Rapeseed: an Alternative Crop for Idaho

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Contents

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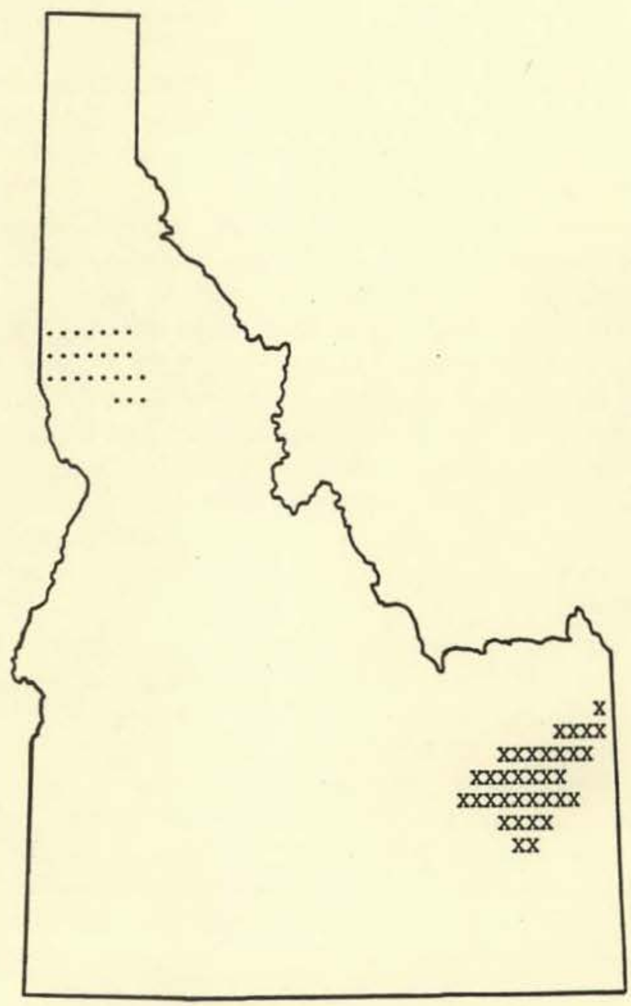
Preface

Growers in the Palouse area of northern Idaho and eastern Washington have grown a small acreage of winter rapeseed in rotation with grain and dry peas since the 1940s. During the past decade, both industrial and canola varieties of rapeseed have been tested as alternative crops in many areas of the United States. This study evaluated the on-farm economic contribution of rapeseed production in northern and eastern Idaho.

In northern Idaho, winter rapeseed is grown almost exclusively on fallow ground; it must be seeded in August to establish itself well enough to survive the winter. Government support programs with provisions for set aside acres encourage fallow and, indirectly, the growing of winter rapeseed. Under these conditions, winter rapeseed about equaled peas and lentils in contributions to farm income, and usually surpassed feed barley. A yield of 1,550 pounds per acre was required to bring winter rapeseed into the crop rotation profitably. Many farmers averaged 1,800 to 2,000 pounds or more per acre. Thus, winter rapeseed has been an advantageous crop for some growers. Additional cost and yield data will be needed to evaluate whether spring canola will be an economically viable crop for northern Idaho.

Spring canola production in eastern Idaho was evaluated on both irrigated and dryland crop farms. Winter rapeseed was ruled out for that area due to the high risk of winter kill. Canola yields on irrigated cropland were quite variable, as it was a new crop in the area and farmers were just learning appropriate cultural practices. Irrigated canola yields were not encouraging except for a few growers. The future of irrigated canola in eastern Idaho is uncertain.

Spring canola on dryland areas of eastern Idaho also gave variable yields. Because of low precipitation in this area, it is common to fallow every other year or every third year. Wheat and barley are the traditional crops. When canola yields exceeded 800 pounds per acre, this crop surpassed barley in its contribution to farm income. When yields exceeded 1,000 pounds, canola exceeded wheat. More research is needed to determine whether canola production will increase incomes on eastern Idaho dryland farms.



Idaho survey areas

. . . Winter rapeseed survey area

xxx Spring canola survey area

Fluctuating environmental concerns, food safety regulations, and economic conditions are encouraging farmers to search for alternative enterprises. Alternative crops may be defined as those not traditionally grown in an area but may potentially benefit farmers. Benefits may include one or more of the following:

- Increased net farm income,
- More income stability over time,
- Greater ability to control erosion and weeds,
- Increased environmental protection.

Rapeseed, one of the more promising alternative enterprises, is currently being grown commercially and experimentally in several locations in the United States. Rapeseed has been successfully produced and marketed in Europe and Canada for more than 40 years and has been grown in China and India since ancient times.

A limited acreage of winter rapeseed has been grown in the Palouse area of northern Idaho for many years. Since 1946, yearly acreage of industrial rapeseed in northern Idaho has fluctuated between 2,000 and 10,000 acres, with an average of 5,000 acres (Karow 1986). Since 1988, edible rapeseed has been grown as a commercial crop in parts of the Pacific Northwest and other areas throughout the United States. Nearly 25,000 acres of edible and nonedible rapeseed were grown in Montana, Idaho, and Washington for harvest in 1991 (Associated Press 1991). This includes both winter and spring varieties of industrial rapeseed and canola.

Rapeseed has been considered an alternative crop because it uses grain-producing equipment already on farms, it fits into crop rotations, and it can be stored in grain storage facilities either on farms or in local elevators. If processing facilities become established in production areas, then a high-quality protein feed that may substitute for soybean or other high-protein feeds will be locally available. Rapeseed production may also allow better distribution of labor and machinery use throughout the year as seeding and harvesting dates may not coincide with those of traditional crops.

Purpose of Study

Many areas of the Pacific Northwest are limited to producing only a few economically feasible crops. Disease and insect cycles that reduce quality and yields are more difficult to control with inadequate rotations. If a different crop could be introduced that would break disease cycles and allow better weed control, greater production per acre and higher incomes could result.

In 1991, a study was undertaken to determine whether rapeseed has potential as an economical crop alternative in areas of the Pacific Northwest. This study concentrated on two areas of Idaho: northern dryland farming areas, and eastern irrigated and dryland areas.

The objectives of the study were:

- To develop production cost budgets for rapeseed and associated crops,
- To evaluate returns for rotations without rapeseed in each area,
- To evaluate returns for rotations including rapeseed,
- To determine conditions in which rapeseed becomes an economical alternative crop.

What is Rapeseed?

Human use of rapeseed oil has a long history, dating as far back as 1000 B.C. However, it is a relatively new crop to most of the western hemisphere.

Rapeseed belongs to the *Cruciferae* or mustard family. There are two major types of rapeseed: edible and industrial. The seed-producing edible oil is derived from rapeseed low in both erucic acid (fatty acids) and glucosinolates (sulfur compounds). It was further developed in Canada and became known as "canola" to distinguish it from the industrial types. The current specifications of the Canola Council of Canada for canola oil are less than 2 percent erucic acid in the oil and less than 30 micromole common glucosinolates per gram in the meal. One major nutritional characteristic of canola oil is that it contains only 6 percent saturated fat, which is the lowest level of all commonly used vegetable oils (Allelix 1989).

The industrial type of rapeseed produces an oil unacceptable as a food product, but used extensively for industrial purposes. This industrial oil is high in erucic acid and usually high in glucosinolates. Erucic acid and glucosinolates are considered unhealthful for humans and can also create goitrogenic (thyroid gland enlargement) problems when fed to livestock.

Rapeseed is a major source of vegetable oil and livestock feed in many parts of the world. In 1983, it ranked fourth in world edible vegetable oil production and fifth in seed production. In 1986, rapeseed oil represented about 13 percent of world vegetable oil production (Fribourg et al. 1989).

Rapeseed Production in North America

Rapeseed can thrive in harsh climates as well as temperate regions. Spring rapeseed grown in Canada and the majority of rapeseed in Europe is grown north of the 45^{th} parallel. In China and India, winter rapeseed is grown in warmer climates, mostly 25° to 40° north latitude. While winter rapeseed is not feasible in areas where winters are long and cold, it can grow successfully in many areas of the United States. Spring rapeseed is often grown in areas where winter rapeseed cannot survive harsh winter weather.

This combination of wide adaptability and recently improved seed varieties makes rapeseed attractive as an alternative crop (Kramer et al. 1983).

Rapeseed and Canola Meal

Rapeseed meal is produced when oil is extracted from the seed. This meal has a slightly lower protein content than soybean meal but can be used as a substitute. Industrial rapeseed meal is high in erucic acid and usually high in glucosinolates. It is not recommended as a feed for monogastric animals although it can be successfully fed to cattle as part of a ration (Scarisbrick and Daniels 1986).

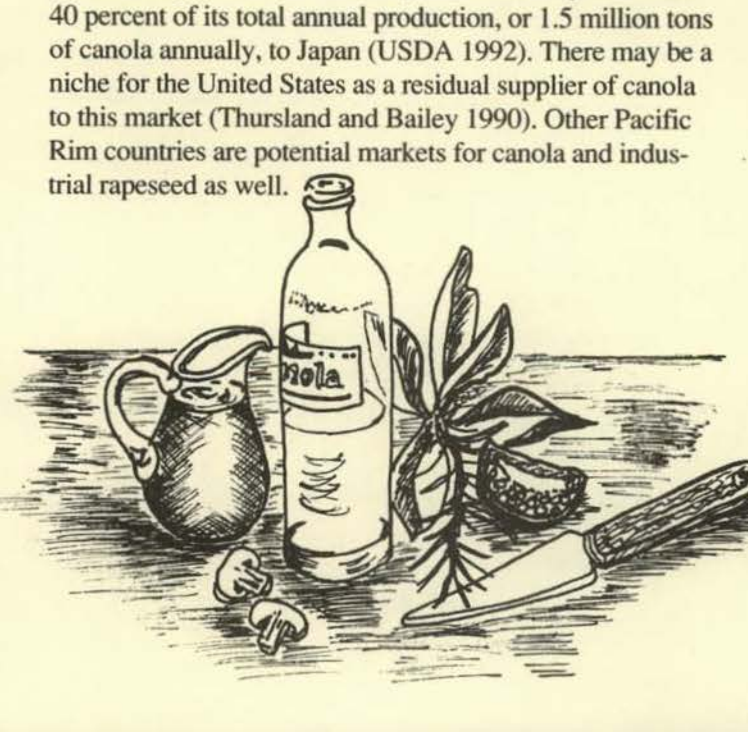
Heidker and Klopfenstein (1990) studied the replacement of soybean meal with industrial rapeseed meal in steer fattening rations. Replacement rates of rapeseed meal for soybean meal were 33 percent, 67 percent, and 100 percent. Results showed: no difference in daily gain, feed efficiency was highest for animals fed a ration where rapeseed meal replaced all of the soybean meal, and comparable carcass quality characteristics for all groups.

The price of canola meal in Portland, Oregon, averaged about 75 percent of the soybean meal price during 1989 and 1990. However, the protein content of soybean meal was 47 percent compared to about 36 percent for canola meal, which makes the two prices nearly equal per pound of protein (USDA 1989-1990).

Marketing

Export Potential

Japan is a major importer of industrial and canola rapeseed and could become an important market for Pacific Northwest producers. For example, Canada exports about 40 percent of its total annual production, or 1.5 million tons of canola annually, to Japan (USDA 1992). There may be a niche for the United States as a residual supplier of canola to this market (Thursland and Bailey 1990). Other Pacific Rim countries are potential markets for canola and industrial rapeseed as well.



Domestic Potential

In the United States, canola oil is well-positioned for growth with health-conscious consumers. Canola oil contains less than half the saturated fat of soybean, corn oil, or olive oil (Allelix Management Guide 1989). So far, the healthful properties have not been fully exploited and the canola oil price is competitive with other edible oils. The price of soybean oil is an important factor in prices for canola oil as both are substitutes for many uses.

Industrial rapeseed has many uses that have not been fully integrated for at least two reasons. First, there has not been a reliable domestic supply available. Second, many potential users are just now becoming familiar with this product.

Previous Related Studies

Kephart and Murray (1990) provided information on cultural practices and production requirements for the rapeseed enterprise. Their study also included a production cost analysis for winter rapeseed in northern Idaho. Total variable costs were estimated to be \$106.32 per acre and total fixed costs were \$109.18 per acre. A break-even price of \$5.32 per cwt was required to cover variable costs and \$10.78 per cwt was needed to cover all costs.

Hinman et al. (1991) estimated the costs of producing winter and spring canola under dryland conditions in two different rainfall areas of eastern Washington. The 8 to 12 inch rainfall region assumed a rotation of winter wheat-summer fallow-winter canola or spring canola-summer fallow-winter wheat. The 12+ inch rainfall region assumed a winter wheat-spring canola-summer fallow-winter wheat-spring barley-summer fallow rotation.

For winter canola in the 8 to 12 inch rainfall region, the break-even selling price was \$10.90 per cwt at an assumed yield of 17.5 cwt per acre (Hinman et al. 1991). The break-even selling price for spring canola grown in the 8 to 12 inch rainfall region was \$15.70 per cwt at an assumed yield of 10 cwt per acre (Hinman et al. 1991).

In the 12+ inch rainfall region, the break-even selling price for winter canola was \$11.20 per cwt at an assumed yield of 20 cwt per acre (Hinman et al. 1991). The break-even selling price for spring canola in the 12+ inch rainfall region was \$11.40 per cwt with an assumed yield of 15 cwt per acre (Hinman et al. 1991).

Caplin et al. (1987) estimated costs and returns of different farm enterprises for 1987 in eastern Whitman County, Washington. The crop enterprises evaluated were dry peas, winter wheat, spring barley, lentils, and rapeseed. The cost of producing winter rapeseed was \$210.03 per acre planted with conventional tillage after summer fallow. A yield of

20 cwt per acre of seed assumed planting after fallow. The break-even price to cover all costs was $10.50 per cwt.

Reddick (1990) used linear programming to analyze the economic potential of rapeseed in Missouri. Representative farms of southeast, west-central, west, and northeast Missouri were selected for the study. The land constraints were split into soil types and land classes. Constraints were also incorporated to encourage crop diversity.

In the southeast Missouri area, rapeseed entered the crop farm plan between $9.24 and $10.24 per cwt. The acreage significantly increased when the price reached $12.24 per cwt and then gradually increased to the $14.24 per cwt range. At $16.24 per cwt, rapeseed entered a large part of the farm plan and was limited only by rotation restrictions (Reddick 1990).

In the west Missouri area, rapeseed entered the rotation at the $8.02 to $9.02 per cwt range. Rapeseed rotations dominated the crop farm plan at prices above $14.00 per cwt. In the west-central Missouri area, rapeseed entered between $7.00 per cwt and $8.00 per cwt (Reddick 1990).

Erickson (1989) estimated cost and return projections for Kansas. Given an average yield of 13 cwt per acre, he found that total costs were $8.90 per cwt. The study used a canola-sorghum-fallow rotation.

Fribourg et al. (1989) estimated direct production costs for winter rapeseed in Tennessee. Direct production costs were estimated to be $89.08 for 18 cwt yield per acre. Costs went up incrementally with higher yield due to increases in fertilizer cost. An additional 10 units of nitrogen were added for each 2 cwt increment of seed for yield between 18 and 24 cwt.

Smith and Hoffman (1986) estimated the cost of rapeseed production in the Palouse area of eastern Washington and compared it with winter wheat, spring barley, and peas. A price of $11.00 per cwt was assumed along with 20 cwt per acre yield. Income above variable cost was estimated at $94.45 per acre.

Methods of Analyzing Data

The Oklahoma State University budget generator program was used to process the data and create enterprise budgets assuming farm sizes, equipment complements, input requirements, and costs and prices prevailing in the study area. The program was developed by Kletke at Oklahoma State University (Kletke 1979).

To create an enterprise budget, the survey data are processed through the budget generator. These data go through engineering formulas and information tables within the budget generator to create an enterprise budget. The fixed and variable costs for machinery were found by using a series of formulas developed by the American Society of Agricultural Engineers (ASAE 1990). These formulas are used by the budget generator to estimate depreciation, repair costs, fuel cost, ownership costs, maintenance costs, machine operating costs, and machine capacities. Costs and returns over variable costs for crops analyzed are located in the appendix of this publication.

The sample data employed in this study were obtained from farmers in northern and eastern Idaho who had produced canola or rapeseed for at least two consecutive years. Selected farm operators were interviewed in person to obtain cost and production data.

Linear programming models were developed to examine the conditions when rapeseed and canola enterprises enter into the best crop combination in the linear programming solutions. The models were based on typical farming practices of each area under investigation (fig. 1).

Budgets were created for the major crops in each area. Budgets were also created for winter and spring types of rapeseed. An example of the rapeseed budget is shown in table 1.

The yields assumed in the enterprises of these models represent production on average or above average quality land. Machinery and labor requirements were not constrained by the amount of labor available; instead labor could be hired if needed. Each model includes the owner and a full-time helper who were able to work a maximum of 300 hours each per month. The hired labor (HL) variables enter into the farm plan at a point where the 600 hours per month was not enough to cover the labor requirement for the month. The cost of hired labor was assumed to be $8.75 per hour. Operating capital was required to cover all cash operating expenses. Interest was charged on the accumulated annual capital each month at one-twelfth the annual rate. The annual interest rate assumed was 11 percent on operating capital and 12 percent on investment capital. It was assumed that adequate capital was available in each of the models.

1. Northern Idaho free market model (table 4)
2. Northern Idaho government program model (table 4)
3. Eastern Idaho dryland free market model (table 10)
4. Eastern Idaho dryland government program model (table 10)
5. Eastern Idaho irrigated free market model (table 7)
6. Eastern Idaho irrigated government program model (table 7)

Fig. 1. The six linear programming models analyzed.

Table 1. Variable costs and return over variable costs for winter rapeseed, northern Idaho, 1991.

	Unit	Price or cost/unit	Quantity per acre	Value or cost/acre($)
Gross receipts from production	Cwt	9.00	19.00	171.00
Total gross receipts				171.00
Variable costs				
Preharvest				
30-0-0-6	Lb	0.11	100.00	11.15
Air apply — dry	Acre	5.50	1.00	5.50
16-20-0	Lb	0.12	200.00	24.20
Fertilizer spreader	Acre	1.44	1.00	1.44
Rape seed - Essex	Lb	0.19	12.00	2.28
Parathion 8 lb Ai	Quart	9.88	0.25	2.47
Air spray	Acre	5.00	1.00	5.00
Machinery	Acre	8.10	1.00	8.10
Tractors	Acre	3.88	1.00	3.88
Labor (tractor & machinery)	Hour	8.75	1.07	9.33
Interest on operating capital	Dollar	0.11	18.04	1.98
Subtotal: preharvest				75.34
Harvest costs				
Machinery	Acre	10.33	1.00	10.33
Labor (tractor & machinery)	Hour	8.75	0.71	6.24
Subtotal: harvest				16.57
Total variable cost				91.91
Income above variable costs				79.09

Linear programming models were selected to identify the combination of activities that provided the highest gross margin subject to the constraints of the model. The linear programming solutions indicated the income above variable costs and the resource requirements for each model.

Coefficients from the budgets were entered into a linear programming model to determine the enterprise combination giving the highest return above variable costs. Price and yield sensitivities were also analyzed to evaluate the effect of introducing rapeseed into the rotation. Conditions in which rapeseed could be an economical alternative crop were identified.

Two distinctive models were developed for each area (fig. 1). One model assumes commodities are marketed without relying on government programs. The second model assumes the farm was in compliance with government programs for either wheat, barley, or both. A third model assumes the farm was using the 0/92 government program option under the wheat deficiency payment option. Results from the third model were not presented in this paper because high wheat prices at that time reduced the expected deficiency payment and therefore the option was not economically viable. When wheat prices are low and deficiency payments are higher, 0/92 is a more attractive option.

Target prices were assumed to be $4.00 and $2.36 per bushel for wheat and barley respectively. The set aside requirement was assumed at 5 percent for wheat and barley, with flex acres 15 percent of the base.

Price and yield sensitivity were explored within each model. The initial iteration in each model gave the original optimal solution assuming average prices and yields. Subsequent iterations were made for prices or yields that were higher or lower than those used in the original model.

Each model was analyzed to find the highest income above variable costs. As prices or yields changed, the optimal number of acres for each crop also changed.

Analysis Results

Northern Idaho

The model farm for northern Idaho consisted of 800 cropland acres. Winter wheat, peas, barley, lentils, and winter rapeseed were considered. Ten percent of the land was in fallow each year and winter rapeseed could be seeded only on fallow. Where economic conditions warranted, up to 25 percent of the cropland could be fallowed and seeded to rapeseed. Winter wheat could be seeded on up to 50 percent of the cropland, peas and lentils up to 30 percent, and barley up to 30 percent. Winter rapeseed under free market conditions returned $79.09 above variable cost (gross margin) under the price and yield assumptions of this study (table 2). This was the second highest gross income of all enterprises on the farm. However, winter rapeseed is a two-year crop in that it is seeded on fallow and therefore is difficult to analyze economically in a one-year budget. In order to handle this problem, a four-year linear programming model was constructed. A fallow budget was developed and the variable cost of fallow charged to the farm. Each enterprise included in the crop plan paid an equal share of the fallow cost, which represented the cost of having fallow in the rotation.

Table 2. Northern Idaho enterprise budget results for specified crops.

Crop	Yield per acre	Price per unit ($)	Variable cost per acre ($)	Gross margin ($)
Wheat	74 bu	3.30	143.20	101.00
Rapeseed	1,900 lb	.090	91.91	79.09
Lentils	1,180 lb	.15	93.15	83.85
Peas	1,990 lb	.0975	108.49	85.54
Barley	1.5 ton	96.00	118.58	28.92
Oats	1.1 ton	95.00	85.21	19.29
Fallow			18.46	-18.46

In table 3, the break-even price to cover variable cost in this budget is $7.34 per cwt. Average prices and yields were based on recent five-year averages. Variable costs were budgeted by enterprise for the area specified. While fixed costs must also be considered to find the net return to the operator, they were not included in this analysis as they are not required to determine the most profitable enterprise combination. The term "gross margin" refers to "return over variable cost." Gross margins should not be compared to net farm income because the fixed costs have not been subtracted from gross receipts. Fixed costs include depreciation and interest on fixed capital, rent, insurance, and overhead.

Table 3. Northern Idaho gross margins per acre for selected rapeseed prices and yields.

Rapeseed	Gross margin ($/acre)		
$/cwt	1,400 lb/acre	1,900 lb/acre	2,400 lb/acre
5.00	-21.91	3.09	28.09
7.00	6.09	41.09	76.09
9.00	34.09	79.09	124.09
11.00	62.09	117.09	172.09

Table 4. Gross margins for specified yields and acreages of rapeseed for the 800-acre northern Idaho model farm.

	Rapeseed yield (lb/acre)	Income above variable cost ($)	Rapeseed acres in model
Government program	1,211	76,626	0
	1,544	78,354	80
	1,900	80,942	90
	2,433	85,262	90
	2,500	85.802	100
	3,133	90,993	200
Free market	1,300	61,472	0
	1,411	62,260	80
	1,900	65,780	80
	1,978	66,340	80
	3,133	74,726	200

As winter rapeseed yields increased, the optimal rapeseed acreage increased. For example, with a yield of 1,211 pounds of rapeseed per acre, it was not profitable to produce rapeseed on the northern Idaho farm. When the yield increased to 1,544 pounds per acre, 80 acres of rapeseed increased farm profitability. When yields reached 3,133 pounds per acre, rapeseed figured in the solution for the maximum allowed by the rotation. As expected, gross margins were higher on farms complying with government programs than those on free market operations.

Eastern Idaho Irrigated

The model farm for eastern Idaho under irrigation consisted of 600 cropland acres. Potatoes, malting barley, peas, wheat, oats, alfalfa, and canola were considered. Up to one-third of the farm crop acres could be in potatoes each year. Canola was limited to 25 percent of the cropland as a substitute for grain or peas. Alfalfa was included in the model rotations in compliance with the government programs. The year alfalfa was established the crop was not harvested and the cropland was used as the set aside requirement. Otherwise, alfalfa may be seeded with a grain crop and the grain harvested the year that alfalfa is established. This farm had an assumed wheat base of 150 acres.

Table 5. Eastern Idaho irrigated enterprise budget results for specific crops.

Crop	Yield per acre	Price per unit ($)	Variable cost per acre ($)	Gross margin ($)
Potato	254 cwt	4.75	845.41	361.09
Barley	37 cwt	6.66	162.01	84.41
Wheat	78 bu	3.02	218.40	17.60
Oats	30 cwt	4.60	192.50	-54.50
Peas	22 cwt	12.75	237.66	42.84
Alfalfa (est.)	0 ton	00.00	141.11	-141.11
Alfalfa	4.5 ton	60.00	205.04	64.96
Canola	18 cwt	11.50	180.65	26.35

Table 6. Eastern Idaho irrigated gross margins per acre for selected canola prices and yields.

Canola	Income above variable yields		
$/cwt	1,300 lb/acre	1,800 lb/acre	2,300 lb/acre
7.50	-83.15	-45.65	-8.15
9.50	-57.15	-9.65	37.85
11.50	-31.15	26.35	83.85
13.50	-5.15	62.35	129.85

Table 7. Gross margins for specified yields and acreages of canola for the 600-acre eastern Idaho irrigated farm model.

Canola yield	Income above variable cost ($/acre)	Canola acres in model
Government program		
1,800	105,101	0
2,313	105,242	150
Free market		
1,800	101,815	0
1,948	101,876	100
2,313	106,123	150

Eastern Idaho Dryland

The model farm for the eastern Idaho dryland area consisted of 2,000 acres of cropland (tables 8-10). Winter wheat, canola, and barley were considered. Fifty percent of the farm was made fallow each year. A fallow budget was developed and the variable cost of fallow charged to the farm. Winter wheat could be seeded on up to 50 percent of the cropland and spring canola could be seeded on 25 percent of the cropland.

Table 8. Eastern Idaho dryland enterprise budget results for specific crops.

Crop	Yield per acre	Price per acre ($)	Variable cost per acre ($)	Gross margin ($/acre)
Wheat	32 bu	3.02	79.58	17.06
Canola	1,000 lb	.115	95.27	19.73
Barley	15.5 cwt	4.60	85.46	-14.16
Fallow			19.31	-19.31

Table 9. Eastern Idaho dryland gross margins per acre for selected canola prices and yields.

Canola	Gross margin ($/acre)		
$/cwt	500 lb/acre	1,000 lb/acre	1,500 lb/acre
7.50	-57.77	-20.27	17.23
9.50	-47.77	-.27	47.23
11.50	-37.77	19.73	77.23
13.50	-27.77	39.73	107.23

Table 10. Income above variable cost for specified yields and acreages of canola for the 2,000-acre eastern Idaho dryland farm model.

Canola yield	Income above variable cost ($)	Rapeseed acres in model
Government program		
1,000	23,372	200
1,300	29,765	500
Free market		
1,000	-915	500
1,300	14,085	500

Summary and Conclusions

This study was conducted to evaluate the economic potential of introducing industrial or canola rapeseed into crop rotations in northern and eastern Idaho. In this study, industrial rapeseed data were collected for northern Idaho and canola data from eastern Idaho. Industrial rapeseed has been grown for many years on farms in northern Idaho, so production practices and costs are fairly well established.

Canola is a new crop to eastern Idaho. Production practices are just becoming established and considerable yield variability is evident. Data used were obtained from farmers who had produced canola for a minimum of two years.

Hypothetical model farms were utilized for three situations: an 800-acre farm in northern Idaho, a 600-acre irrigated farm in eastern Idaho, and a 2,000-acre dryland farm in eastern Idaho. Gross margins were calculated for each farm for several situations. The general results are that rapeseed and canola can compete with some traditional crops at assumed yields and prices. Below average yields and low prices will not allow these crops to compete, as is true for most other crops. Specific results are discussed by area.

Northern Idaho

The results of this study indicate that winter rapeseed can be a profitable crop for dryland farms in northern Idaho under assumed prices and yields. While it does not compete with winter wheat, it does compare favorably with barley and peas. Growing winter rapeseed was most profitable under the government program.

Alternatives to grain and legume crops are welcome in this area because of disease problems that could restrict acreage or yields of the crops currently grown. Winter rapeseed can offer an alternative to crops currently grown in the northern Idaho rotation.

Further research should be conducted to determine the feasibility of producing spring canola in northern Idaho. Fallow would not be required in the rotation to grow spring canola and it could be planted on land where winter crops had been destroyed by extreme winter weather.

Eastern Idaho Irrigated Farm

Canola yields on eastern Idaho irrigated farms have not been encouraging so far, however, a few producers have successfully grown the crop. If yields can increase by improving farming practices and seed selection, the profitability may improve.

Eastern Idaho Dryland

Dryland farming in eastern Idaho usually includes fallow alternate years or every third year. Wheat and barley are the traditional crops grown in this area. Precipitation of 8 to 12 inches limits yields that can be achieved. Canola would be a valuable addition if it can be grown successfully. Current information indicates that it will not replace wheat, but it can compete well with feed barley at 1992 prices if 800 or more pounds can be produced per acre. More information is needed to determine the outcome of this crop in dryland areas.

The future of canola and industrial rapeseed is still uncertain. As canola oil will compete directly with other vegetable oils, its price is not likely to fall below that of soybean oil. It may sell for more if consumers recognize this oil as being more healthful.

The market for industrial rapeseed is less certain. This oil has many uses and the potential is good but the markets must be developed.

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Appendix

Gross receipts, total variable costs, and return above variable costs for selected crops; Idaho , 1991.

Areas and crop	Price ($)	Yield	Gross receipts ($)	Total variable costs ($)	Return over variable costs ($)
Northern Idaho (dryland)					
Winter wheat, bu	3.30	74.0	244.20	143.20	101.00
Winter rapeseed, cwt	9.00	19.0	171.00	91.91	79.09
Lentils, cwt	15.00	11.8	177.00	93.15	83.85
Spring peas, cwt	9.75	19.9	194.02	108.46	85.54
Spring barley, ton	96.00	1.5	144.00	118.58	25.42
Oats, ton	95.00	1.1	104.50	85.21	19.29
Eastern Idaho (irrigated)					
Potatoes, cwt	4.75	254.0	1,206.50	845.41	361.09
Malt barley, cwt	6.66	37.0	246.42	162.01	84.41
Spring wheat, bu	3.02	78.0	235.56	218.40	17.16
Oats, cwt	4.60	30.0	138.00	192.50	-54.50
Dry peas, cwt	12.75	22.0	280.50	237.66	42.84
Alfalfa hay, ton	60.00	4.5	270.00	205.04	64.96
Spring canola, cwt	11.50	18.0	207.00	180.65	26.35
Eastern Idaho (dryland)					
Winter wheat, bu	3.02	32.0	96.64	79.58	17.06
Spring barley, cwt	4.60	15.5	71.30	85.46	-14.16
Spring canola, cwt	11.50	10.0	115.00	95.27	19.73

More detailed enterprise budget information can be obtained from the Department of Agricultural Economics and Rural Sociology at the University of Idaho, Moscow, ID 83844-2334. Telephone (208) 885-6262.

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