

Agriculture's Profitability Tool - *AgProfit*TM

Economic Assessment Organic Rotation using *AgProfit*TM

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*AgTools*TM for Managing Financial Risk

Agriculture's Profitability Tool - *AgProfit*TM

What is *AgProfit*TM

Agriculture's Profitability Tool (*AgProfit*TM) is a Windows based computer program to help agricultural producers make short, medium, and long-run investment decisions.

*AgProfit*TM uses enterprise budgets as the basis to analyze the economic consequences of making those decisions.

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Agriculture's Profitability Tool - AgProfit™

What can AgProfit™ Do?

- **Long-Run Decisions (> 10 years):**
 - compare planting apples to oranges
 - keep a perennial crop or establish w/ new or different
 - compare a perennial crop to a annual crop rotation
- **Medium-Run Decisions (up to 10 years):**
 - automated platforms to remove ladders from orchards
 - sprayer technologies
 - drip irrigation
- **Short-Run Decisions (one or two years):**
 - Sunburn protection to increase fruit quality
 - Reflecting materials to increase fruit color

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AgProfit™ provides an economic assessment using

- Present Value
- Net Present Value
- Annual Equivalents
- Internal Rates of Return



to determine the ***Profitability & Feasibility*** of a production system or implementing a particular technology

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Profitability
Can I Make Money Doing This?

1. Net Present Value
2. Internal Rate of Return

Feasibility
Can I Afford To Do This?

1. Cash Flow Analysis
 - Year to cash flow
 - Payback period
 - Costs to implement




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What Makes *AgProfit™* different from other cost studies or previous computer programs?

- **Takes into account the time value of money.**
- **The ability to inflate returns and costs over time.**
- **Generate machine operation costs.**



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Organic Lettuce Production Budget

Persephone v 3 year - Technology Economic Assessment Model

Budget Title: Year 3, Lettuce, Sudangrass, Fall cover planted to perennial mix

Budget Unit: acre

Notes:
Perennial mix includes red clover, oats, perennial rye

Inflation Rates for Machine Operations (%):

Annual replacement costs:	3.00
Taxes, housing, insurance, license:	3.00
Repairs and maintenance:	3.00
Fuel:	3.00
Lubricants:	3.00
Labor:	3.00

Returns:

Name	Unit	\$/Unit	Quantity	Value
Leaf Lettuce, Farmers Market	carton	\$32.00	450.00	\$14,400.00
Leaf Lettuce, Wholesale	carton	\$25.00	300.00	\$7,500.00
Total Returns				\$21,900.00

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Organic Lettuce Production Budget

Persephone v 3 year - Technology Economic Assessment Model

Packing, Processing and Value Added Costs:

Name	Unit	\$/Unit	Quantity	Value
Reusable box	carton	\$0.28	750.00	\$210.00
Refrigeration	carton	\$0.10	750.00	\$75.00
Organic Certification	fee per gross income	\$0.01	21,900.00	\$175.20
Farmers Market costs	lumped	\$3,744.00	1.00	\$3,744.00
Wholesale Marketing Costs	lumped	\$1,125.00	1.00	\$1,125.00
Interest on Operating Capital		\$5,329.20	0.02	\$106.58
Total Packing, Processing and Value Added Costs				\$5,435.78

Harvest Costs:

Name	Unit	\$/Unit	Quantity	Value
Harvesting Labor	hours	\$13.82	120.00	\$1,668.40
Tractor & Trailer for Harvest	acre	\$51.68	1.00	\$51.68
Tractor & Trailer for Harvest (Labor)	hours	\$13.20	6.50	\$85.80
Interest on Operating Capital		\$1,795.88	0.02	\$35.92
Total Harvest Costs				\$1,831.80

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Organic Lettuce Production Budget

Persephone v 3 year - Technology Economic Assessment Model

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Non-Harvest Costs:

Name	Unit	\$/Unit	Quantity	Value
Manure	acre	\$240.00	1.00	\$240.00
Manure Spreader	acre	\$3.25	1.00	\$3.25
Manure Spreader (Labor)	hours	\$11.69	0.47	\$5.51
Flail Mower	acre	\$6.67	1.00	\$6.67
Flail Mower (Labor)	hours	\$11.69	0.86	\$10.05
Offset disc, 5" deep, 3x	acre	\$11.22	1.00	\$11.22
Offset disc, 5" deep, 3x (Labor)	hours	\$11.69	1.64	\$19.14
Offset disc, 5" deep, 1x	acre	\$3.74	1.00	\$3.74
Offset disc, 5" deep, 1x (Labor)	hours	\$11.69	0.55	\$6.38
Roller Harrow	acre	\$3.35	1.00	\$3.35
Roller Harrow (Labor)	hours	\$11.69	0.49	\$5.74
Rototiller	acre	\$35.14	1.00	\$35.14
Rototiller (Labor)	hours	\$11.69	4.12	\$48.22
Transplants	piece	\$0.03	20,800.00	\$676.00
Transplanter	acre	\$163.58	1.00	\$163.58
Transplanter (Labor)	hours	\$11.69	23.71	\$277.13
Transplant labor	hours	\$13.20	90.00	\$1,188.00

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Organic Lettuce Production Budget

Persephone v 3 year - Technology Economic Assessment Model

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Non-Harvest Costs:

Tine Weeder	acre	\$0.25	1.00	\$0.25
Tine Weeder (Labor)	hours	\$11.69	0.89	\$10.39
Cultivate, sweeps	acre	\$2.74	1.00	\$2.74
Cultivate, sweeps (Labor)	hours	\$11.69	1.29	\$15.07
Hand hoeing	hour	\$13.82	28.00	\$386.96
Offset disc, 5" deep, 2x	acre	\$7.48	1.00	\$7.48
Offset disc, 5" deep, 2x (Labor)	hours	\$11.69	1.09	\$12.76
Sudangrass seed	per acre	\$0.45	60.00	\$27.00
Seed drill, Sudangrass	acre	\$1.85	1.00	\$1.85
Seed drill, Sudangrass (Labor)	hours	\$11.69	0.27	\$3.21
Flail Mower	acre	\$6.67	1.00	\$6.67
Flail Mower (Labor)	hours	\$11.69	0.86	\$10.05
Offset disc, 5" deep, 2x	acre	\$7.48	1.00	\$7.48
Offset disc, 5" deep, 2x (Labor)	hours	\$11.69	1.09	\$12.76
Offset disc, 5" deep, 1x	acre	\$3.74	1.00	\$3.74
Offset disc, 5" deep, 1x (Labor)	hours	\$11.69	0.55	\$6.38
Perennial cover crop seed	acre	\$58.00	1.00	\$58.00
Seed drill, Perennial cover crop	acre	\$1.85	1.00	\$1.85
Seed drill, Perennial cover crop (Labor)	hours	\$11.69	0.27	\$3.21
Interest on Operating Capital		\$3,280.97	0.02	\$65.62

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Organic Lettuce Production Budget

Persephone v 3 year - Technology Economic Assessment Model

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Capital Investment:

Name	Unit	\$/Unit	Quantity	Value
Tractor & Trailer for Harvest	acre	\$7.55	1.00	\$7.55
Flail Mower	acre	\$20.29	1.00	\$20.29
Offset disc, 5" deep, 3x	acre	\$24.27	1.00	\$24.27
Offset disc, 5" deep, 1x	acre	\$8.09	1.00	\$8.09
Offset disc, 5" deep, 2x	acre	\$16.18	1.00	\$16.18
Offset disc, 5" deep, 2x	acre	\$16.18	1.00	\$16.18
Offset disc, 5" deep, 1x	acre	\$8.09	1.00	\$8.09
Roller Harrow	acre	\$8.93	1.00	\$8.93
Seed drill, Sudangrass	acre	\$4.15	1.00	\$4.15
Seed drill, Perennial cover crop	acre	\$4.15	1.00	\$4.15
Flail Mower	acre	\$18.35	1.00	\$18.35
Cultivate, sweeps	acre	\$6.00	1.00	\$6.00
Rototiller	acre	\$113.68	1.00	\$113.68
Transplanter	acre	\$391.40	1.00	\$391.40
Tine Weeder	acre	\$13.01	1.00	\$13.01
Manure Spreader	acre	\$7.44	1.00	\$7.44
Total Capital Investment				\$667.76
Total Annual Costs				\$11,281.93
Total Returns less Total Annual Costs				\$10,618.07

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Organic Lettuce Production Budget

Persephone v 3 year - Technology Economic Assessment Model

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Non-Harvest Costs:

Name	Unit	\$/Unit	Quantity	Value
Manure	acre	\$240.00	1.00	\$240.00
Manure Spreader	acre	\$3.25	1.00	\$3.25
Manure Spreader (Labor)	hours	\$11.69	0.47	\$5.51
Flail Mower	acre	\$6.67	1.00	\$6.67
Flail Mower (Labor)	hours	\$11.69	0.86	\$10.05
Offset disc, 5" deep, 3x	acre	\$11.22	1.00	\$11.22
Offset disc, 5" deep, 3x (Labor)	hours	\$11.69	1.64	\$19.14
Offset disc, 5" deep, 1x	acre	\$3.74	1.00	\$3.74
Offset disc, 5" deep, 1x (Labor)	hours	\$11.69	0.55	\$6.36
Roller Harrow	acre	\$3.35	1.00	\$3.35
Roller Harrow (Labor)	hours	\$11.69	0.49	\$5.74
Rototiller	acre	\$35.14	1.00	\$35.14
Rototiller (Labor)	hours	\$11.69	4.12	\$48.22
Transplants	piece	\$0.03	20,800.00	\$676.00
Transplanter	acre	\$163.58	1.00	\$163.58
Transplanter (Labor)	hours	\$11.69	23.71	\$277.13
Transplant labor	hours	\$13.20	90.00	\$1,188.00

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Add a Machine Operation

Diesel Cost (\$/gal): Convert to your budget unit:
 Conversion factor (budget unit/(acre or hour)):
 Gasoline Cost (\$/gal): Convert \$/acres to \$/budget unit Convert \$/hours to \$/budget unit
 Interest Rate (%):

 Power Unit and Implement
 Kubota 4900 offset disk

	\$/hour	\$/acre	\$/budget unit	\$/hour	\$/acre	\$/budget unit	\$/hour	\$/acre	\$/budget unit	Value
Ownership Costs:										
Annual Replacement:	8.42	4.59	13.77	0.42	0.23	0.69	8.84	4.82	14.46	\$240.00
Interest:	5.00	2.73	8.19	0.00	0.00	0.00	5.00	2.73	8.19	\$3.25
Taxes, housing, insurance, license:	0.93	0.51	1.53	0.02	0.01	0.03	0.95	0.52	1.56	\$5.51
Total Ownership Costs:	14.35	7.83	23.49	0.44	0.24	0.72	14.79	8.07	24.21	\$6.67
Operating Costs:										
Repairs and maintenance:	0.08	0.04	0.12	0.17	0.09	0.27	0.25	0.13	0.39	\$11.22
Fuel:	5.75	3.14	9.42				5.75	3.14	9.42	\$19.14
Lubricants:	0.86	0.47	1.41				0.86	0.47	1.41	\$3.74
Total Operating Costs:	6.69	3.65	10.95	0.17	0.09	0.27	6.86	3.74	11.22	\$6.38
Labor:										
Labor:	11.69	6.38	19.14	0.00	0.00	0.00	11.69	6.38	19.14	\$3.35
Total Costs:	32.73	17.86	53.58	0.61	0.33	0.99	33.34	18.19	54.57	\$5.74
										\$35.14
										\$48.22
										\$676.00
										\$163.58
										\$277.13
										\$1,188.00

Category of operating cost:
 Parking, processing, and value added
 Harvest
 Non-harvest

Operation Name:

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Select a Power Unit

Select a Power Unit:

Name/Description: Salvage Value (\$):
 Purchase Price (\$): Uncheck to enter your own salvage value.
 Percent Financed (%): Maximum PTO Horsepower:

List Price (\$): Fuel Type: Diesel Gasoline

Total Annual Farm Use (hours):

Age When Purchased (years):

Ownership Period (years):

Operator Labor (\$/hour):

Labor Multiplier:

Taxes, Housing, Insurance, License (% of average investment):

Total Annual Repair Costs (\$): Fuel Use (gallons/hour):

Uncheck to enter your own repair value. Uncheck to enter your own fuel use value.

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Select an Implement

Select Implement:

Name/Description: <input type="text" value="offset disk"/> Salvage Value (\$): <input type="text" value="67,204.49"/>	<input checked="" type="checkbox"/> Uncheck to enter your own salvage value
Purchase Price (\$): <input type="text" value="700.00"/>	Field Speed (mph): <input type="text" value="2.70"/>
Percent Financed (%): <input type="text" value="0.00"/>	Width (feet): <input type="text" value="7.00"/>
List Price (\$): <input type="text" value="700.00"/>	Field Efficiency (%): <input type="text" value="80.00"/>
Total Annual Farm Use (hours): <input type="text" value="100.00"/>	Calculated Acres per Hour: 1.83
Age When Purchased (years): <input type="text" value="0.00"/>	
Ownership Period (years): <input type="text" value="15.00"/>	
Crew Labor (\$/Hour): <input type="text" value="0.00"/>	
Labor Multiplier: <input type="text" value="1.10"/>	
Taxes, Housing, Insurance, License (% of average investment): <input type="text" value="0.60"/>	
Total Annual Repair Costs (\$): <input type="text" value="16.74"/>	
<input checked="" type="checkbox"/> Uncheck to enter your own repair value	

Value	\$240.00
	\$3.25
	\$5.51
	\$6.67
	\$10.05
	\$11.22
	\$19.14
	\$3.74
	\$6.38
	\$3.35
	\$5.74
	\$35.14
	\$48.22
	\$676.00
	\$163.58
	\$277.13
	\$1,188.00

OK Cancel

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Organic Perennial Cover Crop Production Budget

Persephone - Technology Economic Assessment Model

Harvest Costs:

Name	Unit	\$/Unit	Quantity	Value
Interest on Operating Capital		\$0.00	0.03	\$0.00
Total Harvest Costs				\$0.00

Non-Harvest Costs:

Name	Unit	\$/Unit	Quantity	Value
Flail Mower	1 acre	\$6.67	1.00	\$6.67
Flail Mower (Labor)	hours	\$11.69	0.86	\$10.05
Interest on Operating Capital		\$16.72	0.03	\$0.54
Total Non-Harvest Costs				\$17.26

Capital Investment:

Name	Unit	\$/Unit	Quantity	Value
Flail Mower	1 acre	\$20.29	1.00	\$20.29
Total Capital Investment				\$20.29

Total Annual Costs \$37.55

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Where to Get AgProfit


Free On-line Distribution

<http://agtools.edu>

or Google

“AgTools”

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Agriculture's Profitability Tool - AgProfit™

Economic Analysis of Three Organic Rotation Options

- **Persephone current rotation 4yrs**
- **3 year rotation without cover crops**
- **6 year rotation with 2 years of cover crops**

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Budgets used in the analysis:

Year	Base Plan (number of years in plan: 12)	Year	Comparison Plan (number of years in plan: 12)
UFI		UFI	
1	Year 1, Potato, 3 year rotation	1	Year 1, Potato, Fall cover of hairy vetch and oats
2	Year 2, Winter Squash, 3 year rotation	2	Year 2, Winter Squash, Fall cover of hairy vetch and oats
3	Year 3, Lettuce, Lettuce, 3 year rotation	3	Year 3, Lettuce, Sudangrass, Fall cover planted to perennial mix
4	Year 1, Potato, 3 year rotation	4	Year 4, Perennial Cover Crop
5	Year 2, Winter Squash, 3 year rotation	5	Year 1, Potato, Fall cover of hairy vetch and oats
6	Year 3, Lettuce, Lettuce, 3 year rotation	6	Year 2, Winter Squash, Fall cover of hairy vetch and oats
7	Year 1, Potato, 3 year rotation	7	Year 3, Lettuce, Sudangrass, Fall cover planted to perennial mix
8	Year 2, Winter Squash, 3 year rotation	8	Year 4, Perennial Cover Crop
9	Year 3, Lettuce, Lettuce, 3 year rotation	9	Year 1, Potato, Fall cover of hairy vetch and oats
10	Year 1, Potato, 3 year rotation	10	Year 2, Winter Squash, Fall cover of hairy vetch and oats
11	Year 2, Winter Squash, 3 year rotation	11	Year 3, Lettuce, Sudangrass, Fall cover planted to perennial mix
12	Year 3, Lettuce, Lettuce, 3 year rotation	12	Year 4, Perennial Cover Crop
13		13	

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Net Returns and Present Value by Year

Year	Base Plan (discount rate = 10.00%)		Comparison Plan (discount rate = 10.00%)	
	Net Returns	Present Value	Net Returns	Present Value
UFI	\$0.00	\$0.00	\$0.00	\$0.00
1	\$5,737.01	\$5,215.46	\$6,183.42	\$5,621.29
2	\$6,289.00	\$5,197.52	\$6,570.03	\$5,429.78
3	\$20,597.09	\$15,474.90	\$10,099.08	\$7,587.59
4	\$5,712.66	\$3,901.82	-\$40.42	-\$27.60
5	\$6,239.79	\$3,874.42	\$6,148.78	\$3,817.91
6	\$18,991.15	\$10,720.01	\$6,495.34	\$3,666.45
7	\$5,686.04	\$2,917.84	\$8,964.45	\$4,600.18
8	\$6,186.02	\$2,885.82	-\$44.65	-\$20.83
9	\$17,236.29	\$7,309.87	\$6,109.79	\$2,591.15
10	\$5,656.97	\$2,181.01	\$6,411.26	\$2,471.82
11	\$6,127.26	\$2,147.57	\$7,687.42	\$2,694.39
12	\$15,318.71	\$4,881.01	-\$49.41	-\$15.74
Total:	\$119,777.99	\$66,707.25	\$64,535.09	\$38,416.37

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Budgets used in the analysis:

Year		Base Plan (number of years in plan: 12)		Year		Comparison Plan (number of years in plan: 12)	
UFI				UFI			
1	Year 1, Potato, Fall cover of hairy vetch and oats	1	Year 1, Potato, Fall cover of hairy vetch and oats				
2	Year 2, Winter Squash, Fall cover of hairy vetch and oats	2	Year 2, Winter Squash, Fall cover of hairy vetch and oats				
3	Year 3, Lettuce, Sudangrass, Fall cover planted to perennial mix	3	Year 3, Lettuce, Sudangrass, Fall cover planted to perennial mix				
4	Year 4, Perennial Cover Crop	4	Year 4, Broccoli, Fall cover hairy vetch and oats				
5	Year 1, Potato, Fall cover of hairy vetch and oats	5	Year 5, Buckwheat X 3, Fall cover cereal rye				
6	Year 2, Winter Squash, Fall cover of hairy vetch and oats	6	Year 6, Sudangrass, Fall cover cereal rye				
7	Year 3, Lettuce, Sudangrass, Fall cover planted to perennial mix	7	Year 1, Potato, Fall cover of hairy vetch and oats				
8	Year 4, Perennial Cover Crop	8	Year 2, Winter Squash, Fall cover of hairy vetch and oats				
9	Year 1, Potato, Fall cover of hairy vetch and oats	9	Year 3, Lettuce, Sudangrass, Fall cover planted to perennial mix				
10	Year 2, Winter Squash, Fall cover of hairy vetch and oats	10	Year 4, Broccoli, Fall cover hairy vetch and oats				
11	Year 3, Lettuce, Sudangrass, Fall cover planted to perennial mix	11	Year 5, Buckwheat X 3, Fall cover cereal rye				
12	Year 4, Perennial Cover Crop	12	Year 6, Sudangrass, Fall cover cereal rye				

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Net Returns and Present Value by Year

Year	Base Plan (discount rate = 10.00%)		Comparison Plan (discount rate = 10.00%)	
	Net Returns	Present Value	Net Returns	Present Value
UFI	\$0.00	\$0.00	\$0.00	\$0.00
1	\$5,774.97	\$5,249.98	\$5,774.97	\$5,249.98
2	\$6,598.95	\$5,453.68	\$6,598.95	\$5,453.68
3	\$11,838.27	\$8,894.27	\$11,838.27	\$8,894.27
4	-\$40.42	-\$27.60	\$9,959.41	\$6,802.41
5	\$5,680.86	\$3,527.37	-\$305.48	-\$189.68
6	\$6,527.15	\$3,684.41	-\$195.36	-\$110.27
7	\$10,913.20	\$5,600.20	\$5,629.46	\$2,888.80
8	-\$44.65	-\$20.83	\$6,487.94	\$3,026.67
9	\$5,574.93	\$2,364.32	\$10,408.00	\$4,414.01
10	\$6,446.35	\$2,485.35	\$8,219.64	\$3,169.03
11	\$9,872.03	\$3,460.08	-\$355.62	-\$124.64
12	-\$49.41	-\$15.74	-\$226.11	-\$72.04
Total:	\$69,092.23	\$40,655.46	\$63,834.09	\$39,402.20

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Persephone v 6 year - Technology Economic Assessment Model

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Summary:

	4 Year	6 Year	
	Base Plan	Comparison Plan	Base minus Comparison
Total Net Returns	\$69,092.23	\$63,834.09	\$5,258.15
Net Present Value	\$40,655.46	\$39,402.20	\$1,253.26
Annual Equivalent	\$5,966.73	\$5,782.80	\$183.93

Persephone v 3 year - Technology Economic Assessment Model

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Summary:

	3 Year	4 Year	
	Base Plan	Comparison Plan	Base minus Comparison
Total Net Returns	\$119,777.99	\$64,535.09	\$55,242.90
Net Present Value	\$66,707.25	\$38,416.37	\$28,290.88
Annual Equivalent	\$9,790.18	\$5,638.11	\$4,152.06

Discount rate = 10%

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