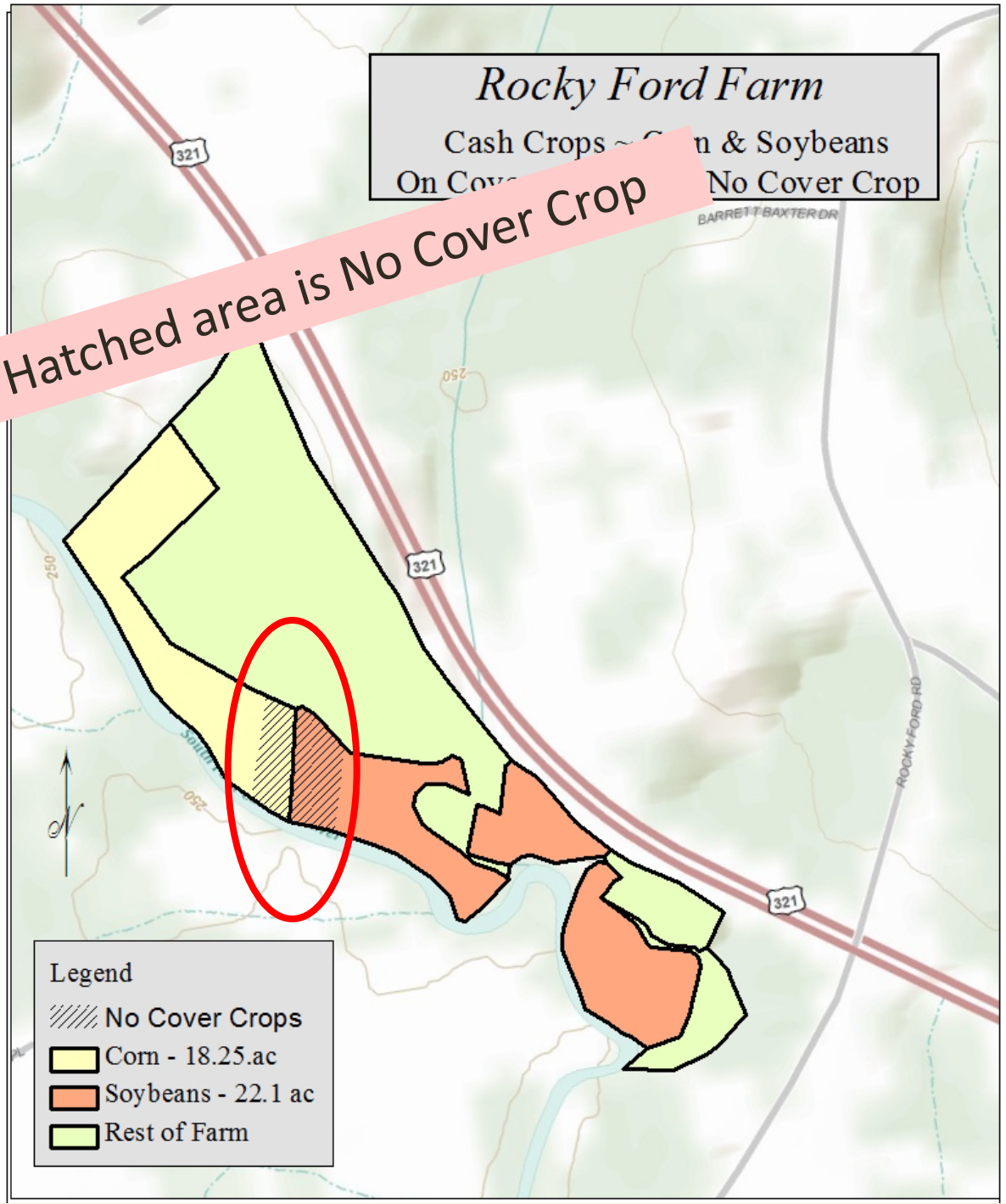

Rocky Ford Farm
Cash Crops ~ Corn & Soybeans
On Cover Crop No Cover Crop
Remember: Hatched area is No Cover Crop
321
BARRETT BAXTER DR
ROCKY FORD RD
250
Legend
No Cover Crops
Corn - 18.25.ac
Soybeans - 22.1 ac
Rest of Farm

During the cash crop growing season…


Saw few Weeds in Cover Cropped Area
(mid-July 2013)


Saw soil erosion on the
No Cover Crop Area

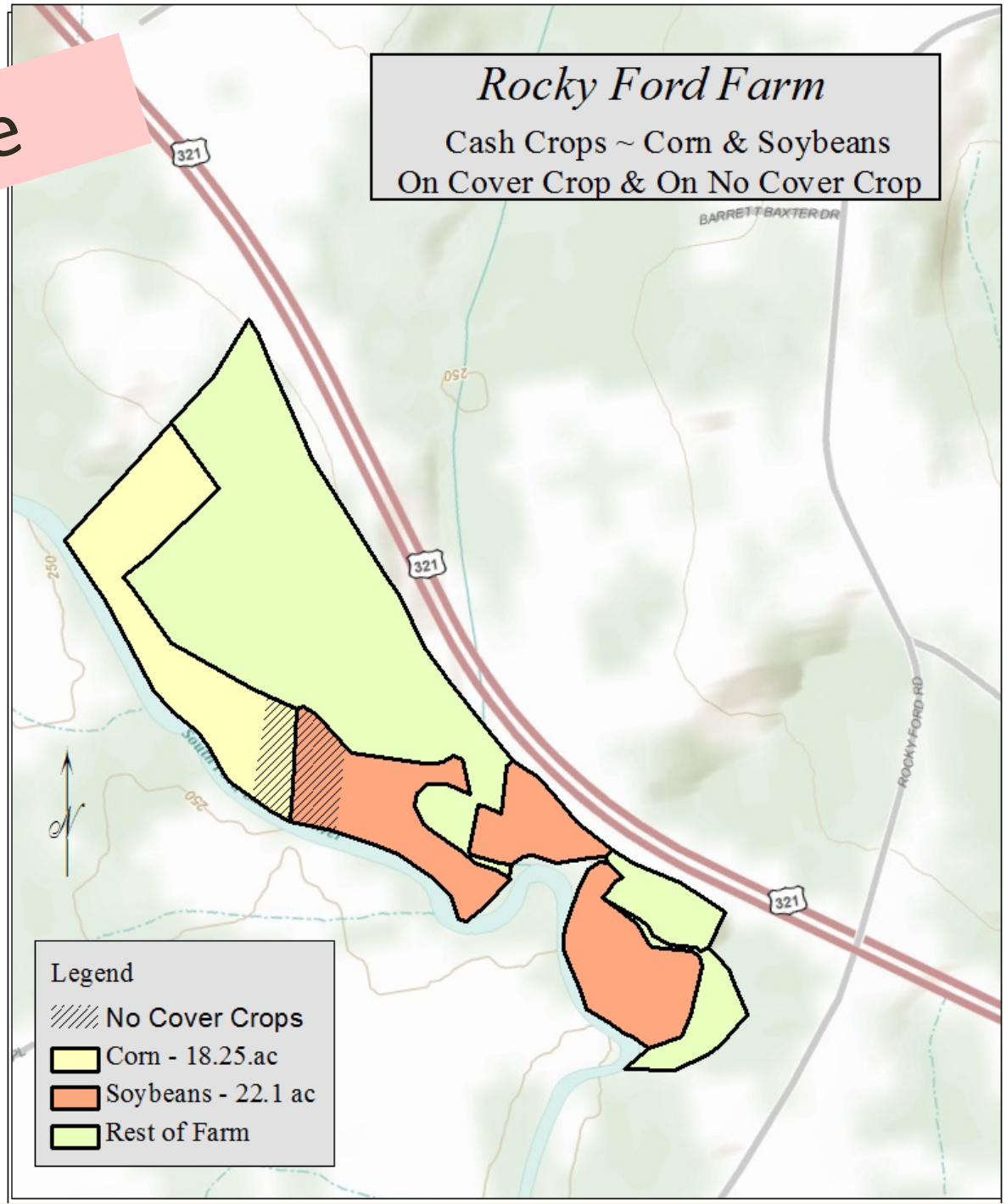
and **SURPRISE!**

Saw differences in the Plants.

Saw differences in the Plants.

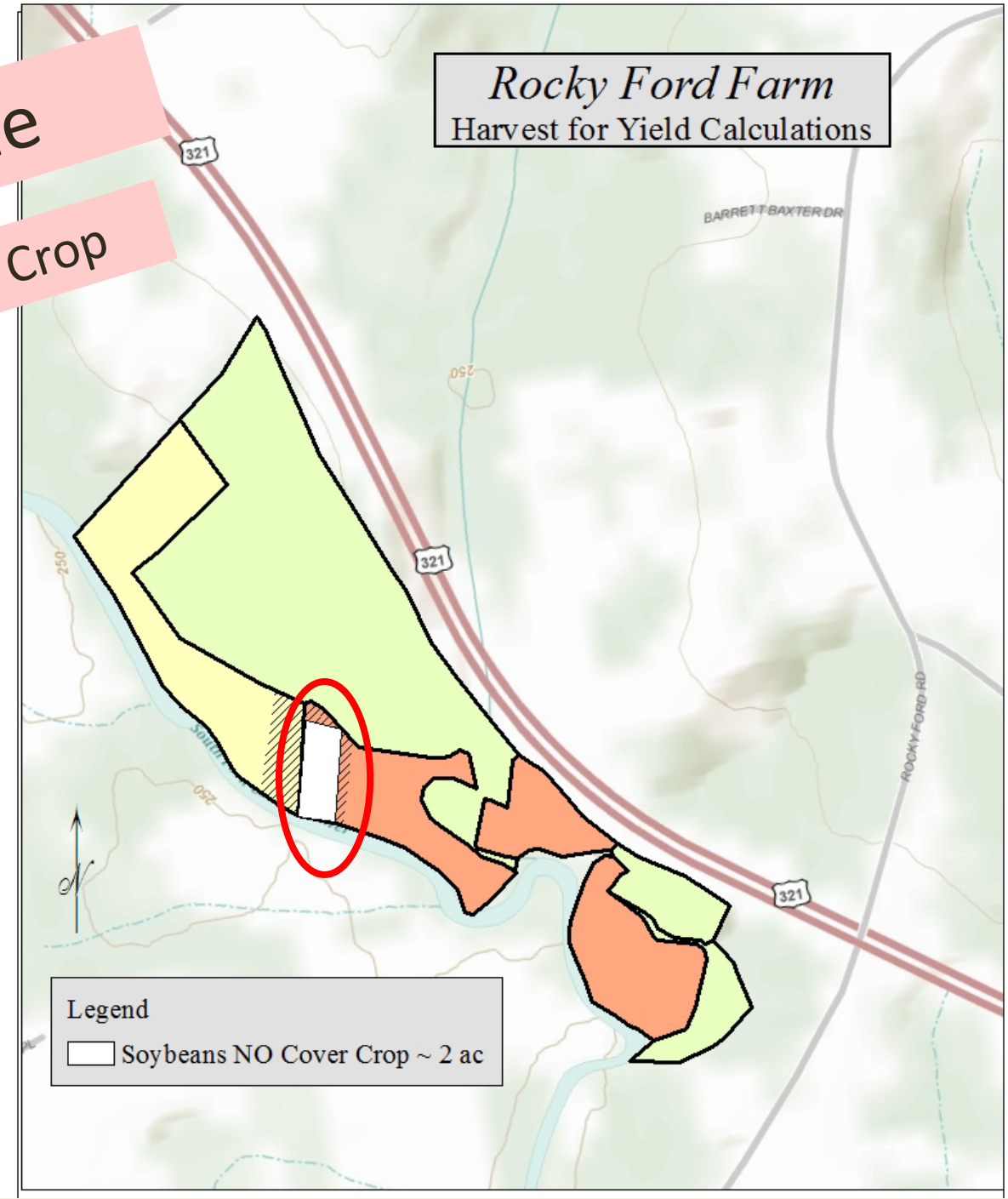
For the Soybeans:
Larger Plants
More Pods
More Beans/Pod
Beans might be larger.

Harvest Time



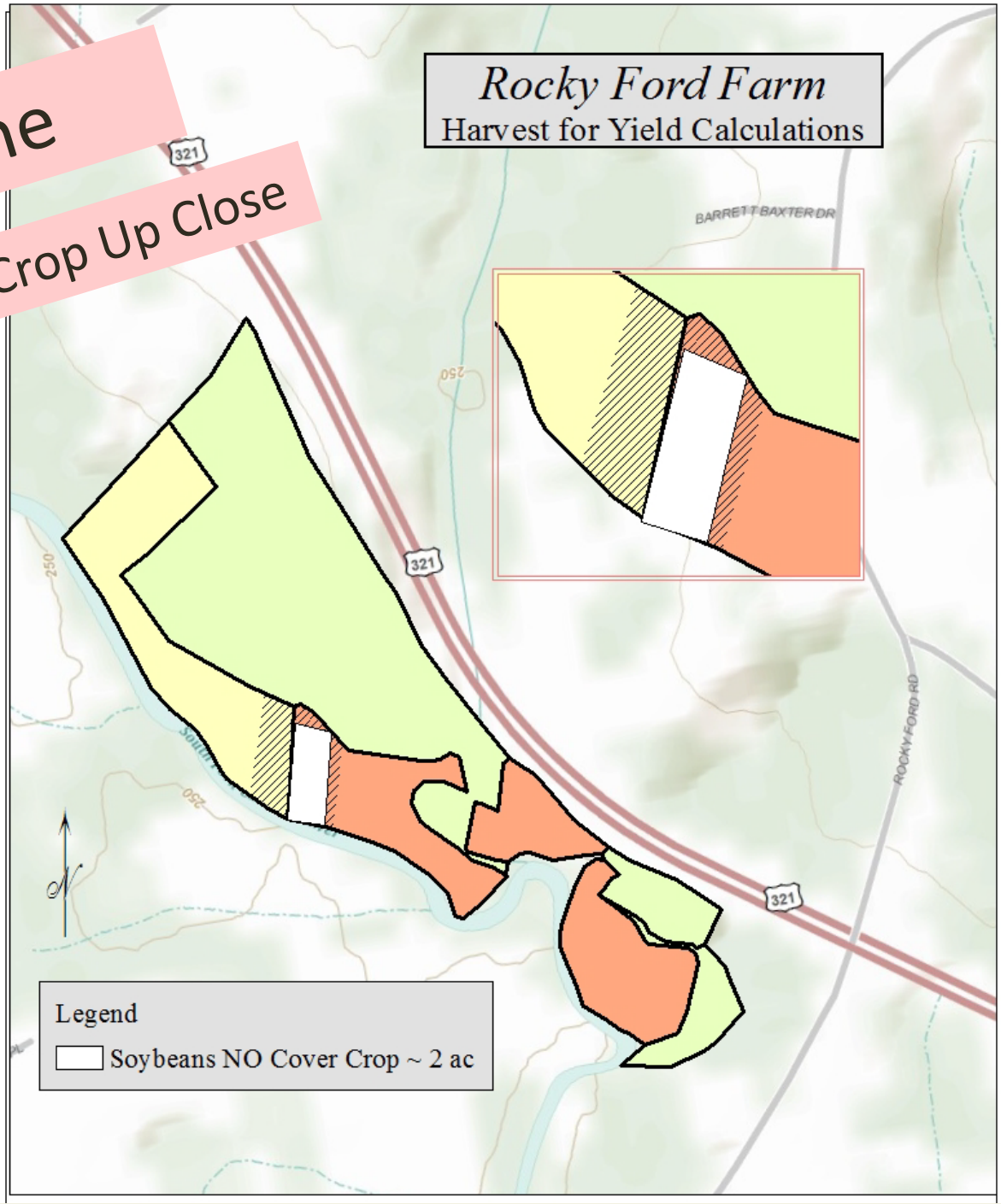
Harvest Time

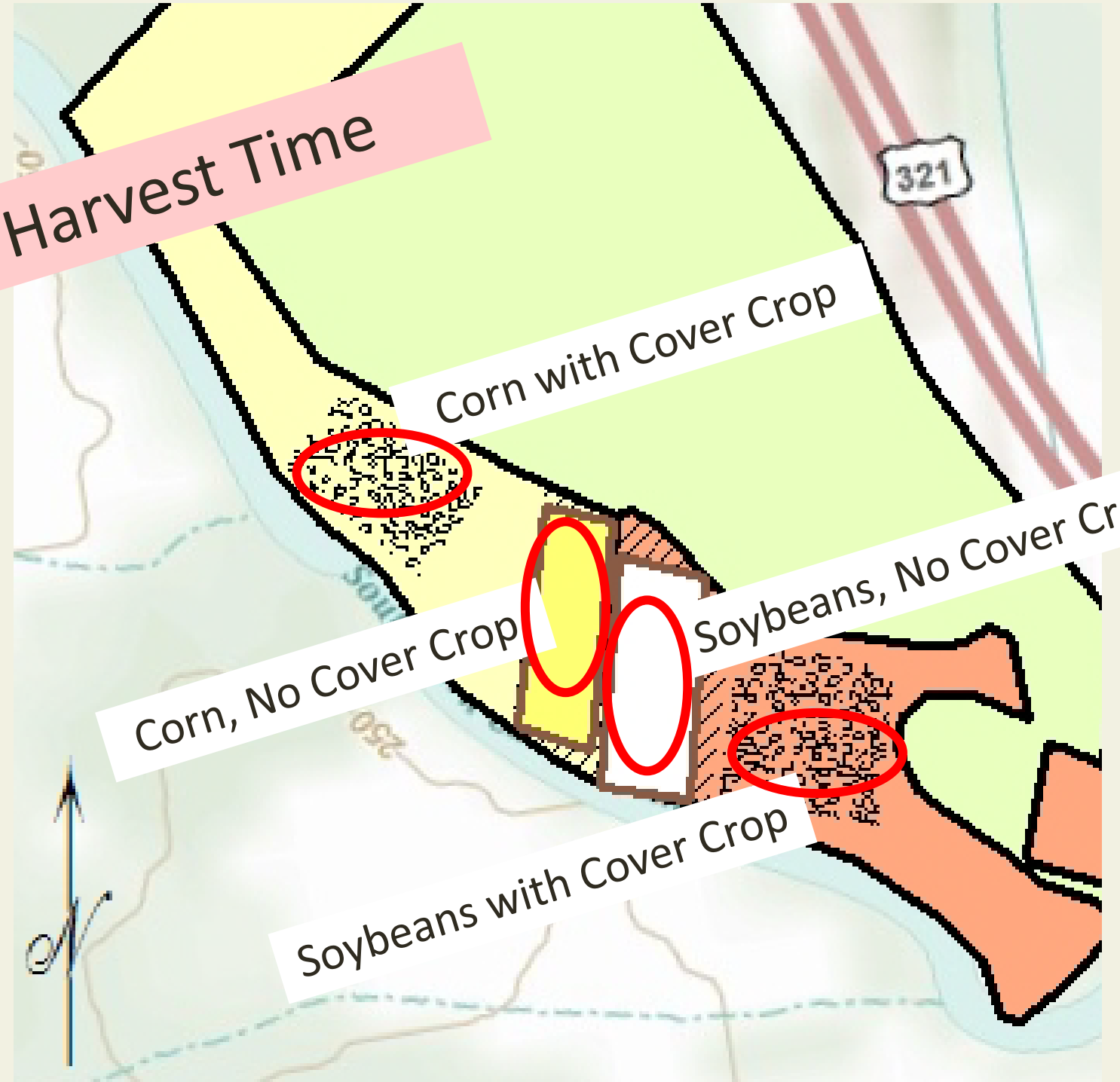
Soybeans, No Cover Crop



Harvest Time

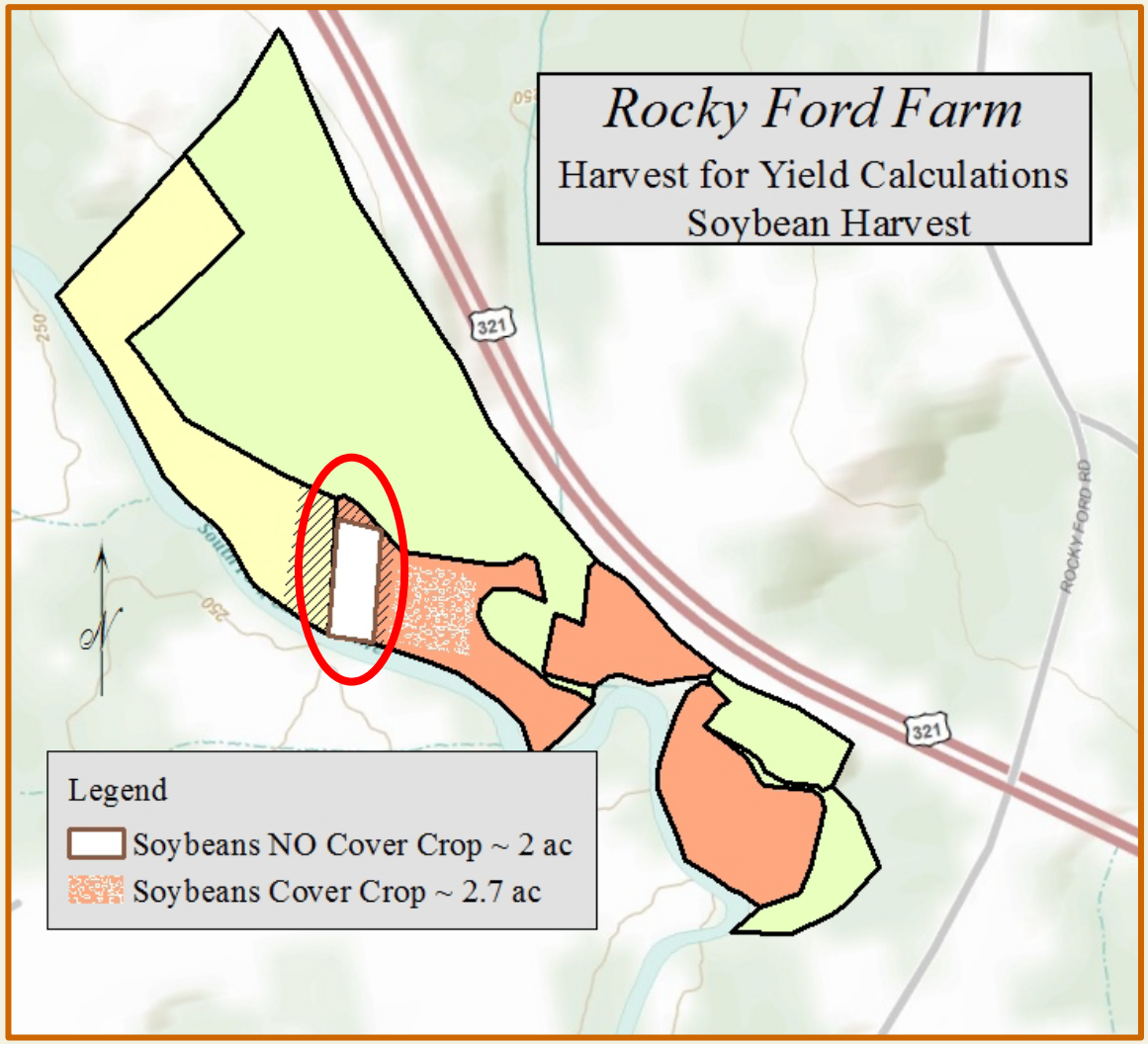
Soybeans, No Cover Crop Up Close




Harvest Time
Corn with Cover Crop
Corn, No Cover Crop
Soybeans, No Cover Crop
Soybeans with Cover Crop
321

Harvest Time

The Results

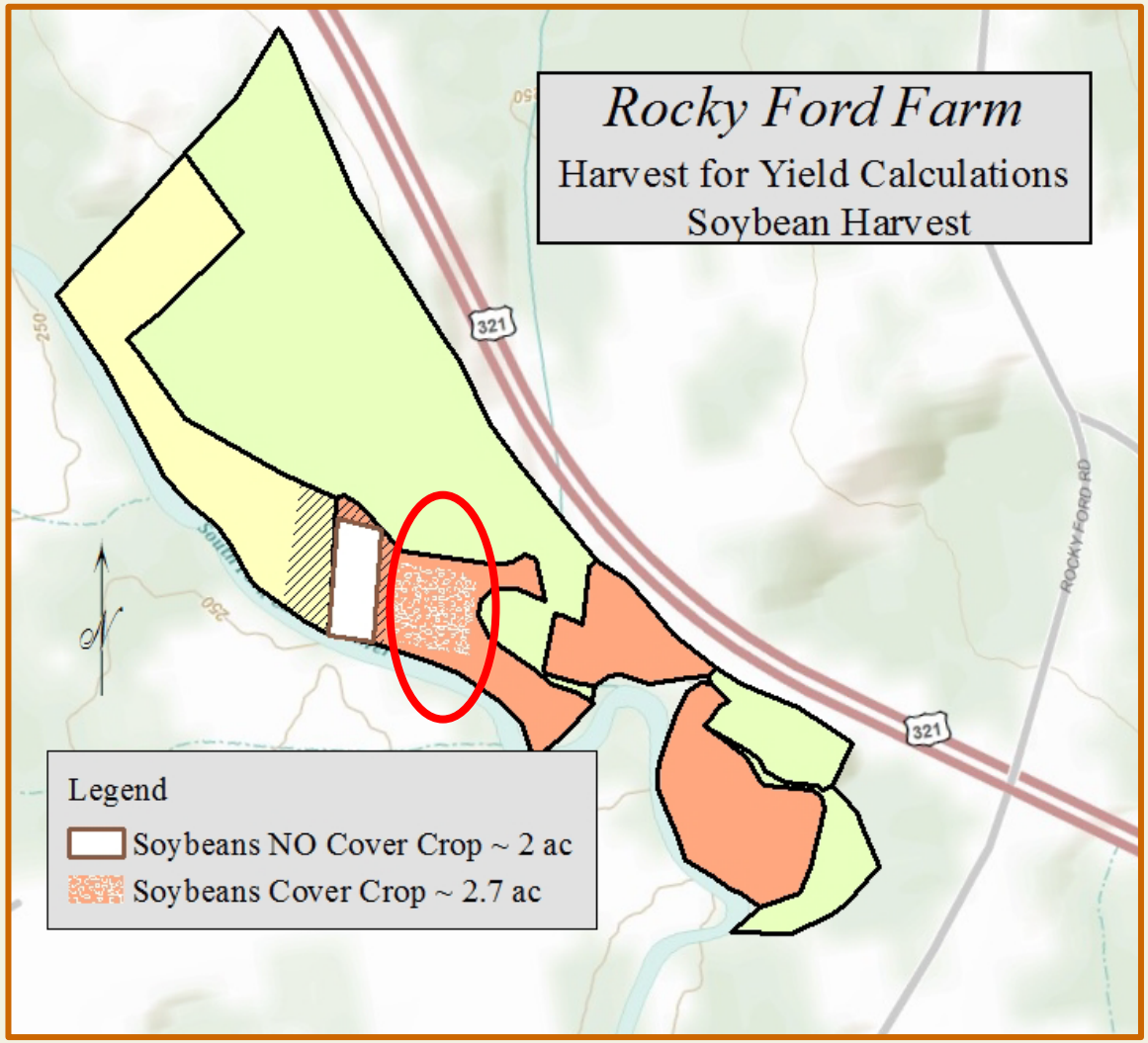


Soybeans, NO Cover Crop

Plot:
Length = 486 feet
Width = 179 feet
Sq Ft = 86,994 ⇨ Acres = 2

Truck Load:
101.18 bushels

Arithmetic:
101 bu/2 ac = 50.5 bu/ac

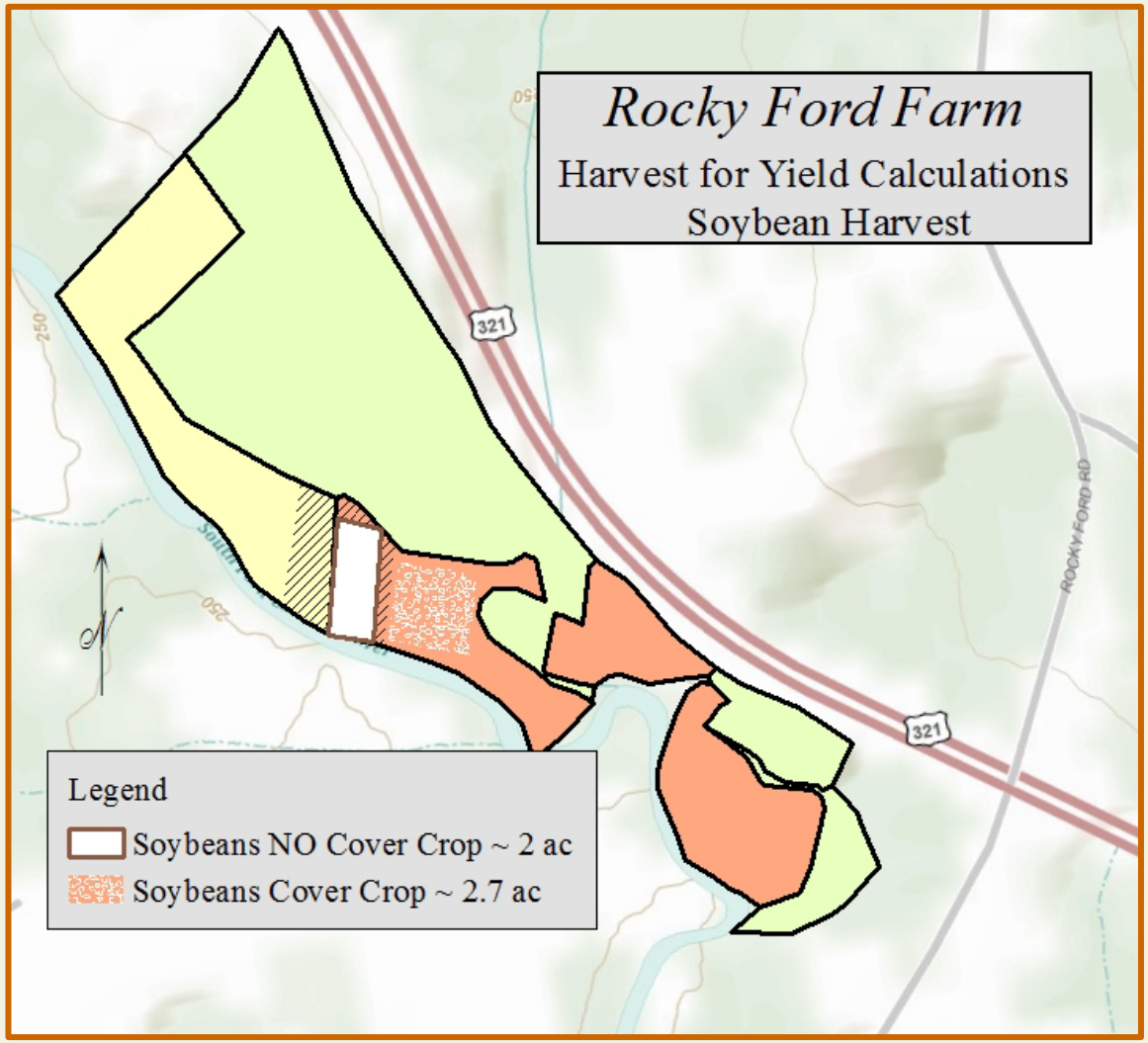


Soybeans Cover Crop

Plot:
Length = 335 feet
Width = 346 feet
Sq Ft = 115,910 ⇨ Acres = 2.66

Truck Load:
182.6 bushels

Arithmetic:
182.6 bu/2.66 ac = 68.6 bu/ac



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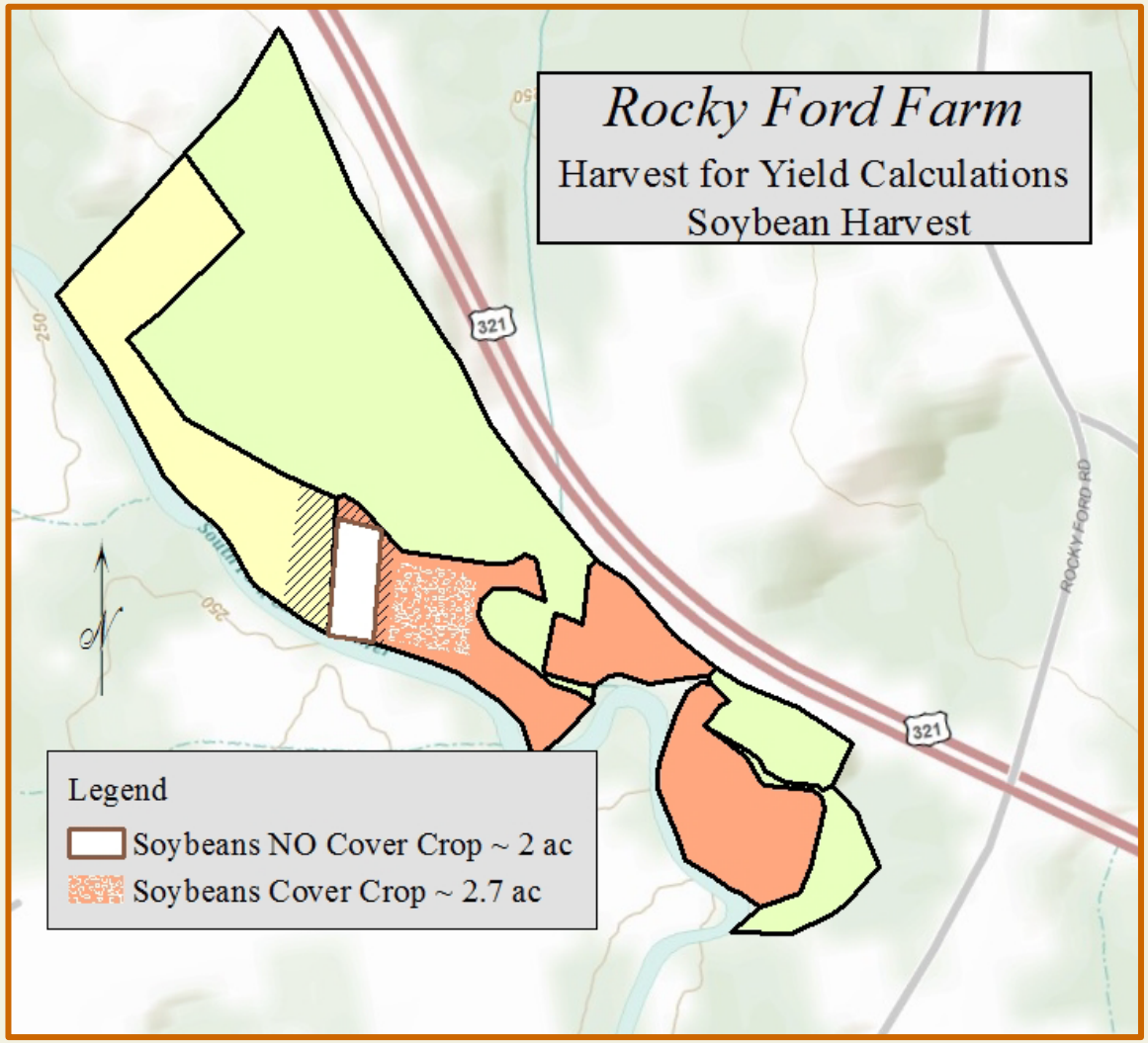

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Truck Load:
182.6 bushels

Arithmetic:
182.6 bu/2.66 ac = 68.6 bu/ac

Increased Yield = 68.6 – 50.5 = 18.1,
= **18** bu/ac rounded

Was this a good test?

Was this a good test?

Not to Researchers ….

No Plot Replications

Only One Year

Was this a good test?

For the Farmer, Yes….

Saw few weeds in Cover Cropped Area

Saw few weeds in Cover Cropped Area

Saw erosion in the No Cover Cropped Area

Saw few weeds in Cover Cropped Area

Saw erosion in the No Cover Cropped Area

Saw evidence of a Yield Increase


Questions ?

Benefits and Costs due to Cover Crop on Soybeans First Year

The Benefits, First Year

INCREASED Benefits, Soybeans, due to Cover Crop, First Year

Benefits based on Yield

Yield INCREASE due to Cover Crops, bu/ac	18
Price Received, $/bu	$12.75
Gross Revenue INCREASE, $/ac	**$230**

Benefits based on Reduction Inputs

Re gen, 50 units @ 46 cents/unit, $/ac	$23
Post Herbicide, $/ac	$28
Cash Crop Production Cost Savings, $/ac	**$51**

Total ADDITIONAL Benefit, $/ac	$280

My rounding may make your arithmetic wrong by a dollar or so.

INCREASED Benefits, Soybeans, due to Cover Crop, First Year

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Yield INCREASE due to Cover Crops, bu/ac	18
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Total ADDITIONAL Benefit, $/ac $280

The Costs, First Year

INCREASED Costs, Soybeans, due to Cover Crop, First Year

Learning Costs, $/ac	$ 67
Soil Tests, $/ac	$ 8
Cover Crop Seed Costs, $/ac	$ 43
Drill Cover Crop Seed, $/ac	$ 14
Additional Fertilizer, $/ac	$ 0
Field Monitoring, $/ac	$ 11
Terminate Cover Crop, $/ac	$ 8
Additional Cost to Drill Soybeans, $/ac	$ 1
Additional Harvest & Post Harvest Cost, $/ac	$ 0

Total ADDITIONAL Cost, $/ac **$152**

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Additional Cost to Drill Soybeans, $/ac	$ 1
Additional Harvest & Post Harvest Cost, $/ac	$ 0

Total ADDITIONAL Cost, $/ac **$152**

Learning Costs due to Cover Crop, First Year

Farm Field Day, hrs	6
NRCS DC, ENTSC, ARS, hrs	7
Internet, 9 hrs/wk for 12 weeks, hrs	108
Total Farmer Time, hrs	121
Value of Farmer Time, $/hr	$ 20
Time Value for Whole Farm, $	$ 2,420
Other Cost, Postage, $	$ 18
Total Learning Costs, First Year, All CC Acres, $	$ 2,438

Cost/ac = Total Cost/36.35 Cover Crop acres **$67**

Cover Crop Seed Costs for Soybeans, First Year

Cereal Rye, 10 lb/ac @ $0.28/lb	$2.80
Crimson Clover, pre-inoculated, 5 lb/ac @ $1.50/lb	$7.50
Oats, 10 lb/ac @ $0.25/lb	$2.50
Radishes, 6 lb/ac @ $2.55/lb	$15.30
Triticale, 10 lb/ac @ $0.34/lb	$3.40
Mixing, Bagging, & Shipping	$11.25
Total CC Seed Pounds per Acre	41

Cost/ac **$42.75**

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Total CC Seed Pounds per Acre	41

Cost/ac **$42.75**

Field Monitoring Costs, First Year

Can you imagine how Field Monitoring could cost almost $11 per acre?

Field Monitoring Costs, First Year

October, 2 trips/wk * 4 wks * 1 hr/trip, hrs	8
Nov-April, 1 trip/wk * 22 wks * 0.25 hr/trip, hrs	5.5

Field Monitoring Costs, First Year

October, 2 trips/wk * 4 wks * 1 hr/trip, hrs	8
Nov-April, 1 trip/wk * 22 wks * 0.25 hr/trip, hrs	5.5
Time Value, 13.5 Farmer Hours * $20/hr, $	$270

Field Monitoring Costs, First Year

October, 2 trips/wk * 4 wks * 1 hr/trip, hrs	8
Nov-April, 1 trip/wk * 22 wks * 0.25 hr/trip, hrs	5.5
Time Value, 13.5 Farmer Hours * $20/hr, $	$270
Fuel, 30 trips * 1 gal/trip * $4/gal	$120

Field Monitoring Costs, First Year

October, 2 trips/wk * 4 wks * 1 hr/trip, hrs	8
Nov-April, 1 trip/wk * 22 wks * 0.25 hr/trip, hrs	5.5
Time Value, 13.5 Farmer Hours * $20/hr, $	$270
Fuel, 30 trips * 1 gal/trip * $4/gal	$120

Cost/ac = ($270 + $120)/36.35 CC Acres $10.73

Termination Costs for Soybeans, First Year

What's not in the following costs that you think should be there?

Termination Costs for Soybeans, First Year

Farmer Time to Roll Cover Crop, 0.25 hr/ac * $20/hr, $/ac	$5.00
Fuel Cost to Roll Cover Crop, 0.6 gal/ac * $4/gal, $/ac	$2.40

Termination Costs for Soybeans, First Year

Farmer Time to Check Termination, (1 hr * $20/hr)/36.35 CC Acres, $/ac	$0.55
Fuel Cost to Check, (1 trip * 1 gal/trip * $4/gal)/36.35 CC Acres, $/ac	$0.11

Termination Costs for Soybeans, First Year

Farmer Time to Roll Cover Crop, 0.25 hr/ac * $20/hr, $/ac	$5.00
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Cost/ac $8.06

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Cost/ac $8.06

So, what's missing?

Termination Costs for Soybeans, First Year

Farmer Time to Roll Cover Crop, 0.25 hr/ac * $20/hr, $/ac	$5.00
Fuel Cost to Roll Cover Crop, 0.6 gal/ac * $4/gal, $/ac	$2.40
Farmer Time to Check Termination, (1 hr * $20/hr)/36.35 CC Acres, $/ac	$0.55
Fuel Cost to Check, (1 trip * 1 gal/trip * $4/gal)/36.35 CC Acres, $/ac	$0.11

Cost/ac $8.06

There's no Herbicide Cost. Why?

Termination Costs for Soybeans, First Year

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Fuel Cost to Roll Cover Crop, 0.6 gal/ac * $4/gal, $/ac	$2.40
Farmer Time to Check Termination, (1 hr * $20/hr)/36.35 CC Acres, $/ac	$0.55
Fuel Cost to Check, (1 trip * 1 gal/trip * $4/gal)/36.35 CC Acres, $/ac	$0.11

Cost/ac $8.06

There's no Herbicide Cost. Why?

Russell would have terminated his winter weeds with the same herbicide. It's a cost he would incur in any event.

Additional Costs to Drill Soybeans, First Year

Just a note about this cost ~

It took Russell a little longer to plant/drill his cash crop because of the 2 inches of cover crop residue. He slowed down to check seed placement.

It took 2 hours longer for the 36.35 cover crop acres.

At $20/hour, that's $40 for the cover crop acres.

Finally, that's $1.10/acre.


Questions ?

Before we leave costs ~

Let’s look at Russell’s Expected Costs for the Second Year

Cover Crop Costs, Soybeans, Expected in the Second Year

Learning Costs, $/ac	$ 67	$ 0
Soil Tests, $/ac	$ 8	$ 8
Cover Crop Seed Costs, $/ac	$ 43	$ 36
Drill Cover Crop Seed, $/ac	$ 14	$ 14
Additional Fertilizer, $/ac	$ 0	$ 0
Field Monitoring, $/ac	$ 11	$ 2
Terminate Cover Crop, $/ac	$ 8	$ 8
Additional Cost to Drill Soybeans, $/ac	$ 1	$ 1
Additional Harvest & Post Harvest Cost, $/ac	$ 0	$ 0
Total ADDITIONAL Cost, $/ac	**$152**	**$ 69**

Bringing it all together ~

Let’s look at the Net Benefits

Soybean Net Benefits, due to Cover Crop, First Year

Net Benefits = Total Benefits – Total Costs

Soybean Net Benefits, due to Cover Crop, First Year

Net Benefits = Total Benefits – Total Costs

Total Benefits, Soybeans, First Year, $/ac	**$280**

Soybean Net Benefits, due to Cover Crop, First Year

Net Benefits = Total Benefits – Total Costs

Total Benefits, Soybeans, First Year, $/ac	$280
Total Costs, Soybeans, First Year, $/ac	$152

Soybean Net Benefits, due to Cover Crop, First Year

Net Benefits = Total Benefits – Total Costs

Total Benefits, Soybeans, First Year, $/ac	$280
Total Costs, Soybeans, First Year, $/ac	$152
Net Benefits due to Cover Crops, $/ac	$128

Soybean Net Benefits, due to Cover Crop, First Year

Net Benefits = Total Benefits – Total Costs

Total Benefits, Soybeans, First Year, $/ac	$280
Total Costs, Soybeans, First Year, $/ac	$152
Net Benefits due to Cover Crops, $/ac	$128

For Russell, cover crops on soybeans more than paid for themselves in the first year.

The Partial Budget

A Partial Budget considers a rather small change in the farm operation. For us, today, the Benefits and Costs of Cover Crop comprise a partial budget for Russell.

In contrast, an Enterprise Budget considers a major part of the farm operation such as a whole crop budget. For us, today, that would be to combine the Partial Budget of Cover Crops with the Soybean Budget without Cover Crops.

In fact, what we are doing in this section is combining Russell's Cover Crop First Year Benefits and Costs with a generalized soybean crop budget which considers only the variable costs of growing no-till, no cover crop soybeans.

The importance is to appreciate that “benefits” and “costs” mean different things in different budgets.

Not understanding this can lead to communication problems with farmers who doubt the value of cover crops.

Let's look at Russell's Benefits and Costs (variable) without Cover Crop ....

Budget (generalized) for No-Till Soybeans, Dryland, No Cover Crop

Costs, $/ac	$275
No-Till Variable Costs, no rent (partial budget), $/ac	$275
Nitrogen, bump start for Soybeans, $/ac	$23
Post Herbicide, $/ac	$27
Rest of the Variable Costs, $/ac	$225

Benefits, $/ac	$644
Benefits w/o Cover Crop, $/ac	$644
Soybean Yield, No Cover Crop, bu/ac	50.5
Soybean Price, $/bu	$12.75

Net Benefits = Total Benefits - Total Costs, $/ac	$369
Benefits w/o Cover Crop, $/ac	$644
Costs w/o Cover Crop, $/ac	$275

Let's add Russell's Cover Crop Benefits and Costs . . . .

Adding Cover Crop Costs and Benefits, First Year

Costs, First Year	
Cover Crop Costs (partial budget), First Year, $/ac	$152
Remember: Learning, Soil Tests, Seeds, Drill, Monitoring, Terminate, etc.	
No-Till Variable Costs, no rent (partial budget), $/ac	$275
Nitrogen, bump start for Soybeans, $/ac	$23
Herbicide, $/ac	$27
Rest of the Variable Costs, $/ac	$225

Benefits, First Year	
Benefits due to Cover Crops (partial), $/ac	$280
Remember: Increased Yield, No Nitrogen, No Post Herbicide.	
Benefits w/o Cover Crop, $/ac	$644
Soybean Yield, No Cover Crop, bu/ac	50.5
Soybean Price, $/bu	$12.75

Net Benefits = Total Benefits - Total Costs, First Year, $/ac	
Net Benefits (Benefits - Costs) due to Cover Crop, $/ac	$128
Benefits due to Cover Crop, $/ac	$280
Costs due to Cover Crop, $/ac	$152
Net Benefits (Benefits - Costs) w/o Cover Crops, $/ac	$369
Benefits w/o Cover Crop, $/ac	$644
Costs w/o Cover Crop, $/ac	$275

Bringing it all together ....

Enterprise Budget for No-Till Soybeans, Dryland with Cover Crop, First Year

Costs, First Year	$427
Cover Crop Costs (partial budget), First Year, $/ac	$152
Remember: Learning, Soil Tests, Seeds, Drill, Monitoring, Terminate, etc.	
No-Till Variable Costs, no rent (partial budget), $/ac	$275
Nitrogen, bump start for Soybeans, $/ac	$23
Herbicide, $/ac	$27
Rest of the Variable Costs, $/ac	$225

Benefits, First Year	$924
Benefits due to Cover Crops (partial), $/ac	$280
Remember: Increased Yield, No Nitrogen, No Post Herbicide.	
Benefits w/o Cover Crop, $/ac	$643
Soybean Yield, No Cover Crop, bu/ac	50.5
Soybean Price, $/bu	$12.75

Net Benefits = Total Benefits - Total Costs, First Year, $/ac	$497
Net Benefits (Benefits - Costs) due to Cover Crop, $/ac	$128
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Understanding a partial budget prevents the following communication problem . . . .

THE WRONG WAY …

Planner: *You can make $130 per acre with cover crops.*

Farmer: *I already make $370 per acre without the fuss and bother of cover crops.*

A RIGHT WAY …

Planner: *You can add $130 per acre to your existing profits with cover crops.*

Farmer: *Really?*


So, Russell answered the question:
“Why grow something you don’t sell?”


* Reduced Soil Erosion


* Reduced Soil Erosion
* Reduced Post Herbicides


* Reduced Soil Erosion
* Reduced Post Herbicides
* Increased Yields

* Reduced Soil Erosion

* Reduced Post Herbicides

* Increased Yields

* Increased Profits

Madalene Ransom, Economist.
East National Technology Support Center

Madalene.Ransom@gnb.usda.gov

336-370-3357


Questions ?


Thank You for Joining Us Today!

Enterprise Budget **No-Till Soybeans, Dryland with Cover Crop, First Year** **Done Two Ways**	Simply Add the Partial Budgets	Change the Accounting Method
Total Costs, First Year	$427	$377
Costs due to Cover Crop (partial budget), First Year, $/ac	$152	$152
Learning, Soil Tests, Seeds, Drill, Monitoring, etc.		
No-Till Variable Costs, no rent (partial budget), $/ac	$275	$225
Cost ~ Nitrogen, bump start for Soybeans, $/ac	$23	$0
Cost ~ Post Herbicide, $/ac	$27	$0
Rest of the Variable Costs, $/ac	$225	$225
Total Benefits, First Year	$924	$874
Benefits due to Cover Crops (partial), $/ac	$280	$230
Savings ~ No Nitrogen, $/ac	$23	No Savings
Savings ~ No Post Herbicide, $/ac	$27	No Savings
Increased Yield, $/ac	$230	$230
Benefits w/o Cover Crop, $/ac	$644	$644
Soybean Yield, No Cover Crop, bu/ac	50.5	50.5
Soybean Price, $/bu	$12.75	$12.75
Total Net Benefits = Total Benefits - Total Costs, $/ac	**$497**	**$497**

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Total Cost Declined by $50/acre

Enterprise Budget **No-Till Soybeans, Dryland with Cover Crop, First Year** **Done Two Ways**	Simply Add the Partial Budgets	Change the Accounting Method
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Costs due to Cover Crop (partial budget), First Ye	152	$152
Learning, Soil Tests, Seeds, Drill, Mon		
No-Till Variable Costs, no rent /	/ac	$275	$225
Cost ~ Nitrogen, b	eans, $/ac	$23	$0
Cost ~ Post		$27	$0
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Total Net Benefits = Total Benefits - Total Costs, $/ac		**$497**	**$497**

Total Benefit Declined by $50/acre

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