

# Corn- Soybeans Rotation Tool

With this program, the user can evaluate the economic returns of changing corn-soybeans rotations.

The Corn-Soybeans Rotation Tool uses crop revenues and farm costs to compare the per-acre returns for three different crop rotations: 1/2 corn - 1/2 soybeans, 2/3 corn - 1/3 soybeans, and continuous corn.

## Inputs

The below graphic shows the input section of the tool. Entries are made in cells where the numbers are in blue font. The program asks for a per-acre farm budget for four different planting scenarios.

Budget Input	Corn- After- Soybeans	Corn- After- Corn	Soybeans- After-Corn	Soybeans- After-Two- Years-Corn
Default = Central Ill. -- High				
Average yields (bu. per acre)	186	175	55	57
Market price (per bu.)	2.75	2.75	6.25	6.25
Loan deficiency payment	0.00	0.00	0.00	0.00
Effective price (per bu.)	\$2.75	\$2.75	6.25	6.25
Direct and CC payments	27	27	27	27
Revenue per acre	\$539	\$508	\$371	\$383
Direct Costs	\$ per acre			
Fertilizer and lime	\$76	\$85	\$27	\$27
Pesticides	43	45	32	32
Seed	46	46	32	32
Drying and storage	18	14	5	5
Crop insurance	8	8	6	6
Total Direct Costs	\$191	\$198	\$102	\$102
Power Costs				
Machine hire/lease	\$6	\$9	\$5	\$5
Utilities	4	4	3	3
Machine repair	13	15	11	11
Fuel and Oil	14	15	12	12
Light Vehicle	1	2	1	1
Machinery depreciation	22	23	19	19
Total Power Costs	\$60	\$68	\$51	\$51
Overhead Costs				
Hired labor	\$9	\$9	\$9	\$9
Building repair and rent	4	4	3	3
Building depreciation	3	3	3	3
Insurance	7	7	7	7
Misc.	6	6	6	6
Interest (non-land)	15	15	13	12
Total overhead costs	\$44	\$44	\$41	\$40
Total non-land costs	\$295	\$310	\$194	\$193
Return to land and operator	\$244	\$198	\$177	\$190



If not all inputs are known, clicking **Budget Defaults** on the upper right corner of the screen allows the user to enter a default budget for the four crop alternatives. A box appears where the user can select the appropriate Illinois region for the analysis. This data is collected from farmers enrolled in the Illinois Farm Business Farm Management Association. Corn-after-corn and soybeans-after-two-years-corn default yields are based on expert opinion. After inserting budget defaults, the user can change specific entries if necessary.

The bottom line of the input screen calculates revenue minus total costs for each planting scenario.

### Rotation Returns

The program computes per-acre returns (revenue less costs) for three different crop rotations for a single planting season: 1/2 corn - 1/2 soybeans, 2/3 corn - 1/3 soybeans, and continuous corn (corn-after-corn). As seen in the graphic to the right, a 50-50 crop rotation yields a return of \$210 per acre, which is based on the revenue and cost information entered in the input section. Furthermore, a 2/3 corn - 1/3 soybeans rotation results in a \$211 per-acre return, while corn-after-corn returns \$198 per acre. The rotation generating the highest return is economically preferred. Calculations in this example are based on budget defaults for high-quality farm ground in Central Illinois.

Rotation Returns	
Rotation	Return
1/2 corn - 1/2 soybeans	\$210
2/3 corn - 1/3 soybeans	\$211
Continuous corn	\$198

The tool also evaluates the economic practicality of a continuous corn rotation. In the example to the right, a corn-after-corn rotation must yield at least 179 bushels per acre to generate returns equivalent to a 50-50 corn-soybeans rotation. This continuous corn yield is 4% less than the corn-after-soybeans yield entered in the input section. In summary, at least a 179-bushel yield is needed to justify a continuous corn rotation.

Break-even corn-after-corn yield	179
Percent below corn-after-soybeans yield	4%
Shows corn-after-corn yield for continuous corn to have the same return as 1/2 corn - 1/2 soybeans rotation.	