

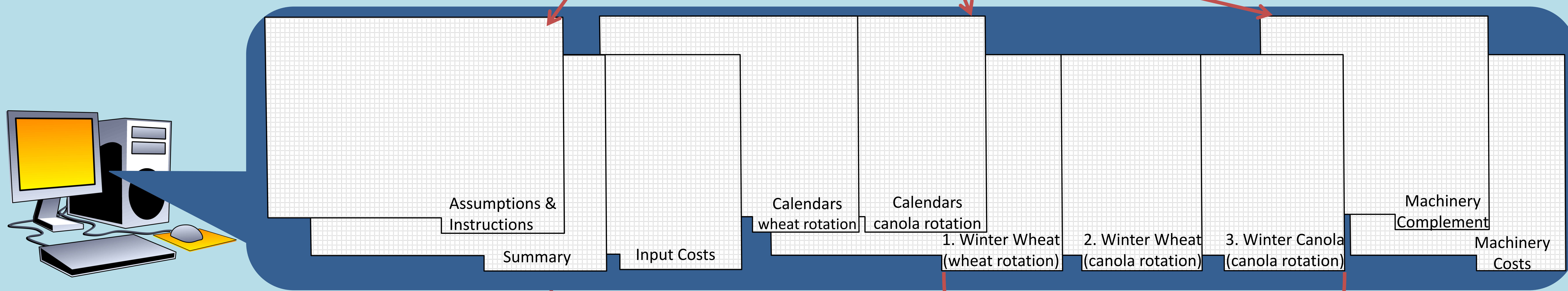
Does it make economic sense to grow canola in my rotation?

Enterprise budget tools for assessing costs, returns, and rotational impacts of canola in Eastern Washington

A visual guide to using the budgets



1. Review the Instructions & Assumptions tab, the Calendar tabs, and the Machinery Complement tab (details not shown) to understand what assumptions were made about farm size, machinery operations, inputs, etc. in the default budget scenarios. The sample images below are from the Low Rainfall Region Budgets (<12") where farms typically fallow every other year.



2. The Summary tab shows average costs and returns for each crop (Table 1) and each full rotation (Table 2). Modify the yield and price values in red text on the Summary tab. Compare returns between different rotations by selecting from the drop down menu in Table 2 on the Summary tab.

Table 1. Summary of Returns by Crop (\$/acre) Over Two-Year Period*

Adjust costs on the individual crop budgets in tabs numbered 1-5 and totals will update here on the Summary tab.

Budget:	By Crop**:	Unit	Yield per acre	Price per unit	Revenue per acre (\$/acre)	Variable Costs (VC) (\$/acre)	Fixed Costs (FC) (\$/acre)	Total Cost (TC) of Operation (\$/acre)	Returns over VC (\$/acre)	Returns over TC (\$/acre)
<i>Wheat Rotation: Fallow - WW - Fallow - WW</i>										
1	Soft White Winter Wheat (SWWW)	bu	50	\$6.42	\$321	\$189	\$121	\$311	\$132	\$10
2	Hard Red Winter Wheat (HRWW)	bu	45	\$7.65	\$344	\$202	\$127	\$329	\$143	\$16
<i>Canola Rotation: Fallow - WC - Fallow - WW</i>										
3	Winter Canola (WC)	lb	1500	\$0.22	\$330	\$224	\$121	\$345	\$106	-\$15
4	Soft White Winter Wheat (SWWW)	bu	50	\$6.42	\$321	\$185	\$120	\$305	\$136	\$16
5	Hard Red Winter Wheat (HRWW)	bu	45	\$7.65	\$344	\$198	\$126	\$323	\$147	\$21

*For average annual costs or returns, divide by two.
**Crop budgets include costs of preceding summer fallow. Individual crop costs and returns are for a two-year period.

Table 2. Summary of Returns by Rotation (\$/acre) over Two-Year Period*

Click on the rotations below (red text) to select and compare alternative rotations from the drop down menu.

Select the Rotation:	Budget(s):	Revenue per acre (\$/acre)	Variable Costs (VC) (\$/acre)	Fixed Costs (FC) (\$/acre)	Total Cost (TC) of Operation (\$/acre)	Returns over VC (\$/acre)	Returns over TC (\$/acre)
F-SWWW-F-SWWW	1	\$321	\$189	\$121	\$311	\$132	\$10
F-WC-F-SWWW	3 and 4	\$326	\$204	\$121	\$325	\$121	\$1

*For average annual costs or returns, divide by two.

Interpreting results: Variable Costs (VC) + Fixed Costs (FC) = Total Costs (TC)

Variable costs include annual operating costs like fertilizer, seed, etc. Fixed costs include ownership costs like depreciation, insurance, etc.

Positive **returns over variable costs** (Revenue - VC) indicate short-term profitability while positive **returns over total costs** (Revenue - VC - FC) indicate long-term profitability. Returns vary based on price, yield, and cost values entered into the budget.

Highlights of the Canola Enterprise Budget Work

- Budgets are in Microsoft Excel format
- Separate budgets will be available for four growing regions in Eastern Washington
 - Low Rainfall (<12"): fallow every other year
 - Intermediate Rainfall (12-16"): fallow every third year
 - High Rainfall (>16"): annual cropping
 - Irrigated: annual cropping
- Budgets include common crops and rotations for each region
- Budgets compare average annual returns for single crops and complete rotations
- Crops in rotation with canola have separate budgets to allow for differences in chemical inputs, machinery operations, yields, etc. due to canola's rotational impacts
- Users can easily update or zero-out values for:
 - Yields and prices
 - Chemical and fertilizer input rates and costs
 - Machinery operating (variable) costs
 - Custom work (e.g. spraying, hauling)
 - Post-harvest storage
 - ...and more!

Dr. Vicki McCracken¹, Dr. Kate Painter², Jenny R. Connolly¹
¹School of Economic Sciences, Washington State University
²Dept. of Agricultural Economics and Rural Sociology, University of Idaho

Soft White Winter Wheat (wheat rotation)

Follow directions below to preserve equations in this spreadsheet.
 Red Type: You may adjust data in red type & all other data will be updated.
 Purple Type: Data are from Summary page (purple tab).
 Green Type: Data are from Input costs page (green tab).
 Blue Type: Data are from the Machinery Costs page (blue tab).

Production Costs for Soft White Winter Wheat

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
Gross Returns				
SWWW	50	bu	\$6.42	\$321.00
Variable Costs				
Seed:				
Wheat Seed	45	lb	\$0.26	\$11.70
Fertilizer:				
Nitrogen	0	lb	\$0.83	\$0.00
Sulfur	0	lb	\$0.57	\$0.00
Pesticides:				
Bronate	1.0	pt	\$6.78	\$6.78
Osprey	2.0	oz	\$3.53	\$7.07
Tilt	4.00	oz	\$0.96	\$3.84
M90	3.00	oz	\$0.19	\$0.57
Machinery:				
Fuel	2.74	gal	\$3.60	\$9.86
Lubricants	1	acre	\$1.48	\$1.48
Machinery Repairs	1	acre	\$5.95	\$5.95
Machinery Labor	0.55	acre	\$20.00	\$10.95
Custom & Consultants:				
Rental Sprayer	0	acre	\$2.00	\$0.00
Rental Ripper Shooter	0	acre	\$2.50	\$0.00
Custom Aerial	0	acre	\$8.70	\$0.00
Post-harvest storage and transportation³:				
Storage	0	month(s)	\$0.50	\$0.00
*Based on rate, share stored:				
Rate per bu, per month:			\$0.02	
Percentage of crop stored:			50%	
Long-haul transportation*	50	bu	\$0.27	\$13.35
*Rate based on distance and volume:				
Roundtrip distance (miles):			100	
Rate per mile:			\$2.67	
Load volume (60lb bu):			1000	
Other:				
Crop insurance	1	acre	\$13.75	\$13.75
Storage Facility & Equip. Repairs				\$0.00
Other Labor				\$0.00
Operating Interest ⁴				\$3.84
Total Variable Costs				\$89.14
Variable Costs per Unit				\$3.78
2-Year Net Returns Above Variable Costs (Fallow + Crop Costs)				
				\$131.80
Fixed (Ownership) Costs:				
Machinery depreciation			\$7.09	\$7.09
Machinery interest			\$5.67	\$5.67
Machinery insurance, taxes, housing, licenses			\$3.86	\$3.86
Interest on summer fallow			\$4.50	\$4.50
Land Cost ⁵	1	acre	\$72.00	\$72.00
*Based on Share Rent Percentage:				
Landlord			33.00%	
Tenant			67.00%	
Overhead ⁶				\$2.00
Management fee ⁶				\$16.00
Total Fixed Costs				\$111.12
Fixed Costs per Unit				\$2.43
Total Costs per Acre				\$200.26
Total Cost per Unit				\$6.21
Return to Risk				
2-Year Net Returns over Total Costs (Fallow + Crop Costs)				\$10.41

3. Modify inputs, rates, and various costs on the budget sheet for each crop in the rotations being compared. Input prices can be updated on the Input Cost tab or directly on the individual crop budget sheet. Machinery operation costs can be updated on the Machinery Cost tab by changing the number of passes in red text. Actual budgets contain addition crops and rotations. Detailed fallow costs are not shown in this example, but budgets for fallow years are included on budget sheets for relevant regions. In this example, fertilizer was applied on fallow ground.

Input Costs by Year

Item	Unit	2012 cost/unit
Fuel:		
Diesel, offroad, bulk (gal)	gal	\$3.60
Gas (gal)	gal	\$3.70
Seed:		
Soft White Winter Wheat	lb	\$0.26
Hard Red Winter Wheat	lb	\$0.27
Winter Canola	lb	\$4.35
Fertilizer:		
Nitrogen (liquid)	lb	\$0.83
Phosphorous (liquid)	lb	\$0.69
Sulfur (liquid)	lb	\$0.57
Potassium (dry)	lb	\$0.55
Boron	lb	\$5.20
Adjvants:		
Amm. Sulf. (20-0-0-24)	lb	\$0.43
Amm. Sulf. (liquid)	oz	\$0.02
Crop Oil Concentrate	oz	\$0.11
In-Place	oz	\$0.25
M90	oz	\$0.19
Surfactant	oz	\$0.24
Ultra Pro	oz	\$0.02
Custom Rental/Services:		
Custom Aerial	acre	\$8.70
Fertilizer Applicator	acre	\$1.00
26' Rental Shredder	acre	\$10.00
36' Ripper Shooter	acre	\$2.50
90' Rental Sprayer	acre	\$2.00
Pesticides:		
2,4-DB	oz	\$0.33
Acrop-UEC	oz	\$6.69

Costs By Crop:

Click on crop to see machinery costs by crop.

Operation	Number of Passes	Dissemination	Interest	Taxes, housing, insurance, licenses	Total Fixed Costs	Repairs	Lube Cost	Fuel Use gal/acre	Fuel Cost	Labor hrs/acre	Labor Cost	Total Variable Costs	Total Cost (\$/Acre)
Seasonal operations:													
300HP Tractor & 26' shredder	0	\$	\$	\$	\$	\$	\$	0.00	\$	0.00	\$	\$	\$
300HP Tractor & 40' harrow	0	\$	\$	\$	\$	\$	\$	0.00	\$	0.00	\$	\$	\$
300HP Tractor & 35' chisel plow	0	\$	\$	\$	\$	\$	\$	0.00	\$	0.00	\$	\$	\$
300HP Tractor & 72' rowweeder	0	\$	\$	\$	\$	\$	\$	0.00	\$	0.00	\$	\$	\$
300HP Tractor & 36' coilwiper	0	\$	\$	\$	\$	\$	\$	0.00	\$	0.00	\$	\$	\$
300HP Tractor & 34' tandem disk harrow	0	\$	\$	\$	\$	\$	\$	0.00	\$	0.00	\$	\$	\$
300HP Tractor & 60' coil-packer	0	\$	\$	\$	\$	\$	\$	0.00	\$	0.00	\$	\$	\$
300HP Tractor & 90' sprayer	1	\$	0.33	\$	0.27	\$	0.04	\$	0.64	\$	0.31	\$	1.94
300HP Tractor & 36' grain drill	1	\$	0.88	\$	0.97	\$	0.38	\$	2.23	\$	0.91	\$	5.70
Combine & 30' header	1	\$	2.46	\$	2.21	\$	0.92	\$	5.61	\$	2.29	\$	10.88
300HP Tractor & Bankout wagon	1	\$	0.69	\$	0.50	\$	0.08	\$	1.27	\$	0.39	\$	5.05
Annual Costs:													
Tandem axle truck		\$	0.79	\$	0.50	\$	0.81	\$	2.10	\$	0.80	\$	5.00
2-ton truck		\$	0.22	\$	0.18	\$	0.29	\$	0.69	\$	0.20	\$	1.81
Trap wagon		\$	0.24	\$	0.11	\$	0.18	\$	0.53	\$	0.08	\$	1.02
34-ton pick-up		\$	0.42	\$	0.29	\$	0.32	\$	1.03	\$	0.12	\$	1.92
ATV		\$	0.25	\$	0.14	\$	0.09	\$	0.42	\$	0.06	\$	0.63
Fixed Cost \$/Acre		\$	7.09	\$	5.67	\$	3.86	\$	16.62	\$	5.95	\$	44.68

Budget work is on-going. Research is funded by the Washington State University Biofuels Cropping Systems Research and Extension Program. Links to budget tools will be posted on the WSU Crop & Soil Sciences site when available: <http://css.wsu.edu/biofuels/>