



PLANNING FOR PROFIT



Ministry of Agriculture,
Food, & Fisheries

Transition To Certified Organic Spelt - North Okanagan

30 Acres

Winter 2002

This information is provided as a tool for projecting costs and returns for B.C. farm enterprises interested in certified organic spelt production. The sample budget should be used as a general guide only and should not be used for business analyses without adjustments to reflect individual situations. Each farm should develop their own budget to reflect their production goals, costs and market prices.

Information regarding financial planning and other enterprise budgets may be downloaded from the internet at B.C. Ministry of Agriculture, Food and Fisheries. Web (<http://www.agf.gov.bc.ca/busmgmt/>).

Key Success Factors

- Weed control and a sound fertility management program aided by an effective crop rotation plan.
- Good site selection and preparation.
- Appropriate timing of planting to optimize weed control measures.
- Identify your market prior to planting and ensure access to organic storage if needed.
- Reduce direct and indirect expenses as much as possible.

Market

- Spelt is an ancient grain mainly grown for human consumption. It is used by the health food and specialty bakery market due to its overall health benefits (e.g. used as a replacement for modern wheat varieties when allergies exist).
- Overall, the spelt market is fairly small and subject to price changes due to supply fluctuations associated with adverse weather conditions and variations in planting acreage. Current B.C. demand is about 1000 tonnes/year, with 85% of this being grown in Ontario.

Conventional

- Little conventional spelt production occurs in B. C. Most production is destined for livestock feed, since there is no local milling or distribution facility for conventional food spelt. The high shipping costs make conventional food markets in Eastern Canada and United States inaccessible to growers in the North Okanagan.
- Producers can increase production incomes from spelt by selling both grain and straw.

Certified Organic

- Much of the organic spelt in the North Okanagan is marketed through the Organic Milling Cooperative in Armstrong.
- Spelt produced during the 3 year transition period are predominantly marketed through the same channels as conventional spelt. Currently, there is no distinct market for transition spelt within B.C.
- Producers of organic spelt are required to be certified. A list of certifying bodies is available from the Certified Organic Association of B.C. (see References).

Risk Factors and Strategies

Financial Risks - Capital investment in equipment can be offset by moving slowly and cautiously. Certain equipment investments can be put off or substituted with less expensive equipment. Renting equipment or hiring custom equipment operators are other measures used to offset investment costs. Additional capital investment may be required by certified organic growers for compost application, rotation crops and buffer zones (i.e. land and equipment investment).

Production Risks - Weed, disease and insect control along with effective fertility management are essential elements in ensuring high quality and high yields. Generally pest control and soil fertility management is more of a challenge to organic growers than conventional growers, particularly during the transition period.

Weed infestations may cause higher disease and insect problems and if the grain becomes contaminated with weeds or weed seeds, grain quality and quantity of marketable yield can be reduced (e.g.. get "hot spots" in stored grain). Stinking smut outbreaks can be a problem, depending on the year. Poor soil fertility will result in reduced grain quality (i.e. grain size smaller) and yield.

Adverse weather can dramatically reduce yields for both conventional and organic production. Too little or too much precipitation can interfere with seeding and harvesting operations. Since spelt is a fall seeded crop, harsh winters can lead to winter kill. On the prairies, spelt is winterkilled on average 7 out of 8 years. This is not as serious a concern in the North Okanagan.

Methods to deal with production risks include an effective crop rotation plan and use of composted and green manures. Rotations with legume crops and crops with different planting windows will help break weed cycle and provide soil nutrients. Crop residues from previously planted green manure crops (eg.fall rye, buckwheat, annual legumes) and perennial legumes will release nutrients to the current oat crop. Generally legumes remain in the ground at least 2 years, the first year being seeded with a nurse crop of oats or other cereal crop. At the end of the final year, the final legume growth is not harvested but rather disced down to supply nutrients and organic matter. Seeding at different times of the year will help suppress a greater variety of weeds, since different weeds germinate under different growing conditions. Planting competitive crops in the rotation program is also important, since competitive crops, such as barley, rye, and perennial legumes will provide better weed suppression than the less competitive crops, such as flax and field peas and beans.

Weed contamination at harvest can be reduced by combining higher and leaving more straw "stubble" behind. Spelt is a tall grain, and much of the weed growth will be lower than the grain growth.

Use of clean seed and clean equipment are also important strategies to deal with disease, insect and weed vectors. Programs available to offset production risks include NISA, crop insurance and whole farm insurance.

Handling Risks - Ensure crop is properly harvested, stored and shipped. Improper handling will increase storage losses and reduce the quantity of your marketable yield. Combines equipped with weed screens (older, less efficient models) and post harvest cleaning equipment are effective means of reducing weed contamination. Grain should be stored at about 14% moisture. The tough hull of spelt grain helps to retain nutrients and quality making long-term storage very feasible.

Price Risks - Prices for spelt are closely linked with world supply and can be somewhat volatile, depending upon weather and production acreages. The major competitor with the local B.C. spelt market is Ontario.

Market Risks - The market is quite small and fairly volatile due to variations in acreage planted year to year and yield reductions associated with winterkill.

SAMPLE ENTERPRISE BUDGET AND WORKSHEET TRANSITION TO CERTIFIED ORGANIC SPELT - NORTH OKANAGAN

This sample enterprise budget is based on the assumptions outlined previously. It should be viewed as a first approximation only. Use the column "Your Farm" to add, delete, and adjust items to reflect your specific situation. Budget items are expressed on *per 1 acre* of spelt for a 30 acre farm.

Projected Income (per acre)

	Conventional	Transition		Certified Organic.....		
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Marketable Yield(tonnes)	2.50	0.60	0.80	1.00	1.25	1.25	1.25
Price(\$/tonne)	\$160	\$160	\$160	\$160	\$400	\$400	\$400
Total Income	\$400	\$96	\$128	\$160	\$500	\$500	\$500

Projected Direct Expenses (per acre)

	Conventional	Transition		Certified Organic.....		
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Seeds							
.conventional (kg)	\$36						
.organic(kg)		\$44	\$44	\$44	\$44	\$44	\$44
.fall rye(kg)		\$30	\$30	\$30	\$30	\$30	\$30
Fertilizer							
.46-0-0 (kg)	\$22						
.11.52-0(kg)	\$12						
.0-0-60(kg)	\$5						
Pesticides							
.Vitivax (kg)	\$9						
.2,4-D amine500 (l)	\$2						
Tractor fuel	\$45	\$55	\$55	\$55	\$55	\$55	\$55
Tractor oil&lube	\$7	\$8	\$8	\$8	\$8	\$8	\$8
Certification Fees		\$13	\$13	\$13	\$13	\$13	\$13
Repair & Maint.	\$93	\$95	\$3	\$0	\$0	\$0	\$0
Total	\$229	\$246	\$153	\$151	\$151	\$151	\$151
Income - Direct Exp.	\$171	-\$150	-\$25	\$9	\$349	\$349	\$349

Projected Indirect Expenses

Depreciation
Interest
Insurance
Administration
Legal/accounting
Other
Total

Indirect expenses do not vary with the level of output and are typically associated with inputs used in more than one enterprise. These expenses must be allocated appropriately (prorated) between uses.

Projected Net Income

	Projected Income
<i>minus</i> Projected Direct & Indirect Expenses	
	<i>Projected Net Income</i>

Sensitivity Analysis

The profitability of both conventional and organic spelt operations are influenced by market prices and yield. The table below illustrates the changes to income margin (ie.income less direct expenses) as prices and yield vary.

Conventional

Price vs. Income less Direct Expenses	80% of Target Price	90% of Target Price	Target Price	110% of Target Price	120% of Target Price
Price (\$/tonne)	\$128.00	\$144.00	\$160.00	\$176.00	\$192.00
Income less Direct Expenses	\$91	\$131	\$171	\$211	\$251

Yield vs. Income less Direct Expenses	75% of Target Yield	85% of Target Yield	Target Yield	110% of Target Yield	120% of Target Yield
Marketable Yield (tonnes)	1.9	2.1	2.5	2.8	3.0
Income less Direct Expenses	\$71	\$111	\$171	\$231	\$271

Certified Organic

Price vs. Income less Direct Expenses	80% of Target Price	90% of Target Price	Target Price	110% of Target Price	120% of Target Price
Price (\$/tonne)	\$320.00	\$360.00	\$400.00	\$440.00	\$480.00
Income less Direct Expenses	\$249	\$299	\$349	\$399	\$449

Yield vs. Income less Direct Expenses	75% of Target Yield	85% of Target Yield	Target Yield	110% of Target Yield	120% of Target Yield
Marketable Yield (tonnes)	0.9	106.3	1.3	1.4	1.5
Income less Direct Expenses	\$224	\$274	\$349	\$424	\$474

Cash Flow Timing

The following table indicates the monthly flow of direct expenses. A complete projected cash flow should include indirect expenses, capital sales and purchases, loans, personal expenses and income.

Conventional

	J	F	M	A	M	J	J	A	S	O	N	D
% Expenses			7		73				20			

Certified Organic

	J	F	M	A	M	J	J	A	S	O	N	D
% Expenses			12		55				33			

Investment Capital Replacement Costs - Conventional vs. Organic Production

Item	Conventional	Cert.Organic	Net Change*
Buildings	\$21,000	\$21,000	\$0
Tractor(s)	\$15,000	\$15,000	\$0
Implements	\$21,500	\$24,000	\$2,500
Combine	\$5,000	\$5,000	\$0
Small tools and equip.	\$5,000	\$5,000	\$0
Vehicle (s)	\$25,000	\$25,000	\$0
Total	\$92,500	\$95,000	\$2,500

*change in investment capital between conventional and certified organic production

Hours of Labour Required - Conventional vs. Organic Production

Task Completed	Conventional	Transition			Certified		
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
.Field Preparation:							
preplant	1.00	1.00	1.00	1.00	1.00	1.00	1.00
post harvest	1.00	1.00	1.00	1.00	1.00	1.00	1.00
fertilizer applications	0.25						
compost applications		1	1	1	1	1	1
.Seeding	0.50	1.00	1.00	1.00	1.00	1.00	1.00
.Spraying -herbicide	0.25						
.Harvesting	1.00	1.00	1.00	1.00	1.00	1.00	1.00
.Straw swath/mulch	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Total hours.	4.50	5.50	5.50	5.50	5.50	5.50	5.50

Conventional vs. Certified Organic Spelt Production

Factors Affecting Production Costs

1. Pest control: Options for the weed, insect and disease control are very limited in certified organic operations. Effective crop rotation programs and ensuring all equipment and seed are clean are vital to dealing with these pests on organic spelt operations. Other techniques include switching to organic production gradually, with a general recommendation of not more than 25% of the total production area being moved into transition at a time. Consider producing a mix of commodities instead of mono-cropping. The direct expenses associated with pest control are notably lower in organic than conventional production, but operator labour may be higher.

2. Equipment: Certified organic spelt producers will require more equipment for the application of composts and mulching straw, but will not require a baler (for straw), fertilizer spreader or sprayer. Overall, equipment costs were assumed as being quite similar for both conventional and organic production in this budget. In all production systems, renting or contracting will help offset the initial capital investment required and reduce financial risks.

3. Fertilizers: Certified organic spelt producers can utilize composts and green manure (legumes) crops for a source of plant nutrients. The costs of using composts is generally not economically feasible on very large operations. Green manure crops, such as alfalfa or field peas do provide a feasible alternative to synthetic fertilizers.

4. Certification fees: To maintain certified organic status, a farm must be registered with a certified organic or recognized association and have semi-annual inspections completed of all farming practices. The fee rates will vary from farm to farm and depend on the certifying body, the level of production, and time required to complete inspections.

5. Marketable Yield: Average values are generally lower for operations during the transition period than on conventional operations or fully certified organic operations. Most of this is due to the fact that biological systems need a certain amount of time to adjust to changes in soil fertility and pest control programs. Once the transition has been made, maintaining high soil fertility levels is essential as spelt is a heavy feeder. Rotating with legume crops and adding composts and green manures to land previously cropped to spelt are essential in achieving optimum yields. The actual amount of yield reductions noted during the transition period can vary considerably from farm to farm, depending upon the fertility program, pest control program and crop rotation scheme in place during conventional production. The yields assumed in this sample budget during the transition period are rough estimates only. To determine yield potentials during transition on your own particular operation, you may consider doing some field tests on your own farm first.

6. Market Factors: The local market for certified organic spelt is fairly strong. Conventional spelt production also has a place, but more in the local feed market than the milling market, due to distances to conventional milling markets.

7. Land Needs: The total land required to produce an acre of spelt on certified organic operations is greater than on conventional operations due to the need for rotation crops and buffer zones. Rotation crops are needed for pest and soil fertility management. Buffer zones are required if there is a concern that contamination from adjacent land, roadways, and so forth can occur.

References:

- BCMAFF. Field Crop Production Guide.
- COABC.2001. B.C. Certified Organic Production Operation Policies and Farm Management Standards (<http://www.certifiedorganic.bc.ca/Standards>)
- BCMAFF. Planning for Profit Budgets <http://www.agf.gov.bc.ca/busmgmt/>
- Alberta Agriculture. March 1995. Soils, Cropping Practices, and Fertilizer Use. Adapted from Agdex 541-1. (<http://www.agric.gov.ab.ca/agdex/500/41100001>)
- Environment Canada and Manitoba Agriculture. October 1992. Getting Started in Organic Farming (<http://www.gks.com/library>)
- Certified Organic Associations of B.C. 8A-101 Kalamalka Lake Rd., Vernon, B.C. V1T 9G1.
email: coabc@bcgrizzly.com
- BC certified organic industry information available at www.certifiedorganic.bc.ca

Contributors:

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- Irene Bevandick, P.Ag., contractor, Kelowna, B.C. (*producer interviews, financial data, market factors, risks*)
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- Rochelle Eisen, RARE Enterprises, Summerland, B.C. (*editorial comments, final edit*)
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- spelt producers

Assumptions:

The following assumptions were made in calculating the sample budget:

1. Crop Information:

- Projected income and expenses are based on 1 acre of spelt for all production systems. Total farm size is 30 acres.
- Spelt in the transition and certified organic systems, is followed with a fall cover crop planting of fall rye. Since the type of rotation plan is highly variable from farm to farm, production income and expenses from rotation crops are not accounted for in this sample budget. Only seed and planting costs of the fall rye crop are included.
- When completing individual farm budgets, the additional income and expenses that result from the rotation crops should be considered.
- Spelt for conventional and organic systems is planted at 45kg/acre and 55kg/acre, respectively. Cost is assumed at \$0.80/kg for both production systems.
- Fall rye cover crop in organic production is planted at a rate of 55kg/acre at a cost of \$0.55/kg.
- Fertilizer applications are assumed as follows:
 - conventional:* 46kg of 46-0-0, 23kg 11-52-0 and 14kg 0-0-60 to supply 24kg/acre N, 12kg/acre P2O5, and 8kg/acre K2O; costs are \$0.47/kg, \$0.53/kg and \$0.35/kg for 46-0-0, 11-52-0 and 0-0-60.
 - transition to c.o.:* nutrients supplied by alfalfa rotation crop.
- Pesticides applied in conventional production assumed as 0.34 litre/acre of 2,4-D amine 500 herbicide at a cost of \$4.80/litre and 0.34kg/acre of Vitavax at a cost of \$25.00/kg
- Marketable target yields for organic production are assumed at 0.6, 0.8 and 1.0 tonne/acre for the first, second and third year of transition, and 1.25 tonnes/acre for the subsequent years of organic production.
- Marketable target yields for conventional production are 2.5 tonnes/acre.

2. Marketing Information:

a. Costs

- No separate marketing cost is detailed in this sample budget. Instead it is assumed that the costs of marketing are included in the return price.

b. Returns

- Returns for conventional and transition spelt are \$160.00/tonne and returns for certified organic spelt are \$400/tonne.
- Straw sales for conventional production are not accounted for in this sample budget.
- Spelt straw is not assumed as an income source on organic production systems due to problems with weed contamination.

3. Certification Fees

- Certification fees include membership fees for certifying body, Certified Organic Assoc. of B.C. (COABC) fees, certification fees, and farm inspection fees. These fees vary greatly according to the certifying body, the level of farm production and the time it takes to complete inspections. This budget assumes a total farm certification fee of \$400/year or \$13.33/acre for 30 acres of organic production.

4. Labour Requirements:

There *are no* differences with respect to the following tasks between conventional, transition and certified organic.

Field Prep Preplant	1 hrs/acre	(3x0.33hr)
Field PrepPost harvest	1 hrs/acre	(3x0.33hr)
Harvesting	1 hrs/acre;	
Straw mulching	0.5 hrs/acre	

There *are* differences with respect to the following tasks between conventional, transition and certified organic.

Seeding	0.50 hrs/acre	conventional	
	1.00 hrs/acre	transition & certified organic	(0.5hr spelt;0.5hr fall ry
Compost application	1.00 hrs/acre	transition & certified organic only	
Fertilizer applications	0.25 hrs/acre	conventional only	
Herbicide spraying	0.25 hrs/acre	conventional only	

5. Buildings/Equipment Costs:

a. Investment Capital

When switching from conventional to organic production, additional investment capital is required for a compost application All capital investment costs assumed in this budget are outlined below:

Buildings

implements/shop	\$20,000	all production systems
grain storage	\$1,000	all production systems

Implements

tillers	\$4,000	all production systems	(includes disc, cultivator, harrow)
seed drill	\$4,000	all production systems	
loader & attachments	\$7,000	all production systems	
swather	\$2,500	all production systems	
mower	\$1,500	all production systems	
manure spreader	\$5,000	transition and certified organic	
fertilizer spreader	\$2,500	conventional	
Tractor(s)	\$15,000	all production systems	
Combine	\$5,000	all production systems	
Small Tools & Equip	\$5,000	all production systems	
Vehicle (s)	\$25,000	all production systems	

b. Equipment Operation Costs

Tractor fuel costs for 70hp tractor are calculated as the no of tractor hours x 20L/hr fuel consumption x \$050/L (@2000rpm running speed). The number of tractor hours assumed for all production systems are outlined below:

Task	Conventional	Transition	Certified Organic
field prep spring&fall:	2 hrs/acre	2 hrs/acre	2 hrs/acre
fertilizer application:	0.25 hrs/acre	0 hrs/acre	0 hrs/acre
compost application:	0 hrs/acre	1 hrs/acre	1 hrs/acre
seeding:	0.5 hrs/acre	1 hrs/acre	1 hrs/acre
herbicide spray:	0.25 hrs/acre	0 hrs/acre	0 hrs/acre
harvest (combine/bin):	1 hrs/acre	1 hrs/acre	1 hrs/acre
straw mulch:	0.5 hrs/acre	0.5 hrs/acre	0.5 hrs/acre
<i>Total</i>	4.5 hrs/acre	5.5 hrs/acre	5.5 hrs/acre

Oil and lube costs are assumed at 15% of fuel costs

Repair and maintenance costs are calculated at 3% of investment capital replacement costs