

Economic Returns to Canola Rotations in Eastern Washington

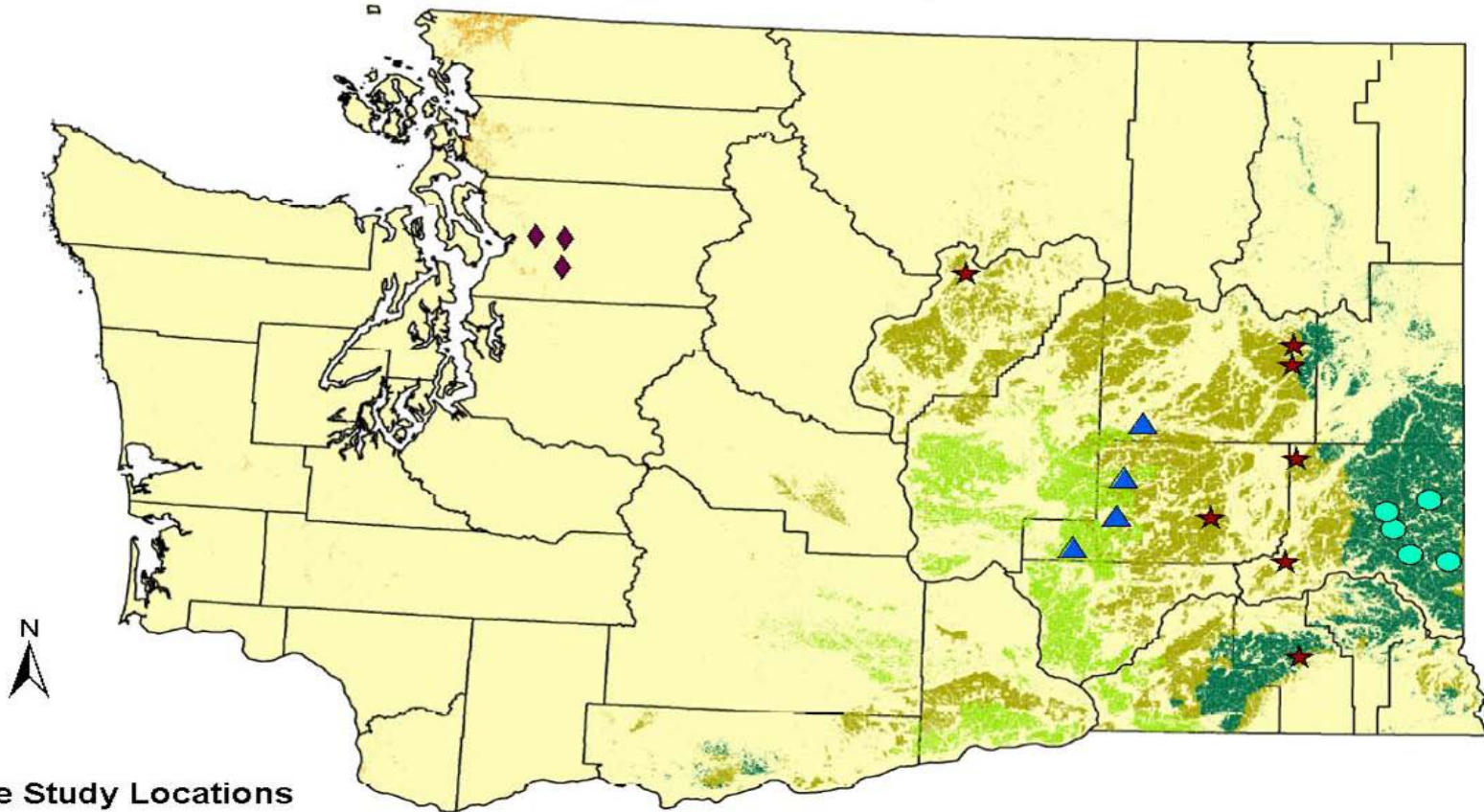
Nathan Skuza, Graduate Student

Vicki McCracken, Professor mccracke@wsu.edu

School of Economic Sciences

WSU

Figure 1: Washington State Crop



Case Study Locations

- Region 1
- ★ Region 2
- ▲ Region 3
- ◆ Region 4

	17" - 25" Rainfall Cropland	1325321 acres
	< 17" Rainfall Cropland	2339258 acres
	Irrigated Cropland	996071 acres
	Western Washington Cropland	62453 acres

Crop data is from the 2009 Cropland Data Layer from the National Agricultural Statistical Service of the U.S. Department of Agriculture. Map projection is Universal Transverse Mercator, zone 11, WGS 1984. Map created by Richard Rupp, Department of Crop & Soil Sciences, Washington State University.

Overview

- **Inclusion of canola into cropping systems may offer agronomic benefits to farms that translate into improved overall farm profitability over time.**
- **We compared economic returns of cropping systems that incorporate canola with the returns to traditional cropping systems appropriate to each region. Crop prices from early November 2010 were used initially, and then updated using prices from late January 2011.**
- **In all the rotations considered, the addition of canola increased input costs, and tended to decrease overall returns. The exception was the intermediate rainfall area of Whitman county, which yielded slightly higher returns.**

Overview

Region 2

Compare the conventional two year winter wheat – chemical fallow system with an alternative system in which winter canola is substituted for winter wheat every second cycle.

Methodology

- **Economic returns of rotations estimated using enterprise budgets created by Kate Painter**
- **Valuations used current market prices and average yields for the crop region**
- **Rotational impacts on yield and inputs were incorporated when data was available based on grower input and expert opinion**
- **Used projected yields and inputs costs for non-traditional systems**
- **Rotation returns computed assuming equal acreage of each rotation phase**
- **Assumed all canola is Roundup Ready**

Region 1: WW – SC - Fallow

Table 4 – Region 1: WW – SC - Fallow

Summary of Returns by Crop and Rotation (\$/acre)							
	Total Cost of Operation (TC)	Yield	Price*	Revenue	Returns over TC	Total Variable Costs (VC)	
By Crop:	(\$/acre)	Unit (unit/acre)	(\$/unit)	(\$/acre)	(\$/acre)	(\$/acre)	(\$/acre)
Conventional Tillage							
2 Year							
Conv. Tillage Winter Wheat (CTWW)	\$236	bu	50	\$6.00	\$300	\$64	\$49
Summer Fallow (SF)***							\$76
3 year							
Conv. Tillage Winter Wheat (CTWW)	\$236	bu	50	\$6.00	\$300	\$64	\$49
Spring Canola	\$247	lb	1500	\$0.16	\$240	-\$7	\$161
Summer Fallow (SF)***							\$76
Reduce Tillage							
2 Year							
Red. Tillage Winter Wheat (RTWW)	\$277	bu	50	\$6.00	\$300	\$23	\$100
Chemical Fallow (CF)***							\$65
3 year							
Red. Tillage Winter Wheat (RTWW)	\$236	bu	50	\$6.00	\$300	\$64	\$49
Spring Canola	\$277	bu	1500	\$0.16	\$240	-\$37	\$100
Chemical Fallow (CF)***							\$65
	TC of Operation			Revenue	Returns over	TC	Total VC
By Rotation:	(\$/acre)			(\$/acre)	(\$/acre)	(\$/acre)	(\$/acre)
SF-WW-SF-WW-SF-WW	\$118			\$150	\$32	\$63	
SF-WW-SC,SF-WW-SC	\$161			\$180	\$19	\$70	
CF-WW-CF-WW-CF-WW	\$138			\$150	\$12	\$50	
CF-WW-SC,CF-WW-SC	\$171			\$180	\$9	\$50	

Region 1: WW – SC - Fallow (Updated 1/21/11 Prices)

Table 4 – Region 1: WW – SC - Fallow

Summary of Returns by Crop and Rotation (\$/acre)

By Crop:	Total Cost of Operation (TC)		Yield (unit/acre)	Price* (\$/unit)	Revenue (\$/acre)	Returns over	
	(\$/acre)	Unit				TC (\$/acre)	Total Variable Costs (VC) (\$/acre)
Conventional Tillage							
2 Year							
Conv. Tillage Winter Wheat (CTWW)	\$258	bu	50	\$7.33	\$367	\$109	\$49
Summer Fallow (SF)***							\$76
3 year							
Conv. Tillage Winter Wheat (CTWW)	\$258	bu	50	\$7.33	\$367	\$109	\$49
Spring Canola	\$295	lb	1500	\$0.23	\$349	\$54	\$161
Summer Fallow (SF)***							\$76
Reduce Tillage							
2 Year							
Red. Tillage Winter Wheat (RTWW)	\$299	bu	50	\$7.33	\$367	\$68	\$100
Chemical Fallow (CF)***							\$65
3 year							
Red. Tillage Winter Wheat (RTWW)	\$258	bu	50	\$7.33	\$367	\$109	\$49
Spring Canola	\$299	bu	1500	\$0.23	\$349	\$50	\$100
Chemical Fallow (CF)***							\$65
By Rotation:							
	TC of Operation (\$/acre)				Revenue (\$/acre)	TC (\$/acre)	Total VC (\$/acre)
SF-WW-SF-WW-SF-WW	\$129				\$183	\$54	\$63
SF-WW-SC,SF-WW-SC	\$184				\$238	\$54	\$70
CF-WW-CF-WW-CF-WW	\$149				\$183	\$34	\$50
CF-WW-SC,CF-WW-SC	\$185				\$238	\$53	\$50

Region 2: WW – Fallow – WC – Fallow

Table 5 – Region 2: WW – Fallow – WC – Fallow

Summary of Returns by Crop and Rotation (\$/acre)

		Yield	Price*	Revenue	Total Cost of Operation (TC)	Returns over TC	Total Variable Costs (VC)
By Crop:	Unit	(unit/acre)	(\$/unit)	(\$/acre)	(\$/acre)	(\$/acre)	(\$/acre)
Conv. Tillage Winter Wheat (CTWW)	bu	40	\$6.00	240	\$217	\$23	\$50
Winter Canola (CTWW)	lb	1500	\$0.16	240	\$236	\$4	\$68
Summer Fallow (SF)***							\$76
Red. Tillage Winter Wheat (RTWW)	bu	40	\$6.00	240	\$257	-\$17	\$100
Winter Canola (RTWW)	lb	1500	\$0.16	240	\$253	-\$13	\$95
Chemical Fallow (CF)***							\$65
***Fallow costs are included in costs for winter wheat and winter canola							
				Revenue	TC of Operation	Returns over TC	Total VC
				(\$/acre)	(\$/acre)	(\$/acre)	(\$/acre)
By Rotation:							
SF-WW-SF-WW				\$160	\$151	\$9	\$39
CF-WW-CF-WW				\$120	\$170	\$2	\$67
SF-WW-SF-WC				\$120	\$113	\$7	\$29
CF-WW-CF-WC				\$160	\$170	-\$10	\$65

Region 2: WW – Fallow – WC – Fallow (Updated 1/21/11 Prices)

Updated Prices on 1/21/11

Table 5 – Region 2: WW – Fallow – WC – Fallow
Summary of Returns by Crop and Rotation (\$/acre)

		Yield	Price*	Revenue	Total Cost of Operation (TC)	Returns over TC	Total Variable Costs (VC)
By Crop:	Unit	(unit/acre)	(\$/unit)	(\$/acre)	(\$/acre)	(\$/acre)	(\$/acre)
Conv. Tillage Winter Wheat (CTWW)	bu	40	\$7.33	293.2	\$234	\$59	\$50
Winter Canola (CTWW)	lb	1500	\$0.23	348.9	\$272	\$77	\$68
Summer Fallow (SF)***							\$76
Red. Tillage Winter Wheat (RTWW)	bu	40	\$7.33	293.2	\$274	\$19	\$100
Winter Canola (RTWW)	lb	1500	\$0.23	348.9	\$289	\$60	\$95
Chemical Fallow (CF)***							\$65

***Fallow costs are included in costs for winter wheat and winter canola

By Rotation:	Revenue (\$/acre)	TC of Operation (\$/acre)	Returns over TC (\$/acre)	Total VC (\$/acre)
SF-WW-SF-WW	\$214	\$169	\$45	\$39
CF-WW-CF-WW	\$174	\$188	\$38	\$67
SF-WW-SF-WC	\$161	\$127	\$34	\$29
CF-WW-CF-WC	\$214	\$188	\$26	\$65

Conclusions

- Inclusion of canola increased input costs of all rotation systems considered
- Roundup ready canola can potentially decrease overall input costs through improved weed control
- The impacts of RR canola were not included in the budgets
- Future budgets should include rotational impacts such as decreased herbicide use
- The winter canola offers high yield potential and high potential returns
- All systems are more profitable under January prices!