

# ROI Calculator 2.0

The industry's first nutrient return on investment calculator to incorporate spatial variation shows how much you could increase your yield and net return with optimal P and K applications.



TUTORIAL



NUTRIENT ROI CALCULATOR 2.0

CHANGE VALUES

EMAIL RESULTS

Increase your net return by an average of

**\$22,400**

If you add

**133** lb/acre

of entered fertilizer material,  
which supplies 80 lb/acre of  $K_2O$ ,  
you could increase your yield by

**22** bu/acre.

Your crop will be removing

**53** lbs/acre

of potassium from your soil  
that has a value of

**\$15** /acre.



# Learning How To Use This Tool



TUTORIAL



### NUTRIENT ROI CALCULATOR 2.0

**1 CHOOSE YOUR CROP:**

<  Corn |  Soybeans |  Cotton >

**2 NUTRIENT:** P K ?

**3 STATE/REGION:** Select ?

**4 YOUR AVERAGE SOIL TEST LEVEL:** Select PPM ?

**5 YOUR ACREAGE:** Enter # acres

**6 YIELD POTENTIAL OF THIS CROP ACREAGE:** Enter # BU/acre ?

**7 NUTRIENT ANALYSIS:**

	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
%	%	%	%

**8 CURRENT NUTRIENT PRICE FOR YOUR AREA:** Enter # \$/ton ?

**9 CROP PRICE:** Enter # \$/BU ?

USE UNIVERSITY RECOMMENDED RATE:

**10 DESIRED FERTILIZER RATE (NUTRIENT RATE):** Enter # lb/acre ?

**CALCULATE**

**1) Crop selector:**

To get started, choose your crop.



**3) State/Region selector:**

Then choose your state or province. If it is not listed, select the geographic location or regional “hybrid” nearest you.



**5) Acreage:**

Enter the acreage of your farm.



**7) Nutrient Analysis:**

Enter the specifications for your nutrient. This can be a single or multi-nutrient fertilizer. The calculator will determine the ROI of the P or K in your nutrient.



**9) Crop price:**

For crop prices, please consult our commodity futures prices ticker.



**2) Nutrient selector:**

To see how much more net return you could earn by an investment in phosphorus, pick P. For potassium, pick K.



**4) Soil test level selector:**

Choose your soil test level. Refer to your most recent soil test to determine P or K levels. If you don't have that info, contact your local retailer agronomist, consultant, or extension agent.



**6) Yield potential:**

To get this number, take the highest yield you've ever had and add 10%.



**8) Current nutrient price:**

Enter the current nutrient price for your area. If you don't know it, consult your local retailer agronomist.



(Continued)

(Continued)

**10) Desired fertilizer rate:**

You can use the university recommended rate (This rate is a default fertilizer rate for each state as recommended by a leading agronomy university within that state) or you can enter a rate of your own.

**12) Cost of MOP/Cost of DAP**

When relevant, the field for cost of MOP or DAP will appear. You can select the current mid cornbelt terminal price as a default value or you can enter a rate of your own.

The screenshot shows a calculator interface with three sections. Each section has a radio button for 'USE UNIVERSITY RECOMMENDED RATE:' and a text input field. The first section is for 'DESIRED FERTILIZER RATE: (NUTRIENT RATE)' with a value of 'lb/acre of P<sub>2</sub>O<sub>5</sub>'. The second section is for 'COST OF AMMONIA:' with a value of 'Enter # \$/ton'. The third section is for 'COST OF MOP:' with a value of 'Enter # \$/ton'. A green 'CALCULATE' button is at the bottom.

**11) Cost of Ammonia:**

When relevant, the field for the cost of ammonia will appear. You can select the current mid cornbelt terminal price as a default value or you can enter a rate of your own.

# Learning How To Use This Tool

## General rules of thumbs:

- For every 20 pounds of P added above crop removal soil test level will increase by 1 ppm.
- Similarly, for every 20 pounds of P removed without fertilization, soil test level will decrease by 1 ppm.
- For every 6 pounds of K added above crop removal soil test level will increase by 1 ppm.
- Similarly, for every 6 pounds of K removed without fertilization soil test level will decrease by 1 ppm.



# Going Beyond The Basics



# Going Beyond the Basics

We are providing two different scenarios to demonstrate how you can use the calculator.

- The first scenario will be a demonstration of how to use this tool to determine the profitability of fertilizing a corn/soybean rotation.
- The second scenario will be a demonstration of how to use this tool to determine the profitability of building up a soil test.



# Going Beyond the Basics

## Scenario 1 – Fertilizing a rotation

We are providing specific values as a demonstration, but realize this approach can be used for many scenarios:

TUTORIAL 

  
NUTRIENT ROI CALCULATOR 2.0

**1 CHOOSE YOUR CROP:**



**2 NUTRIENT:**  P  K

**3 STATE/REGION:** Iowa

**4 YOUR AVERAGE SOIL TEST LEVEL:** 100-125

**5 YOUR ACREAGE:** 1

**6 YIELD POTENTIAL OF THIS CROP ACREAGE:** 225

**7 NUTRIENT ANALYSIS:**

	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	
	0	0	60	<input data-bbox="2510 1379 2538 1420" type="button" value="?"/>

**8 CURRENT NUTRIENT PRICE FOR YOUR AREA:** 300

**9 CROP PRICE:** 3.75

USE UNIVERSITY RECOMMENDED RATE:

**10 DESIRED FERTILIZER RATE: (NUTRIENT RATE)** 120

**CALCULATE**

## Going Beyond the Basics

Scenario 1 – Fertilizing a rotation

The screenshot shows the 'NUTRIENT ROI CALCULATOR 2.0' interface. The 'CHOOSE YOUR CROP' section has 'Corn' selected. The 'NUTRIENT' section has 'K' selected. The 'STATE/REGION' is 'Iowa', 'YOUR AVERAGE SOIL TEST LEVEL' is '100-125', 'YOUR ACREAGE' is '1', 'YIELD POTENTIAL OF THIS CROP ACREAGE' is '225', 'NUTRIENT ANALYSIS' shows N: 0, P<sub>2</sub>O<sub>5</sub>: 0, K<sub>2</sub>O: 60, 'CURRENT NUTRIENT PRICE FOR YOUR AREA' is '300', and 'CROP PRICE' is '3.75'. A yellow box highlights the 'USE UNIVERSITY RECOMMENDED RATE' checkbox (checked) and the 'DESIRED FERTILIZER RATE (NUTRIENT RATE)' field set to '120'. A 'CALCULATE' button is at the bottom.

Notice that the default fertilizer rate (based upon university recommendation) is 120 lbs/acre.

Now switch the crop to soybean and the yield potential to 70.

The screenshot shows the 'NUTRIENT ROI CALCULATOR 2.0' interface. The 'CHOOSE YOUR CROP' section has 'Soybeans' selected. The 'NUTRIENT' section has 'K' selected. The 'STATE/REGION' is 'Iowa', 'YOUR AVERAGE SOIL TEST LEVEL' is '100-125', 'YOUR ACREAGE' is '1', 'YIELD POTENTIAL OF THIS CROP ACREAGE' is '70', 'NUTRIENT ANALYSIS' shows N: 0, P<sub>2</sub>O<sub>5</sub>: 0, K<sub>2</sub>O: 60, 'CURRENT NUTRIENT PRICE FOR YOUR AREA' is '300', and 'CROP PRICE' is '10.00'. A yellow box highlights the 'USE UNIVERSITY RECOMMENDED RATE' checkbox (checked) and the 'DESIRED FERTILIZER RATE (NUTRIENT RATE)' field set to '110'. A 'CALCULATE' button is at the bottom.

Notice that the default fertilizer rate is 110 lbs/acre.

Thus the total fertilizer rate for a corn soybean rotation is 230 lbs of K<sub>2</sub>O/acre.

## Going Beyond the Basics

### Scenario 1 – Fertilizing a rotation

Let's just assume that we will use the university recommendations for each of the crops in the rotation (switch the crop back to corn and the yield potential to 225).

TUTORIAL

NUTRIENT ROI CALCULATOR 2.0

1 CHOOSE YOUR CROP:

Corn Soybeans Cotton

2 NUTRIENT: P K

3 STATE/REGION: Iowa

4 YOUR AVERAGE SOIL TEST LEVEL: 100-125

5 YOUR ACREAGE: 1

6 YIELD POTENTIAL OF THIS CROP ACREAGE: 225

7 NUTRIENT ANALYSIS: N 0 P<sub>2</sub>O<sub>5</sub> 0 K<sub>2</sub>O 60

8 CURRENT NUTRIENT PRICE FOR YOUR AREA: 300

9 CROP PRICE: 3.75

USE UNIVERSITY RECOMMENDED RATE:

10 DESIRED FERTILIZER RATE: 120 (NUTRIENT RATE)

CALCULATE

Click "Calculate".

The results reveal that for the corn crop, you would expect – on average – a net return increase of \$91/acre (that is calculated based upon the average yield increase associated with supplying fertilizer).

TUTORIAL

NUTRIENT ROI CALCULATOR 2.0

CHANGE VALUES EMAIL RESULTS

Increase your net return by an average of

**\$91**

If you add

**200** lb/acre

of entered fertilizer material, which supplies 120 lb/acre of K<sub>2</sub>O, you could increase your yield by

**32** bu/acre.

Your crop will be removing

**52** lbs/acre

of potassium from your soil that has a value of

**\$15**/acre.



## Going Beyond the Basics

Scenario 1 – Fertilizing a rotation

Click “Change Values” from the results page.

Change the crop to soybean, the yield potential to 70, and the crop price to \$10.00.

TUTORIAL

### NUTRIENT ROI CALCULATOR 2.0

1 CHOOSE YOUR CROP:

Corn Soybeans Cotton

2 NUTRIENT: P K

3 STATE/REGION: Iowa

4 YOUR AVERAGE SOIL TEST LEVEL: 100-125

5 YOUR ACREAGE: 1

6 YIELD POTENTIAL OF THIS CROP ACREAGE: 70

7 NUTRIENT ANALYSIS: N P<sub>2</sub>O<sub>5</sub> K<sub>2</sub>O  
0 0 60

8 CURRENT NUTRIENT PRICE FOR YOUR AREA: 300

9 CROP PRICE: 10.00

USE UNIVERSITY RECOMMENDED RATE:

10 DESIRED FERTILIZER RATE: (NUTRIENT RATE) 110

CALCULATE

Click “Calculate”.

The results reveal that for the soybean crop, you would expect – on average – a net return increase of \$74/acre (that is calculated based upon the average yield increase associated with supplying fertilizer).

For the rotation, you would expect – on average – a net profit of \$165/acre (\$91+\$74=\$165).

TUTORIAL

### NUTRIENT ROI CALCULATOR 2.0

CHANGE VALUES EMAIL RESULTS

Increase your net return by an average of

# \$74

If you add

## 183 lb/acre

of entered fertilizer material, which supplies 110 lb/acre of K<sub>2</sub>O, you could increase your yield by

## 10 bu/acre.

Your crop will be removing

## 78 lbs/acre

of potassium from your soil that has a value of

## \$23/acre.

# Going Beyond the Basics

## Scenario 2 – Building up a soil test

We are providing specific values as a demonstration, but realize this approach can be used for a variety of scenarios:

Notice that the university recommendation is 100 lbs of  $P_2O_5$ /acre.

TUTORIAL



### NUTRIENT ROI CALCULATOR 2.0

1 CHOOSE YOUR CROP:

<  Corn  Soybeans  Cotton >

2 NUTRIENT:  P  K ?

3 STATE/REGION: Iowa ?

4 YOUR AVERAGE SOIL TEST LEVEL: 5-10 ?

5 YOUR ACREAGE: 1

6 YIELD POTENTIAL OF THIS CROP ACREAGE: 225 ?

7 NUTRIENT ANALYSIS:

	N	$P_2O_5$	$K_2O$	
	11	52	0	?

8 CURRENT NUTRIENT PRICE FOR YOUR AREA: 400 ?

9 CROP PRICE: 3.75 ?

USE UNIVERSITY RECOMMENDED RATE:

10 DESIRED FERTILIZER RATE: (NUTRIENT RATE) 100 ?

USE CURRENT MID CORNBELT TERMINAL PRICE:

11 COST OF AMMONIA: 550 ?

**CALCULATE**

## Going Beyond the Basics

Scenario 2 – Building up a soil test

Now assume that we desire to increase the soil test level (assuming an initial level of 9 ppm), so we apply an additional 100 lbs of  $P_2O_5$ /acre – change the rate to 200.

This will theoretically increase soil test level by 6 ppm.

TUTORIAL

NUTRIENT ROI CALCULATOR 2.0

1 CHOOSE YOUR CROP:

Corn Soybeans Cotton

2 NUTRIENT: P K

3 STATE/REGION: Iowa

4 YOUR AVERAGE SOIL TEST LEVEL: 5-10

5 YOUR ACREAGE: 1

6 YIELD POTENTIAL OF THIS CROP ACREAGE: 225

7 NUTRIENT ANALYSIS:

	N	$P_2O_5$	$K_2O$
Analysis	11	52	0

8 CURRENT NUTRIENT PRICE FOR YOUR AREA: 400

9 CROP PRICE: 3.75

USE UNIVERSITY RECOMMENDED RATE:

10 DESIRED FERTILIZER RATE: (NUTRIENT RATE) 200

USE CURRENT MID CORNBELT TERMINAL PRICE:

11 COST OF AMMONIA: 550

CALCULATE

Click “Calculate”.

The increase in net return generated from this investment would be \$105/acre (even though we invested in substantially more fertilizer than actually required).

TUTORIAL

NUTRIENT ROI CALCULATOR 2.0

CHANGE VALUES EMAIL RESULTS

Increase your net return by an average of

# \$105

If you add

## 385 lb/acre

of entered fertilizer material, which supplies 200 lb/acre of  $P_2O_5$ , you could increase your yield by

## 45 bu/acre.

Your crop will be removing

## 68 lbs/acre

of phosphorus from your soil that has a value of

## \$27 /acre.



## Going Beyond the Basics

Scenario 2 – Building up a soil test

Click “Change Values” from the results page.

Now let’s assume that we are making a plan for the next crop, the new soil test would theoretically be 15 ppm (so change the soil test level to 15-20).

Leave all other assumptions the same, (notice that the university recommendation is 60 lbs of  $P_2O_5$ /acre).

**TUTORIAL** NUTRIENT ROI CALCULATOR 2.0

1 CHOOSE YOUR CROP: Corn Soybeans Cotton

2 NUTRIENT:  P  K

3 STATE/REGION: Iowa

4 YOUR AVERAGE SOIL TEST LEVEL: 15-20

5 YOUR ACREAGE: 1

6 YIELD POTENTIAL OF THIS CROP ACREAGE: 225

7 NUTRIENT ANALYSIS: N: 11,  $P_2O_5$ : 52,  $K_2O$ : 0

8 CURRENT NUTRIENT PRICE FOR YOUR AREA: 400

9 CROP PRICE: 3.75

USE UNIVERSITY RECOMMENDED RATE:

10 DESIRED FERTILIZER RATE: (NUTRIENT RATE) 60

USE CURRENT MID CORNBELT TERMINAL PRICE:

11 COST OF AMMONIA: 550

**CALCULATE**

Click “Calculate”.

Notice that the results reveal that you will – on average – increase your net return by \$29/acre.

The investment in year 1 to raise the soil test P level to 15 ppm allows you to make smaller investments in fertilizer while still realizing a good return. If you had made smaller application rates you could have gotten to a higher soil test level, but it would have taken more years to get there. Realize, since your application rate was below crop removal, soil test levels will decline over time, so higher rates will be required to build soil test P back up.

**TUTORIAL** NUTRIENT ROI CALCULATOR 2.0

**CHANGE VALUES** **EMAIL RESULTS**

Increase your net return by an average of

# \$29

If you add

## 115 lb/acre

of entered fertilizer material, which supplies 60 lb/acre of  $P_2O_5$ , you could increase your yield by

## 11 bu/acre.

Your crop will be removing

## 81 lbs/acre

of phosphorus from your soil that has a value of

## \$27 /acre.