2013

Northwestern Ontario Specialty Crop Market Report

NORTHWESTERN ONTARIO INNOVATION CENTRE

3/31/2013

Acknowledgements

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Executive Summary

In October of 2009, the Northwestern Ontario Development Network completed a series of research reports detailing the Economic Impact of Agriculture in the various regions of Northern Ontario. This research clearly illustrated the significant economic impact agriculture has in Northwestern Ontario. In 2013, the Northwestern Ontario Innovation Centre, with support from IRAP, completed this report with the goal of assessing the potential market opportunity for growing and marketing selected specialty crops. Can the diversification of the crops grown increase the profitability of our current producers, enhance revenue and make existing land more productive? The crops analyzed in this report were selected from those deemed viable from outcomes of the ongoing research conducted at the Thunder Bay Agriculture Research Station. These crops included: chickpeas, lentils, field peas, flax seed, mustard seed, canola, durum wheat, white spring wheat and mill house barley.

Parallel to this research the Innovation Centre was pleased to receive funding to organize and deliver workshops focused on utilizing precision agriculture technology and the potential of specialty crop production. Three workshops were delivered (Thunder Bay, Emo and Dryden) with information presented on Precision Agriculture and the initial results of this market opportunity research. Some of the producers attending these workshops were interested in evaluating both of these opportunities. This report will be provided to all participants to allow for further exploration and evaluation of specialty crops in NWO. Precision agriculture offers many benefits to agriculture producers in our region with increased yields and reduced input costs. It is not the focus of this report but the Innovation Centre has information and resources for producers considering adopting precision agriculture in their operation.

Currently, there is one producer in the Northwest just starting to grow chickpeas and others who have grown canola, flaxseed and wheat varieties. However, this region is inexperienced with growing and marketing specialty crops. The challenge of this report was to not only provide market information on these crops but to provide practical information that will allow a producer in this region to make business decisions regarding the viability of growing one or more of these crops. Each producer has unique constraints that will need to

be considered when evaluating these opportunities. The report provides an understanding of market trends, detailed potential customers interested in purchasing commodities from local producers, information on all potential marketing approaches, constraints, costs and the realities of transporting commodities from the three regions of Northwestern Ontario. A financial analysis was completed that considered potential yields, projected pricing and average production costs to provide a guideline for producers in determining the feasibility of the various crops under consideration.

Key findings include:

The existence of numerous market intermediaries who will purchase, handle and market these commodities. A list of those interviewed is contained in the report. Key factors in successful selling to these buyers is keeping transportation costs low by looking for creative solutions (backhauls, joint shipments with other producers when quantities are small), proper grading and timing of the sale. There was almost no appetite from food producers to purchase directly from small farmers.

The need to focus on buyers in Manitoba, Minnesota and Southern Ontario to reduce transportation costs.

The margins in selling direct to the consumer can be very high but the producer, separate local business or group of producers must be willing to invest resources and energy in packaging, marketing, and distribution. Their marketing efforts would have to be focused outside of Northwestern Ontario. Selling direct only to the local market is not a sustainable option because the local consumption given our region's small population base make the market too small to justify any substantial volume of production.

Chickpeas and flax were the crops that illustrated the highest potential profitability based on expected pricing for 2013/14. However, variance in pricing, soil conditions, producers location, field size, customer location and transportation options make the analysis unique to each situation.

Agriculture Market Research Report

Project Overview

The purpose of this report is to provide practical information to agricultural producers in the region of Northwestern Ontario allowing them to evaluate the potential for growing specialty crops on their land. Each producer will need to take this information and relate it to their individual situation. The cost of production, transportation, handling and storage, potential for cooperative market and transportation with other producers, appetite for risk, current utilization and land cost will all vary. The information provided in the report provides a guideline and starting point for individual assessment. The research completed by Dr. Tarlok Singh Sahota at the Thunder Bay Agriculture Research Station is the source for the list of crops analyzed in this study. Only crops that have been identified to have competitive yields when grown in climate and soils of Northwestern Ontario have been analyzed. This study is meant to be more practical than theoretical. It is comprised of four main segments.

- Section 1: A Crop Analysis and Profile
  The first is an analysis of crops which can be successfully grown in Northern Ontario.

- Section 2: Market Potential and Industry Trends
  The second is a general overview and industry trends which help describe the broad markets and trends for the crops listed in section one. This section also describes domestic markets and identifies potential regional and national customers. Primary research was used to validate market opportunities for various specialty crops with an emphasis on markets and customers within Ontario, Manitoba, Minnesota and Wisconsin.

- Section 3: Market Opportunity Analysis
  The market information collected illustrates potential opportunities; there are key assumptions and variables that must be considered to assess risk and reward. There are various options regarding path to market and the attractiveness of these options will depend on the environment the producer is operating in and the farmer's individual resources and interest. Providing budget models and discussing these considerations in this section will assist producers in making business decisions.

- Section 4: Transportation and Infrastructure Analysis

  An examination of the different modes of transportation available to ship specialty crops out of the target areas in Northwestern Ontario to buyers in Winnipeg, Minnesota and Toronto in order to provide guidance in building the most practical and cost efficient system of getting the products to the most profitable market based on the constraints identified

- Section 5: Opportunities and Recommendations

  A summary of the findings and recommendations.

Section 1: Crop Analysis and Profile of Economically Viable Crops

Dr. Tarlok Singh Sahota CCA, TBARS Thunder Bay[1]

Chickpeas

Chickpeas, an excellent source of protein and fibre, they are a cool season pulse crop. Being a legume it can meet its nitrogen (N) requirement by fixing atmospheric N and is therefore eco-friendly. Proceeding crops in rotation with chickpeas, especially cereals, benefit from the N fixed by chickpeas. There are two types of commonly grown chickpeas, Desi and Kabuli (also known as Garbanzo beans). Saskatchewan is the major chickpea producer in Canada. Chickpeas are not grown in Ontario. Research at Thunder Bay Agricultural Research Station (TBARS) since 2010 has revealed that chickpeas could yield 2.5-3.0 tonne grains/hectare, higher than that of Western Canada which has yields of 1.99 tonnes/hectare. Since the chickpeas are sold at a higher price than cereals, it offers higher economic returns to the producers. Encouraged by the success at the research station, one local farmer has grown chickpeas in 12 acres this year (2012). Chana Masala (Asian) and Hamas (Middle East) are the famous chickpea dishes relished by most communities in Ontario/Canada.

Lentils

Lentils, like chickpeas, are a cool season pulse crop with some resistance to high temperatures and drought. Lentils can grow in almost any type of soil provided that it is not subjected to flooding. As a nitrogen fixing legume crop, lentils are another good alternative for rotating with cereals and other non-legume crops. Lentils are high in protein and fibre, low in fat and cholesterol free and thus provide heart healthy food. Lentils are not currently grown in Ontario mainly due to the lack of research and education on its health and economic benefits. Recent studies at Thunder Bay Agricultural Research Station suggested that lentils can grow well in the region with yields up to 3.0 tonnes/hectare. That is a fair bit higher than that in the Western part of Canada where yields average 1.46 tonnes/hectare. Combining the crop could be challenging because the pods are too close to the ground. Northwestern Ontario producers may need to learn how to combine lentils from producers in Saskatchewan.

[1] See Appendix A for Thunder Bay Agriculture Research Station Yield Statistics

Field Peas

Dry (field) peas are a cool season crop with better drought tolerance than cereals. Dry peas can suppress weeds and provide a great choice for improving crop rotations with cereals or oilseeds. They are an excellent source of fibre, protein, minerals and other nutrients mainly for humans, but could also be fed to livestock. Old varieties did not stay up well when mature, which caused problems during harvesting/combining and as a result Thunder Bay producers abandoned peas cultivation after trying many years ago. The new varieties tested at Thunder Bay Agricultural Research Station could stand well till combining and have performed really well with grain yields of up to 6 tonnes/hectare, which is well above the reported average yield of dry peas in Western Canada (2.3 tonnes/hectare).

Hard White Spring Wheat

Hard white spring wheat is indistinguishable to hard red spring wheat in terms of a hard endosperm, similar starch and protein characteristics. White wheat is used to produce whole-wheat yeast bread with similar appearance and taste as traditional white bread made from refined red wheat flour. It is also used for making hard rolls, bulgur, tortillas and oriental noodles. There is potentially an increasing market for hard white spring wheat. However, grain yield from hard white spring wheat is usually lower than hard red spring wheat and extra/separate bins would be required for storage of hard white spring wheat. The yields for hard white spring wheat are 12 to 19% less than US hard red spring wheat or approximately 2.8 tonnes/hectare, and in Western Canada they averaged 2.23 tonnes/hectare. Brule Creek Farms Thunder Bay has been stone grinding hard white spring wheat for making bread. Growth requirements of hard white spring wheat are the same as that for any other spring wheat.

Millhouse Barley

Millhouse (hulless barley) is the first milling food barley in Canada. It can be processed the same way as wheat, and when mixed with wheat flour, it can double the percentage of dietary fibre in the bread and have the health benefit of lowering blood cholesterol. Even though Millhouse barley does not yield as well as some other varieties, it does have very high protein content. However, discounting the weight of hulls in other barley varieties, Millhouse grain yield would be comparable with other barley varieties, averaging about 3.53 tonnes/hectare in Western Canada. Thunder Bay is the only place in Ontario where Millhouse barley is grown. Brule Creek Farms in Thunder Bay is stone grinding Millhouse barley for flour to make barley bread or wheat-barley mix bread.

Durum Wheat

Durum wheat, also called Macaroni wheat, is the only tetraploid wheat that is commercially grown. Durum wheat is hardest of all wheats with high protein content, and it's most important use is in making pasta products such as macaroni, spaghetti, and other noodles, though it is also used in making bread. Durum wheat is somewhat lower yielding than conventional wheat with an average of 2.5 tonnes/hectare in the western part of Canada. It is typically around 20 percent of total wheat production in Canada. Durum wheat usually fetches higher produce price than other types of spring wheat. It is more susceptible to Fusarium Head Blight, a fungal disease, as compared to conventional spring wheat. However, fungicides are available for effective control of the disease.

Soft Red Winter Wheat

Soft red winter wheat, like any other winter wheat, is seeded in the late summer in Northwestern Ontario. It has a soft endosperm with low to medium grain protein content. It is used to make cakes, pastries, flat breads, and crackers. A large chunk of the winter wheat grown in Ontario falls under the category of soft red winter wheat. However, it isn't as winter hardy as the hard red winter wheat, which is better suitable for cultivation in Northwestern Ontario. The average yield in Western Canada is 3.55 tonnes/hectare. Winter wheat is a good cover crop, helps spread field operations and yields at least 20 % higher than the spring wheat. It can escape excessive heat/drought as also Fusarium Head Blight as compared to the spring wheat. Thunder Bay growers have shown keen interest in reviving winter wheat cultivation in the area.

Flax Seed

Flax is an important oil seed crop that can be successfully grown in Northwestern Ontario. In the research plots at Thunder Bay Agricultural Research Station, up to 3 tonne/hectare flax seed yield was recorded. Its growth requirements are more or less the same as other oil seeds crops such as canola, though its N requirements are less than half of that of canola. Flax seed is rich in fibre, antioxidants and omega-3 fatty acids (anti inflammation). While its vitamin and mineral contents are similar to cereal grains, it is low in carbohydrates. Flax seed thus makes a healthy food; helps lowering body weight and cholesterol. Fibre in flax also helps stabilizing blood sugar and proper functioning of intestines (helps relieve constipation). Lack of marketing is the main constraint in extending flax cultivation on farms. Flax could be an ideal crop to rotate with cereals, corn and grain legumes. Its light blue flowers have a great scenic value!

Canola

Canola (‘Can’ for Canada + ‘Ola’ for low fatty acids) is truly a Canadian crop/innovation. Canadian plant breeders developed this crop in 1970 to remove the excessive anti-nutritional erucic acid and glucosinolates from rapeseed to make it safe for human and animal consumption. Oil seeds that do not have less than 2 % erucic acid and less than 30 % glucosinolates cannot be marketed as canola. It has 43-44 % oil in its seed. Canola oil is considered healthier than most other vegetable oils. The crop is seeded in spring and produces a seed yield of ~3 tonne/ha. Canola’s N requirements are more than double than that of spring cereals. It also has a high requirement of sulphur as compared to most of the field crops. Boron too is considered critical for healthy canola production. The crop has different drying and storage requirements than cereals. An enterprising Slate River Valley producer has been growing and marketing canola for the past few years. Ideally, canola should be grown only once in a 3-4 year period in the same field. Rotation with other crops (grain, forage or hay crops) is recommended.

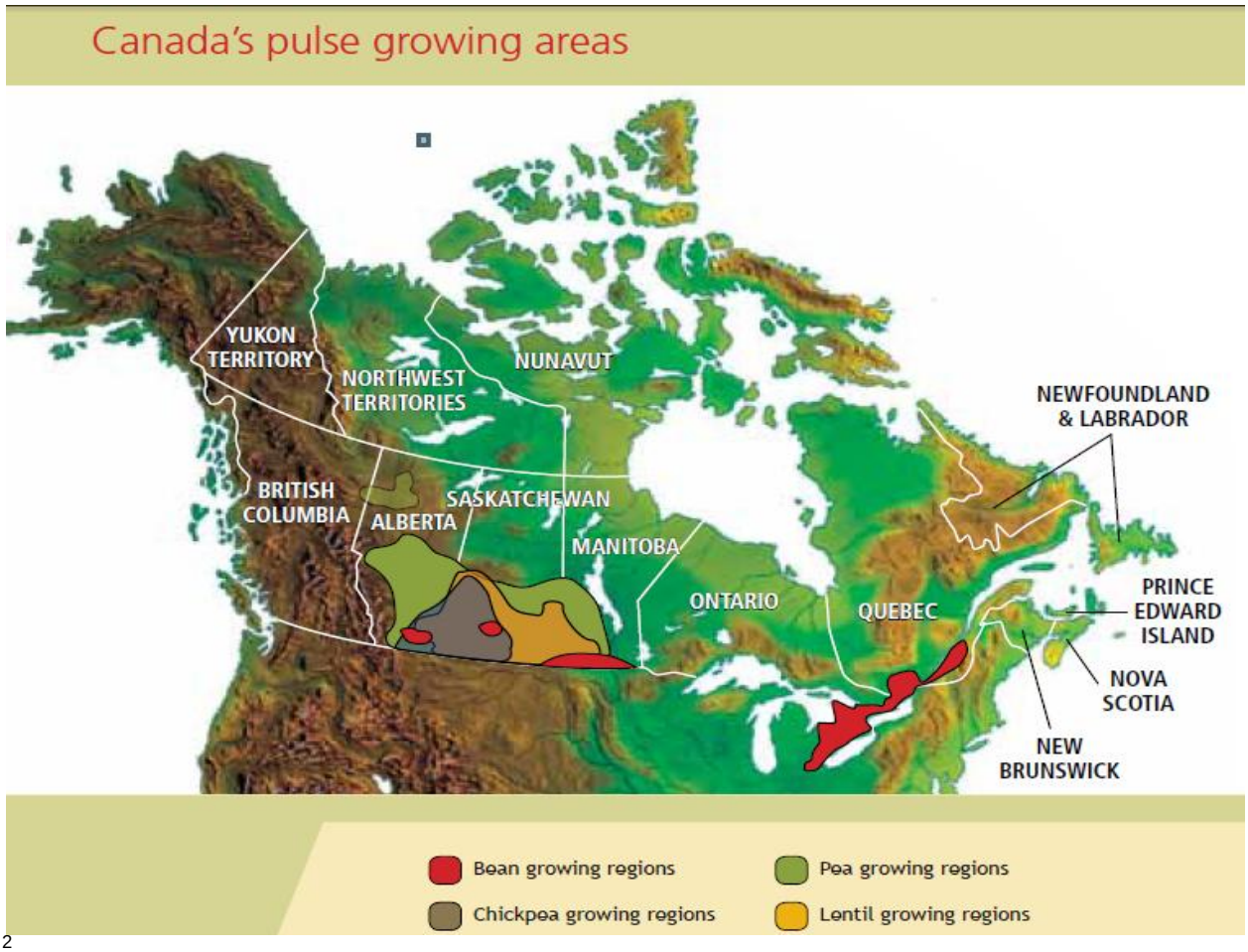
Mustard

Mustard is also an oilseed crop that belongs to the Brassica family. Growing season and requirements are the same as that for canola, except that N requirements of mustard are relatively lower. Both the leaves and seeds of mustard are edible. In old times, mustard was used as a remedy for scorpion stings and in a variety of medicines and poultices, which were applied to "cure" toothaches and a number of other ailments. Mustard oil is rich in sulphur and is considered good for skin/and curing skin diseases. Yellow, brown, and oriental mustard are grown in North America, though most area under mustard is covered by yellow mustard. It is used primarily as a spice or condiment; as a seasoning in mayonnaise, salad dressings, and sauces. Yellow mustard flower, an excellent emulsifying agent and stabilizer, is used in sausage preparation. In Western Canada mustard has an average yield of 0.85 tonnes/hectar. Mustard can be grown in Northwestern Ontario. However, lack of research and marketing is a limiting factor for cultivation of mustard on farms. Mustard will fit in the same crop rotations as canola.

Section 2: Market Potential and Industry Trends

Pulse Overview

Canadian production of pulses has grown from 1 Million tonnes (Mt) to 5.7 Mt in a 20 year period. Exports represented more than 4.7 Mt in 2011 worth $2.7 billion. A leader in pulse production, Canada represents 32% of world pea production, 38.5% of the world lentil production and is a top five exporter of chickpeas. Therefore Canada is the world's largest exporter of lentils and peas. Quebec and Ontario are primarily producers of beans, while Saskatchewan is a primary producer of peas, lentils, and chickpeas production with some beans. Manitoba produces white and coloured beans and peas and Alberta is producing beans, peas, lentils and chickpeas. As the map below illustrates there is no pulse production in Northern Ontario.



[2]

[2] http://www.pulsecanada.com/canadas-growing-regions

Consumer Trends

The per capita consumption of pulses in North America is approximately 3.5 kg and this has been consistent over the past several years. There has been a slight decline in consumption in other world markets (India, China, Spain). This is due to urbanization where increased access to larger supermarkets and rising incomes allow for the substitution of meat and processed foods.

The pulse industry in Canada's vision is to continue to increase yields and the total area seeded. The use of pulses in rotations is attractive to producers to optimize nitrogen fixation and break weed and disease cycles. The industry is seeking to optimize market value by transforming pulses from commodities to ingredients with health and nutritional benefits. New demand drivers are health and environmental benefits, and the need for sustainable food production.

Chickpeas[3]

	Domestic
Production	- Production doubled to 158 kt in 2012/113 due to an increase in harvested area and yields – kabuli rose. US chickpea production up 51% from 2011/12 Forecasts for the 2013/14 season is for the area seeded to fall and production is to decrease to 120 kt . India is the largest producer of chickpeas accounting for 66% of global chickpea production and 63% of cultivated area.
Markets	- The marketed volume is only 8.7% of the total average production (8,177 thousand tonnes) while more than 92% of the chickpeas are consumed in the countries where they are produced - US, the Middle East and the Indian subcontinent are forecast to remain the main markets for Canadian chickpeas
Competition	- The biggest chickpea producers in Canada are in the south-western part of Saskatchewan. India and Jordan are the biggest producers globally.
Pricing	The average price is forecast to decrease, but remain historically high, due to higher Canadian and world supply. In 2013/14 the average price to fall from $635-$665 to $615 - $645/tonne due to higher world supply
Processing	- Steps for processing are; cleaning, sorting, dehulling, splitting, and milling, Fractioning is also becoming a common process.[4]

[3] 2013/14 forecasts from *Agriculture and Agri-Food Canada – Market Analysis Group/Grains and Oilseeds Division Feb 21, 2013*

Lentils[5]

	Domestic
Production	- This year production fell marginally from 2011/12 due to lower yields - Crop quality is lower - US harvested area ↑ 12% production↑ 7% - For 2012-2013, the area seeded is intended to fall by 4% due to lower returns, particularly for red lentil types, compared to other crops. - Canada has become the largest lentil exporter in the world and is expected to account for 80% of global exports[6] - 2013/14 production is to fall sharply but carry-in stocks will dampen the effect - 4th year of lower production
Markets	- Exports increasing (India/Pakistan) - 2012 – domestic use ↑ record level of 0.5Mt - Domestic use accounts for about 15% of production[7] - Domestic use is expected to rise to high levels as lower quality lentils from the 2010 harvest are consumed by the domestic livestock feed industry - Canadian lentil exports are forecast to rise due to the increase shipments to the Middle East, The EU and South America
Competition	- Increased export competition from Australia and Turkey in common markets is expected to limit Canadian market
Pricing	- Large green lentil premium over red has fallen from $195/t to $40/t - Average price $405 to 435/t in 2012/ 13. Average price to recover slightly from 2012/13 from $450 to $480/t.
Processing	- Steps for processing are; cleaning, sorting, dehulling, splitting, and milling, Fractioning is also becoming a common process.[8]

[4] http://www.pea-lentil.com/core/files/pealentil/uploads/files/Chapter4.pdf
[5] 2013/14 forecasts from *Agriculture and Agri-Food Canada – Market Analysis Group/Grains and Oilseeds Division Feb 21, 2013*
[6] http://www.agr.gc.ca/pol/mad-dam/index_e.php?s1=pubs&s2=rmar&s3=php&page=rmar_02_02_2010-08-03
[7] http://www.agr.gc.ca/pol/mad-dam/index_e.php?s1=pubs&s2=rmar&s3=php&page=rmar_02_02_2010-08-03
[8] http://www.pea-lentil.com/core/files/pealentil/uploads/files/Chapter4.pdf

Field Peas[9]

	Domestic
Production	- Production rose by 13% in 2012/13 to 2.8 Mt (Yellow 2.5 Mt and 0.3 Mt Green) - Sharp increase in Saskatchewan harvested area - Lower Yields - Seeded area is forecast to increase – higher returns and benefits of crop rotation - For 2012-2013, seeded area is forecast to increase sharply by 42% because of higher returns relative to other crops and the continued use of peas as part of the crop rotation plan. - For 2012-2013 the pulse crop in India is forecast to decrease by 5% from the previous year due to lower seeded area.
Markets	- Canada is expected to continue to be the largest producer and exporter of dry peas in the world. Exports to rising to 2.3 Mt (China/India/Pakistan) - U.S. Exports to decrease – U.S. doubles production in 2012 - Another very important market for Canada's peas is the domestic feed market
Competition	- The biggest competition for Canadian producers is India who has 48% of the field pea market.
Pricing	- Prices have reached record highs - No 1. green peas $590/t (forecasted to by $140/t > yellow) Prices 2012/13 $310 to 345/t forecasted to decrease in 2013/14 - larger supply and carry-out stocks to $280 -$310/t
Processing	- Steps for processing are; cleaning, sorting, dehulling, splitting, and milling, Fractioning is also becoming a common process.[10]

[9] 2013/14 forecasts from *Agriculture and Agri-Food Canada – Market Analysis Group/Grains and Oilseeds Division Feb 21, 2013*

[10] http://www.pea-lentil.com/core/files/pealentil/uploads/files/Chapter4.pdf

Overview - Wheat

Canada, on average, produces 25,717 TMT of wheat, making the nation the sixth largest producer of wheat in the world. Based on the average, Canada consumes 7,922 TMT of wheat. Canada exports an average of 18,385 TMT ranking them second in world exports. Consumption demand was strong due to the substitution of wheat for corn in animal feed.

Three different varieties of wheat are predominantly grown in Canada: winter wheat, dark northern spring wheat, and durum wheat. Saskatchewan accounts for 55 percent of all the DNS grown in Canada, with Alberta contributing 26 percent to the total DNS wheat grown. The remainder of the spring wheat grown in Canada is raised in Manitoba, which contributes 17 percent to the total spring wheat production. Durum is raised, generally, in the same area that the DNS is raised. The provinces are ranked the same for durum production as they are for spring wheat. Saskatchewan accounts for 76 percent of the durum produced in Canada, Alberta produces 18 percent, and Manitoba produces 6 percent.

Canadian winter wheat is almost exclusively grown in the province of Ontario. Ontario produces 82 percent of the total winter wheat in Canada, with the remaining winter wheat being grown on the prairies of Alberta, Saskatchewan, and Manitoba. [11]

On August 1st the passage of Bill C-18, the legislation that removed the Canadian Wheat Board's (CWB) monopoly on wheat and barley sales is significantly changed many aspects of Western Canada's grain system. It is predicted that it will take some time before things normalize. Experts are recommending that producers read over contracts as they are not consistent since the grades tied to specific pricing are different from one company to the next. It is recommended that growers shop around before committing to any contracts. Producers that have marketed canola, peas, oats and domestic feed barley will find wheat marketing similar. [12]

The CWB is planning cash as well as pooling options, and the ICE Futures Canada exchange in Winnipeg has announced a full range of made-in-Canada futures contracts. The services offered by ICE action will impact whether the Winnipeg-based exchange or the Minneapolis Grain Exchange will be the home of the dominant spring wheat futures for Western Canada.

[11] http://www.spectrumcommodities.com/education/commodity/statistics/wheat.html
[12] http://business.financialpost.com/2012/08/07/grain-farmers-become-marketers-after-wheat-board-monopoly-ends/

Hard White Spring Wheat[13]

	Domestic
Production	- Spring wheat production is estimated to increase by 6% to 19.05 Mt (2012-2013). Production of spring wheat was 22.57 Mt in 1990, 17.45 Mt in 1999 and 18.12 Mt in 2009. The declining production pattern, of around 20% over the past 20 years, has been due to relatively low net returns of wheat as compared to competing crops. - In 2009, Saskatchewan was the largest producer of spring wheat with 7.2 Mt, followed by Alberta (5.2 Mt) and Manitoba (3.4 Mt). The combined western provinces account for 89% of all spring wheat production, which is on par with the production pattern of the past 20 years.[14]
Markets	- In the Prairie Provinces, the dominant wheat is hard spring wheat which is planted in the spring (May) and harvested between mid-August to mid-October. Hard wheat is desired for its gluten strength and high protein content. It is widely used for blending with other wheat and in the production of high volume pan breads. Spring wheat grows best in areas with lots of sunshine and adequate moisture, especially when the grains are filling. It takes approximately 90 days from wheat emergence to full maturity when the crop can be harvested. - About 70% of all wheat is planted to the Canadian Western Red Spring (CWRS) class. Around 16% is planted to winter wheat. The remainder is distributed between spring wheat classes.[15]
Processing	- Wheat is reaped for harvesting. A machine typically threshes the wheat and beats it to remove the chaff. The remaining wheat kernels then go through a cleaning and a process called tempering to toughen the bran coat. The wheat then goes though a grinder and sifters to ensure for very fine flour. Depending on the type of flour the last step is enriching and adding certain supplements to the flour. [16]

[13] 2013/14 forecasts from *Agriculture and Agri-Food Canada – Market Analysis Group/Grains and Oilseeds Division Feb 21, 2013*
[14] http://www.agr.gc.ca/pol/mad-dam/index_e.php?s1=pubs&s2=rmar&s3=php&page=rmar_02_06_2010-11-26
[15] http://www.agr.gc.ca/pol/mad-dam/index_e.php?s1=pubs&s2=rmar&s3=php&page=rmar_02_06_2010-11-26
[16] http://www.ehow.com/how-does_4914695_how-wheat-processed.html

Durum Wheat[17]

	Domestic
Production	- Lower world supply, lower world use and higher US supply - 2013/14 area seeded to increase by 3% - good prices and shift out of lentils - Canadian durum production is estimated to decrease by 8% to 5.1 Mt because of a 7% lower seeded area and higher abandonment. Supply is estimated to rise by 10% to 7 Mt, as higher carry-in stocks more than offset the decrease in production. (2009-2010) - World durum production (2012-2013) is forecast to decrease by 1.6 Mt to 35.1 Mt, as higher production for the US, Canada and Algeria is offset by lower production for Kazakhstan, Morocco and the EU.
Markets	- Domestic use is expected to increase moderately. Carry-out stocks are forecast to increase by 11% to 2.1 Mt - 2012/13 exports increased by 16% because of lower production in other countries - Exports to decrease by 4% because of an increase in world production (Morocco and Kazakhstan)
Pricing	- 2013/14 Price to decrease from 2012/13 due to higher world supply and strong Canadian $
Processing	- Wheat is reaped for harvesting. A machine typically threshes the wheat and beats it to remove the chaff. The remaining wheat kernels then go through a cleaning and a process called tempering to toughen the bran coat. The wheat then goes though a grinder and sifters to ensure for very fine flour. Depending on the type of flour the last step is enriching and adding certain supplements to the flour. [18]

[17] 2013/14 forecasts from *Agriculture and Agri-Food Canada – Market Analysis Group/Grains and Oilseeds Division Feb 21, 2013*
[18] http://www.ehow.com/how-does_4914695_how-wheat-processed.html

Soft Red Winter Wheat[19]

SRWW	Domestic
Production	- Production is estimated to increase by 20% to 3.68 Mt. More winter wheat was produced in western Canada than in eastern Canada (2012-2013)
Pricing	- Wheat (excluding durum) prices fluctuate based on global supply and demand fundamentals. The 10 year average (1999-2008) of the CWB Pool Return Outlook (PRO) for No.1 Canada Western Red Spring Wheat (CWRS, 13.5% protein) was CAN $242/tonne. In recent years, prices peaked in 2007 (in line with global commodity price increases) to a high of $372/t. Since 2008, wheat prices have stabilized at trend levels and the price for 2010 is estimated at $238/t.[20]
Processing	- Wheat is reaped for harvesting. A machine typically threshes the wheat and beats it to remove the chaff. The remaining wheat kernels then go through a cleaning and a process called tempering to toughen the bran coat. The wheat then goes though a grinder and sifters to ensure for very fine flour. Depending on the type of flour the last step is enriching and adding certain supplements to the flour. [21]

[19] 2013/14 forecasts from *Agriculture and Agri-Food Canada – Market Analysis Group/Grains and Oilseeds Division Feb 21, 2013*
[20] http://www.agr.gc.ca/pol/mad-dam/index_e.php?s1=pubs&s2=rmar&s3=php&page=rmar_02_06_2010-11-26
[21] http://www.ehow.com/how-does_4914695_how-wheat-processed.html

Overview - Oilseeds

Canada is the world's leader in the production and export of flax, canola and mustard seed. Uses and demand for these versatile crops continue to expand. The health benefits and the development of new products especially for flax and canola continue to expand the market.

Flax Seed

One of five major Canadian crops, flax travels today to ports alongside wheat, barley, oats and canola. Canadian flax is exported mainly to Europe, the U.S., Japan and South Korea . Canada currently ships 60% of its flax exports to the EU, 30% to the United States, and 4% to Japan.[22]

Flaxseed is typically processed by cold pressing to obtain flaxseed oil suitable for human consumption and by solvent extraction to obtain flaxseed oil for industrial purposes. Flax is an attractive, high-nutrition crop because it is rich in dietary fiber, very high in essential fatty acids and high in vitamins and minerals. Nutritionally, flax provides alpha-linolenic acid (ALA), an essential omega-3 fatty acid. Flax has traditionally been used as an ingredient in breakfast cereals and breads. However, in the last ten years, a significant number of products containing flax have been developed for the health food market. The renewed interest in flax as a food source is due to findings suggesting that it can provide a variety of health benefits such as reducing heart disease and cancer risks. Research also indicates additional health benefits related to the autoimmune system.Flaxseed meal is gaining popularity in the premium pet food industry.

In the past, "industrial" flaxseed oil for linoleum flooring, paints and other industrial products was in high demand. Increased use of water-based paints and petroleum-based floor coverings has reduced that demand. The non-allergenic and biodegradable characteristics of linoleum flooring have led to a resurgence of demand for linoleum in some parts of Europe. The paper and pulp industry uses the fiber in the stem of flax plants for linen sheets, napkins, table cloths and clothing, and for fine papers like parchment paper and cigarette paper. New developments are focusing on using flax straw as an alternative fuel.[23]

[22] www.flaxcouncil.ca
[23] http://www.agmrc.org/commodities__products/grains__oilseeds/flax-profile/

Flax[24]	Domestic
Production	- For 2012-13, total production is forecast to rise by nearly 50% to 0.55 Mt due to higher seeded area and steady yields. Total supply is forecast to rise by 21% as significantly lower carry-in stocks moderate the rise in output.
Markets	- Total domestic use is forecast to remain steady following the sharp decline in 2011-12 caused by the reduction in domestic capacity - Exports are forecast to rise steady US and Chinese import demand and a significant price advantage compared to canola.
Pricing	- Carry-out stocks are forecast to be unchanged, while prices decline marginally, with losses moderated by high world vegetable oil, protein meal and oilseed prices.
Processing	- Flax seed plants are pulled from the root and then hung to dry for several days. Once they are dried they are pulled through a rippler to separate the seed heads from the stems. At that point the seeds are used and sold as flax seed and the stems are further processed into a fiber that is treated like wool. [25]

Canola

Canola oil is the main product of canola seed since about 43 percent of the seed is oil. Canola oil is the lowest in saturated fats of all commonly used oils. The low level of saturated fats and wide range of functionality has made canola oil a popular option for food services looking to decrease trans fats in their food. At average yields of 30 bushels per acre, and 13 million acres harvested, just over five million tons of an 8 million ton crop is exported as seed. The major export markets are Japan, Mexico, the U.S. and the E.U. The remainder is crushed domestically with almost 3.5 million tons channelled to food markets and the rest destined for biodiesel. [26]

[24] 2013/14 forecasts from *Agriculture and Agri-Food Canada – Market Analysis Group/Grains and Oilseeds Division Feb 21, 2013*
[25] http://www.richters.com/show.cgi?page=InfoSheets/d2701.html
[26] http://www.soyatech.com/canola_facts.htm

Source: Canola Council of Canada

Canola[27]	Domestic
Production	- Production of 2.7 Mt of canola oil and 3.9 Mt of canola meal 2012/13 - 2013/14 – seeded area to decline by 1% - disease/insect concerns, high input costs and returns on alternative crops - Production to ↑ 16% due to higher yields - Production is forecast to continue increasing to a new record of 15.7 Mt, up 11% from 2011-2012
Markets	- 2012/13 Exports decreased by 17% because of tight supply - Strong demand (China, Japan, Mexico UAE) - Domestic processing of canola is forecast to rise by 3%
Competition	- Palm oil, soyoil and soymeal
Pricing	- Prices to fall under pressure from supply of palm oil, soyoil and soymeal from $625-$665/t to $560- $600/t in 2013/14
Processing	- Canola seeds are crushed into oil and meal and is then refined - Canola Oil Extraction process is typically to flake the seed; the flaked seeds are then cooked and subject to mild pressing. Then it is further processed to remove remain oil and then processed into final product. [28]

[27] 2013/14 forecasts from *Agriculture and Agri-Food Canada – Market Analysis Group/Grains and Oilseeds Division Feb 21, 2013*

Mustard Seed

Canada accounts for 75 – 80% of all mustard exports worldwide. Canada produces and exports several types of premium mustard, including brown mustard, yellow mustard (also known as white mustard) and oriental mustard. As the world's leading exporter of mustard, Canada is consistently able to meet demand (Canada produces 140,000 – 300,000 tonnes of mustard seed annually). Canada is recognized internationally as being among the best in the world in terms of ensuring food safety and traceability.[29]

Mustard [30]	Domestic
Production	- Production fell – higher harvest area but low yields - US doubled mustard harvested area - Carry-out stocks will fall supporting prices - 2013/14 Production expected to rise by 9% - Supply will fall by 8% because of lower carry-in stocks - Area seeded to increase and yields to increase - Agri-food Canada is involved in mustard seed research and has released a stream of improved varieties in the last 15 years.[31]
Markets	- Mustard seed is used primarily as a condiment in the food industry, in the form of whole seed, meal or oil. Mustard seed is also used as an emulsifier, a water binding agent, and for texture control in many food products.[32] - US and the EU are the main export markets 115 kt - Canada is the second largest producer of mustard seed in the world and accounts for 75-80% of all mustard exports worldwide[33]
Competition	- The biggest market to compete with is the U.S. who produces 43% of Mustard seed
Pricing	- lower carry in stocks - Price is forecast to be higher moving up to $790 -$820/tDue to a fall in carry-out stocks that will affect the price of mustard seed, it is expected that they will increase to an average price of 675-705 ($/t)
Processing	- The typical manufacturing process for mustard is to examine, clean, dry and store the seeds. After that the seeds are usually soaked to soften them and

[28] http://www.soyatech.com/canola_facts.htm
[29] http://www.specialcrops.mb.ca/
[30] 2013/14 forecasts from *Agriculture and Agri-Food Canada – Market Analysis Group/Grains and Oilseeds Division Feb 21, 2013*
[31] http://www.ats-sea.agr.gc.ca/pro/4690-eng.htm
[32] http://www.ats-sea.agr.gc.ca/can/4752-eng.htm#m
[33] http://www.specialcrops.mb.ca/pdf/CSCA-Special-Crops-Brochure.pdf

	make it easier to remove the hulls. The seeds are then crushed and ground while the hulls and bran are sifted out. Liquids are then added as well as seasoning and flavours, then the mustard paste gets heated to complete the process. [34]

Overview - Millhouse Barley

Millhouse barley often referred to as hulless barley has many positive characteristics for feed, food and malt uses. Yet according to the Canadian Wheat Board's 2011-12 Variety Survey, hulless barley is estimated to account for less than one percent of the barley grown in Western Canada. There is very little data on Millhouse Barley as it is considered an emerging crop. Nevertheless breeders, food scientists, industry development specialists and others continue to work on many fronts to help realize hulless barley's full potential.

Hulless barley is not truly hulless, but the hull is much more loosely held onto the seed than in hulled barley, and the hulls are removed during combining. The absence of hulls means the grain has more nutrients and higher energy per unit weight than hulled barley and it requires less space to store and transport. The absence of hulls also means the seed is more easily damaged during handling, yields may sometimes be lower because the hulls are left in the field, and in some cases food and beverage processing is different than for hulled.[35] More information on the current state of the Hulless or Millhouse Barley market is contained in the complete article in Appendix B.

	Domestic
Production	- Millhouse barely represents 1% of Barley grown in Western Canada - For 2012-2013 Barley (production is estimated to increase by 23% to a record of 9,508kt) - Total Barely supply is also predicted to rise from 9,211kt to 10,750 kt in the next year.
Markets	- The total world supply of barley is expected to decrease slightly which helps increase the exports from Canada from 1,995kt last year to 2,200 kt this year
Pricing	- Retail - Barley Flour- 1.75kg Grower: Brule Creek Farms Price: $7.00 (each)

[34] http://www.madehow.com/Volume-5/Mustard.html#b
[35] Hulless barley: challenges and prospects -Slow progress made in market development. by Carolyn King | Feb 2012 AgAnnex.com

Section 3: Market Opportunity Analysis

Paths to Market and Supply Chain

In general, there are three main market paths which can be taken by agricultural producers who want to sell their yields.

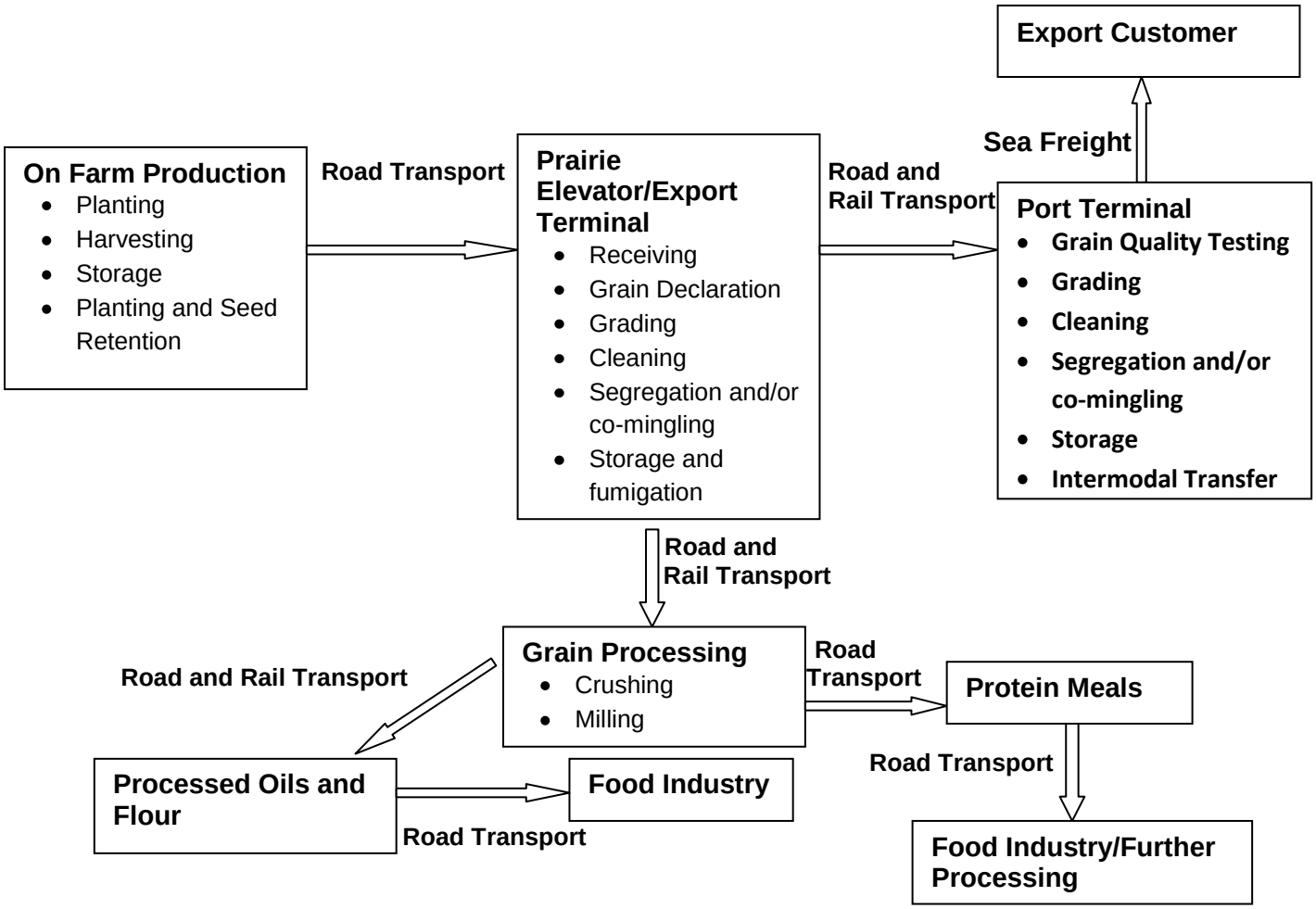
Direct To Consumer
- Farmers Market
- On Farm Production and Sales
- Roadside Sales

Grain Dealer/ Processor/ Marketing Board
- Grain Elevators and Dealers
- Marketing Board
- Food Manufacturers
- Cooperative
- Export to International Buyers

Food Manufacturer
- Mostly Domestic
- Opportunities exist with US customers

These paths to market typically follow a basic and fundamental supply chain as seen below:

Figure 1 - Supply Chain



Marketing Commodities

Prepared by Allan Mitchell of Al Mitchell of AgraTactics Agronomy

Marketing and selling are often considered the same thing, but marketing is not the same as selling. Since farming is a production based business, we can conclude that farm marketing is the summation of all activities that keep a farm focused on its customers. Selling, is simply the exchange of a good or service for specific price. [36]

Marketing plays five roles in a farm business:

1. Marketing bridges the gap between producers and consumers
2. Marketing helps producers better understand consumer needs
3. Marketing aids producers in deciding what to produce
4. Marketing aids producers in deciding when to produce
5. Marketing aids producers in deciding when to sell

There are three main functions to marketing:

1. **Exchange Function** – two components that are associated with marketing are Buying and Selling

2. **Physical Function** – are made up of storage, transportation and processing. Storage includes both storage on farm and off farm, they are both important for the flow of grain and specialty crops. Transportation includes railcars and truck and also the mode of transportation to get produce to the consumer. Processing is taking the raw product and adding value to it through changing its form.

3. **Facilitating Functions**

- Grade/standardization of a product allows for mass selling to occur
- Financing enables consumers to purchase where cash would be prohibitive
- Futures, options and contracting are a few avenues that allow producers to reduce risk
- Market information is crucial in helping producers in the decision process.

[36] See Appendix F for a glossary of terms and Appendix H for market alternatives

Procedure for Marketing Commodities

Step 1 – Develop a Marketing plan - Decide when you will require movement, either for cash purposes or for bin space.

Step 2 – Ensure you have a representative sample that is properly labeled.

- Procedure for Sampling Grain by the Canadian Grain Commission

- As trucks unload to a selected bin, take grain samples at consistent and regular intervals to ensure the sample is representative. The length of the interval should be determined at the beginning of the process and should take into account:
- Amount of grain that is being moved
- Type of equipment you are using
- How much sample you need
- For example, the larger the auger or the smaller the load of grain, the shorter the interval. It's also very important to keep the sampling interval time consistent throughout the entire process to ensure your sample is representative.
- When taking grain samples, alternate between the sides and centre of the grain stream. Place all the samples for each truck in pail A, ensuring that you have at least enough sample to fill the pail to three-quarters full.
- Once the truck is finished unloading, mix the contents of pail A thoroughly by hand. Place the 2 empty pails labeled B, side by side and touching on a level surface. Pour the contents of pail A at the point where the pails touch, ensuring that each pail receives about half the sample. Return 1 pail of sample to pail A. The contents of the other pail can be poured back into the bin.

  Repeat this process with the remaining sample until you have approximately 2 kilograms of sample left. Place the final sample into the remaining pail labelled A.
- Repeat the procedure for each truckload of grain that is going into the same bin.
- When the bin is full, thoroughly mix the contents of pail A by hand and reduce the sample as outlined in Step 2. Keep in mind that for most purposes, you will need enough grain to make 1-kilogram samples.
- Place the final sample or samples in sealed containers and label each container to show the bin it represents.
- Preparing a composite sample of multiple bins:
- To prepare a composite sample from multiple bins, select a single sample that represents each bin and combine them in a pail. Mix the sample thoroughly and reduce it as outlined in Step 2. For most purposes, you will need enough grain to make 1-kilogram samples.
- Definitions:
- Composite sample - A composite sample is composed of a number of distinct portions, each obtained in a prescribed manner from consecutive samples. The portions are blended to make the composite.

- Representative sample - Grades are based on samples. To ensure samples adequately reflect the entire lot of grain, proper sampling procedures must be used.

Step 3 – Establishing Grade

Producer can submit sample to the Canadian Grain Commission or to a grain merchant to determine the grade and quality of the commodity (a table of the fees can be found in Appendix I). If there is any dispute on grade or quality the Canadian Grain Commission has final say. The Canadian Grain Commission sets the standards for grading and ensures that commodities are properly graded. [37]

Step 4 – Use a Licensed Intermediary

Ensure the producer is dealing with a company that is licensed with the Canadian Grain Commission. The Canadian Grain Commission is there to protect the producer. As a requirement of the *Canada Grain Act*, elevators and grain dealers must be licensed by the Canadian Grain Commission. As a condition of licensing, an elevator or grain dealer must provide security to the Canadian Grain Commission. This security is used to compensate producers in the event they are not paid for the grain they deliver to the licensed company.

The following website will give you a list of all companies licensed with the Canadian Grain Commission. http://www.grainscanada.gc.ca/licensee-licence/licensed-agreees-eng.htm

Step 5 – Marketing

Once grade is determined the producer can proceed to market their commodity. In Canada grain is marketed by Metric tonne, in the United States grain is marketed based a Short Ton the difference is as follows. For these purposes we will be talking in Metric tonne.

US short ton (907Kgs) = 2000 pounds
Canadian tonne – metric tonne (1000Kgs) = 2204 pounds

Price for commodities are based off the futures market, for example canola is traded off the ICE futures market. To derive a net price the producer must do the following; all prices are based on price per metric tonne.

Future price + Basis - Trucking Cost = Net Price

[37] http://www.grainscanada.gc.ca/oggg-gocg/2012/oggg-gocg-2012-eng.pdf

Definition:

Future Price - The price at which the two participants in a futures contract agree to transact at on the settlement date.

Basis – Freight, elevation and cleaning basically it is the cost of selling a tonne of grain. Basis can also be a signal of when to sell. Basis can be positive and negative, in some situations you may receive a positive basis if the market is needing a commodity at a certain time or the company is being aggressive and wants to buy tonnes.

Trucking Cost – Cost of grain to be trucked to market, generally the producer is charged to haul the grain to market but in some cases the producer can get a FOB price. FOB stands for Freight on Board which means the company is picking up the cost of trucking.

Net Price – Final price the producer will receive for his tonne of grain

Example 1:

Producer wants to market 42 metric Tons of canola in Yorkton, he is looking to move it in April 2013. The May 2013 futures is $638.30/tonne the current basis is a positive $10/tonne and it will cost the Producer $10/tonne to ship.

Future price ($638.3) + Basis (+10) – Trucking (10) = $638.20/tonne net to Producer

Example 2:

Producer wants to market 42 metric Tons of canola in Yorkton, he is looking to move it in April 2013. The May 2013 futures is $638.30/tonne the current basis is a negative $10/tonne and it will cost the Producer $10/tonne to ship.

Future price (638.30) + Basis (-10) - Trucking (10) = $618.30/tonne net to Producer

Step 6 – Harvesting

Producers should ensure that the grain is harvested at the proper moisture. This cannot always happen due to weather issues so if grain is harvested at higher moisture than preferred it is up to the producer to dry or aerate the grain until it has reached a safe level for storage. It is also important that a grain needs to be cooled after it is harvested as it may be dry however if harvested at high temperatures this can also cause grain to heat and go

out of condition. The following chart is what is considered dry by the Canadian Grain Commission standards.

Grain Moisture Chart

Crop	Dry Moisture
Wheat	14.5%
Winter Wheat	14.50%
Malt Barley	13.50%
Feed Barley	14.80%
Peas	14%
Lentil	14%
Flax	10%
Canola	10%
Mustard	10%

Step 7 – Storage

The producer is responsible to maintain the condition of the grains and oilseeds in on farm storage until the buyer calls for the commodity. Grains and Oilseeds need to be stored properly in order to preserve their condition. Grain and Oilseeds need to be cooled to prevent molds or to prevent heating which would cause the commodity to spoil and go out of condition. The commodity can be cooled by way of aeration or by transferring the grain to another bin. This is something that some producers lose sight of once harvest is complete, it is essential to monitor your grains and oilseeds regularly.

Step 8 – Buyer calls for commodity

It is typically up to the producer to find a trucking company to haul the commodity to the buyer but some buyers will provide a trucking company to move the commodity. Once commodity has reached the buyer it will be tested for moisture and graded again to ensure that the representative sample matches what the producer has delivered. Dockage will be assessed at this time. Dockage is described as weed seeds, weed stems, chaff, straw, or grain other than wheat, which can be readily removed from the commodity by the use of appropriate sieves and cleaning devices; also, underdeveloped, shriveled and small pieces of grain removed in properly separating, properly rescreening, or recleaning. Once this has occurred the producer will be paid for his grain.

Wheat/ Red Winter Wheat

These crops have the same bushels per tonne, there are 36.744 bushels of wheat/Winter wheat in a metric tonne. Each commodity weighs 60 pounds per bushel. There are many

different types of wheat, best to pick the one that best suits your area and the market that you are looking at.

Canadian load is typically 42 metric tonnes = 1,543 bushels of wheat, it would take 35 acres to produce one truck load of wheat at a 45 bushel average yield

US loads are typically 28 metric tons = 1,028 bushels of wheat, this would take 23 acres to produce one truck load of wheat at 45 bushels average yield.

Canola & Mustard

These two crops have the same bushels per tonne, there are 44.092 bushels in a Metric tonne of canola/mustard

A typical Canadian bound load of Canola/Mustard is 42 Metric tonnes = 1851 bushels it would take 46 acres at 40 bushels per acre to make up a load.

A typical US bound load of Canola/Mustard is 28 Metric tonnes = 1234 bushels it would take 31 acres at 40 bushels per acre to make up a US destination load.

Barley

There is 45.93 bushels of Barley in a Metric tonne. Barley weighs 48 pounds. There are several forms of Barley, there is Malt barley, feed barley and hull less barley.

A typical Canadian load of Barley is 42 metric tons = 1929 bushels it would take 29 acres at 65 bushels per acre to make up a load.

Flax

There is 39.37 bushels in a Metric tonne of Flax. Flax weighs 56 pounds per bushel

A typical Canadian load of Flax is 42 Metric tonnes = 1654 bushels and at 30 bushels per acre it would take 55 acres to produce a full load.

Peas/Lentils

There is 36.77 bushels of peas/lentils in a Metric tonne. Peas/lentils weigh 60 pounds per bushel

A typical Canadian load of Peas/Lentils is 42 metric tonnes = 1543 bushels per load and it would take 39 acres at 40 bushels per acre to produce a load. To produce a load of lentils it would take 61 acres at 25 bushels average yield.

Bushel Equivalents Per Tonne

GRAIN	EQUIVALENT
Wheat	36.7440
Oats	64.8420
Barley	45.9300
Rye	39.3680
Flaxseed	39.3680
Canola/Rapeseed	44.0920
Corn	39.3680
Faba Beans [2]	36.7440
Soybeans	36.7440
Peas	36.7440
Lentil	36.7440
Buckwheat	45.9300
Mustard Seed	44.0920
Canary Seed	44.0920
Sunflower Seed	73.4870
Triticale [1]	42.3960
Beans (White) [2]	36.7440

Standard lbs per Bushel

Crop	lbs.	Crop	lbs.
Barley	48	Lentils	60
Feed Bean	60	Oats	34
Canola	50	Peas	60
Chickpeas	60	Rice	45
Corn Shelled	56	Sorghum	56
Corn Ear	70	Soybean	60
Corn Sweet	50	Sunflower	24
Flax	56	Wheat	60

General Grain Information

Acre X 0.405 = hectares

Hectare X 2.47 = acres

Organic Crops

Organic Crop Returns

There is potential for NWO producers to consider organic growing especially considering that if fallow lands or lands used for grazing that has not been treated for several years they will be considered organic. Northwestern Ontario has significant volume of fallow lands for consideration.

Crop	Yield	Price	Estimated Gross Margin
Soybeans	30 bu/ac	$16/bu	$281/ac
Corn	98 bu/ac	$7.25/bu	$375/ac
Winter Wheat	60 bu/ac	$8.25/bu	$251/ac
Spelt	1.1 tonne/ac	$400/tonne	$186/ac

Non-Organic Crop Returns

Crop	Yield	Price	Estimated Gross Margin
Soybeans	40 bu/ac	$8.00/bu	$131/ac
Corn	130 bu/ac	$4.00/bu	$146/ac
Winter Wheat	75 bu/ac	$4.50/bu	$162/ac

The demand for organic products in Canada has been growing over the past 5 years and the grain prices are typically 2-3 times higher than conventional grain prices. However organic crops are not for everyone, it can be a big commitment to convert a field and require a lot of records in order to be certified organic. The average time period to convert to organic is about 2-3 years and the crops grown in that field during that time will not get premium prices. Therefore the best crops to use as transitional crops are cereals and hay. [38]

Primary Research – Customers for NWO Specialty Crops

Methodology

To determine the potential customers for any of the specialty crops a list of potential buyers was developed. When considering for the relatively small output from producers in Northwestern Ontario it was decided that the focus would be on potential customers in Southern Ontario, Manitoba and the U.S. Midwest. A telephone survey was completed with over 50 potential customers. A copy of the telephone survey questions are contained in Appendix C.

Primary Research Findings

The results of this research are found in Table A at the end of this section of the report. The Table contains those customers willing to purchase some or all of the specialty crops under consideration. Also listed below are those companies that not interested in purchasing these products or purchasing directly from small producers.

[38] http://www.omafra.gov.on.ca/english/crops/field/news/croptalk/2007/ct-0307a2.htm

NO	Company Name Location Type of Business	QUESTION 1 a. Products/Commodities currently handled b. Would you consider buying any of the crops we are studying	QUESTION 2 a. Typical volume purchased from farmer b. Would you buy from NWO farmers c. Min/Max	QUESTION 3 a. How to determine price b. Pricing history	QUESTION 4 a. Specific dates/times to buy b. Do the dates vary c. How do farmers connect with you and how does the buying process work	QUESTION 5 a. State the product must be in b. Handling requirements/limitations c. Transportation mode available
1	Koch Grain Elevators Ltd. Earlton, ON Elevator, Dealer	a. All grains and oil seeds b. Chickpeas Lentils Peas Soft Red Winter Wheat Canola	a. 3000 Bushels b. Yes c. Min: 20 Tonnes Max: Depends on space	a. Depends on contract	a. All year round b. No c. Phone or email	a. Raw b. No c. Rail and Road
2	Glencoe Grain and Seed Glencoe, ON Elevator, Dealer	a. Oats Wheat Some Peas No pulse or special crops b. Peas Hard White Spring Wheat Soft Red Winter Wheat	a. 1000-3000 Bushels b. Yes c. Min: 250 bushels, 1,000-25,0000 Max: Depends on space	a. CBOT b. Cash basis	a. All year round b. Yes c. Phone or email	a. Raw- no bagging just bulk b. No- 10-13% moisture c. Road and rail, does have access to seaport
3	Grantt Elevators New Liskard, ON Farm, Grain Peeler	a. Anything b. Chickpeas Lentils Peas Hard White Spring Wheat Durum Wheat Soft Red Winter Wheat Flaxseed Canola	a. Truck loads- 20 to 40 tonnes b. Yes c. Min: 20 tonnes Max: 44 tonnes	a. Straight cash basis, contracts, consignment b. CBOT	a. All year round b. No c. Call directly	a. Bulk b. Trucks only- 44 tonnes max c. Trucks
4	Alliance Grain Traders SK Trading, Milling, Processing	a. Peas Beans Seeds Lentils b. Chickpeas Lentils Peas Mustard Seed Canola	a. 5-10,000 b. Yes c. Min: 1000	a. CBOT, Cash Basis	a. All year round b. No c. Contact trading and merchandising department	a. Bulk b. No c. Road, Rail and Seaport

NO	Company Name Location Type of Business	QUESTION 1 a. Products/Commodities currently handled b. Would you consider buying any of the crops we are studying	QUESTION 2 a. Typical volume purchased from farmer b. Would you buy from NWO farmers c. Min/Max	QUESTION 3 a. How to determine price b. Pricing history	QUESTION 4 a. Specific dates/times to buy b. Do the dates vary c. How do farmers connect with you and how does the buying process work	QUESTION 5 a. State the product must be in b. Handling requirements/limitations c. Transportation mode available
5	Labonte Seed Ltd. New Liskard, ON Processor	a. Soybeans Canola Corn Cereals Flaxseed b. Peas Hard White Spring Wheat Durum Wheat Soft Red Winter Wheat Flaxseed	a. 1,000-20,000 b. Yes c. No min or max	a. Depends on market, cash basis	a. All year round b. Weather dependent c. Call directly	a. Raw, bulk b. No rail or sea c. Truck
6	Linear Grain	a. Corn Oats Canola Soy Beans Wheat Barley b. No	a. Depends on Farm b. Yes c. Min: 1000 Bushels	a. CBOT	a. All year round b. Depends on harvest and weather c. Contract from trader	a. Raw, Bulk b. No c. Rail and Road
7	Parrish & Heimbacker Mississauga, ON	a. Chickpeas Canola Oats Wheat b. No pulses or special crops Chickpeas Peas Hard White Spring Wheat	a. 3-10,000 b. Yes c. Min: 3,000	a. CBOT	a. All year round b. No, depends on harvest and markets c. Call elevator directly	a. Bulk b. No c. Rail, road and sea
8	HyLife Broqerie, MB Feedmill	a. Feed grain b. Lentils Peas Hard white spring wheat Durum wheat Soft red winter wheat	a. 460,000 b. n/a c. no max or min	a. Depends on the market, encourage them to call around and compare	a. No b. No c. Call directly	a. Bulk b. Only trucks

NO	Company Name Location Type of Business	QUESTION 1 a. Products/Commodities currently handled b. Would you consider buying any of the crops we are studying	QUESTION 2 a. Typical volume purchased from farmer b. Would you buy from NWO farmers c. Min/Max	QUESTION 3 a. How to determine price b. Pricing history	QUESTION 4 a. Specific dates/times to buy b. Do the dates vary c. How do farmers connect with you and how does the buying process work	QUESTION 5 a. State the product must be in b. Handling requirements/limitations c. Transportation mode available
9	BroadGrain Commodities Toronto, ON Trader	a. Canary Mustard Peas Edible beans Lentil b. Chickpeas Lentils Peas Mustard seed Canola	a. 1000 bushels, or whatever the farmer can provide b. Yes c. Min 1000	a. CBOT, Cash basis pricing	a. All year round b. No, depends on weather and harvest c. Call directly	a. Bulk b. No c. Roads, rail and sea
10	Filmore Seeds Inc. Filmore SK Processor	a. Seeds Peas Legumes b. Chickpeas Lentils Peas Flaxseed Mustard seed Canola	a. Varies greatly b. Yes c. Minimum: truckload No max	a. Cash basis	a. All year round b. No, depends on existing stocks and markets c. Call directly	a. Bulk b. No c. Rail and road
11	Columbia Seed Ltd. Vauzhall, BC	a. Corn Soybeans Wheat b. Chickpeas Lentils Peas Flaxseed Mustard seed Canola	a. n/a b. n/a c. min: truckload, max: depends on storage	a. cash basis, futures market	a. all year b. no, depends on market c. Call directly	a. Bulk b. No c. Road and rail
12	Ferguson Bros St. Thomas, ON Elevator	a. Corn Soybeans Wheat b. Chickpeas Lentils Peas Millhouse barley Soft red winter wheat Canola	a. 1,000-50,000 bushels b. Yes c. Min: truckload, no max	a. Cash basis, CBOT b. See CBOT, do not keep records	a. Buy all year round b. No c. Call directly	a. Bulk b. Must be less than 15% moisture of buying changes c. truck

NO	Company Name Location Type of Business	QUESTION 1 a. Products/Commodities currently handled b. Would you consider buying any of the crops we are studying	QUESTION 2 a. Typical volume purchased from farmer b. Would you buy from NWO farmers c. Min/Max	QUESTION 3 a. How to determine price b. Pricing history	QUESTION 4 a. Specific dates/times to buy b. Do the dates vary c. How do farmers connect with you and how does the buying process work	QUESTION 5 a. State the product must be in b. Handling requirements/limitations c. Transportation mode available
13	Blue Hill Processors Avonlea, SK Elevator	a. Peas Beans Lentils b. Chickpeas Lentils Peas Flaxseed	a. 5-50,000 bushels b. Yes c. No max or min	a. Cash basis, depends on market b. CBOT	a. All year round b. No, varies mostly on weather and variables competition faces c. Call directly	a. Bulk b. No c. Roads or rail
14	Deifenbaker Seeds Elbow, SK Seed processor	a. Peas Beans Lentils b. Same as normally handled	a. 1-10,000 bushels depending on production b. Yes c. . No max or min	a. Cash basis, depends on market b. No records	a. Buy more between harvests to supplement production b. No c. Call directly	a. Raw, bulk b. No c. Rail and truck
15	Bell Pulse Bellevue, SK Trader/Processor	a. Lentils Chickpeas Peas Hard white spring wheat Flaxseed Mustard seed Canola b. Chickpeas Lentils Peas	a. No typical volume b. Yes c. No max or min	a. Cash basis pricing b. N/A	a. Buy all year round b. No, depends on variables such as weather, drought, etc	a. Bulk b. No c. Rail and truck
16	Best Cooking Pulses Rowatt, SK Trader/Processor	a. Chickpeas Lentils Peas Canola b. Chickpeas Lentils Peas Flaxseed Mustard seed Canola	a. 1-20,000 bushels b. Yes c. Min: 500, no max	a. Cash basis b. See futures market	a. No b. No c. Call directly	a. Bulk b. No c. Road and rail

NO	Company Name Location Type of Business	QUESTION 1 a. Products/Commodities currently handled b. Would you consider buying any of the crops we are studying	QUESTION 2 a. Typical volume purchased from farmer b. Would you buy from NWO farmers c. Min/Max	QUESTION 3 a. How to determine price b. Pricing history	QUESTION 4 a. Specific dates/times to buy b. Do the dates vary c. How do farmers connect with you and how does the buying process work	QUESTION 5 a. State the product must be in b. Handling requirements/limitations c. Transportation mode available
17	Bornhorst Seeds Ltd. Briecrest, SK Trader	a. Flaxseed Mustard seed Chickpeas Lentils b. Chickpeas Lentils Peas Hard white spring wheat Flaxseed Mustard seed Canola	a. 5,000 b. Yes c. No min or max	a. Cash basis b. No history	a. No b. No c. Call for pricing	a. No b. No, pure trader doesn't have facilities c. Rail, water, road
18	Walker Seeds Saskatoon, SK Traders	a. Lentils Chickpeas Mustard seed b. Chickpeas Lentils Peas Flaxseed Mustard seed Canola	a. no typical b. yes c. no max or min	a. n/a b. see email printout	a. no b. no c. call trader	a. bulk b. no facilities c. contract out all modes
19	Keystone Grain Winkler, MB Trader/Processor	a. All types, mostly cereal grains b. Lentils Peas Hard white spring wheat Flaxseed Mustard seed Canola	a. 20-1000,000 tonnes b. Yes c. No max or min, but no less than a truckload	a. Cash basis b. No info – see futures market	a. No b. No – depends on whether and markets c. Call directly	a. Bulk b. No c. Roads and rail
20	S.S. Johnson Seeds Ltd. Arborg, MB Trader	a. Lentils Peas Beans b. Chickpeas Lentils Peas Hard white spring wheat Flaxseed Mustard seed Canola	a. Any and all b. Yes c. No max or min	a. Futures cash basis b. None on record	a. No b. No c. Call directly	a. Bulk b. No facilities c. Can outsource to any type of facility

NO	Company Name Location Type of Business	QUESTION 1 a. Products/Commodities currently handled b. Would you consider buying any of the crops we are studying	QUESTION 2 a. Typical volume purchased from farmer b. Would you buy from NWO farmers c. Min/Max	QUESTION 3 a. How to determine price b. Pricing history	QUESTION 4 a. Specific dates/times to buy b. Do the dates vary c. How do farmers connect with you and how does the buying process work	QUESTION 5 a. State the product must be in b. Handling requirements/limitations c. Transportation mode available
21	Mobile Grain Regina, SK	a. Mostly cereal grains, but some specialty crops b. Lentils Peas Hard white spring wheat Durum wheat Soft red winter wheat Canola	a. 20 – 10,000 tonnes b. Yes c. No max or min	a. Cash basis b. Not available	a. No b. No c. Call directly	a. Bulk b. No facilities c. All outsource
22	Southland Pulse Inc. Estevan, SK Trader	a. Peas Beans Lentils b. Chickpeas Lentils Peas Flaxseed Mustard seed Canola	a. Any and all b. Yes c. No max or min	a. Futures cash basis b. n/a	a. No b. No c. Call directly	a. Bulk b. No facilities c. Outsourced
23	TW Commodities Swift Current, SK Trader/Processor	a. Mostly wheat and barley b. Hard white spring wheat Durum wheat Soft red winter wheat Flax seed Mustard seed Canola	a. Usually around 5000 tonnes b. Yes c. No max or min	a. Futures cash basis b.	a. No b. No c. Call directly	a. Bulk b. No c. Road and rail, can ship through the port
24	Commodity Specialists Company Minneapolis, MN Trader	a. Corn Cotton Soybeans Wheat b. Lentils Peas Hard white spring wheat Soft red winter wheat	a. 1000-50,000 bushels b. Yes c. No max or min	a. Cash and basis b. No data	a. No b. No c. Contact directly	a. Raw bulk b. No facilities c. Contract out, all modes available
25	Sea Rice Caribbean Miami, FL Traders/Shippers/Millers	a. Lentils only b. Lentils	a. Any and all b. Yes c. No max or min	a. Cash and basis b. See CBOT	a. No b. No c. Call directly, set up Canadian subsidy	a. Bulk b. No facilities, only ships c. All

NO	Company Name Location Type of Business	QUESTION 1 a. Products/Commodities currently handled b. Would you consider buying any of the crops we are studying	QUESTION 2 a. Typical volume purchased from farmer b. Would you buy from NWO farmers c. Min/Max	QUESTION 3 a. How to determine price b. Pricing history	QUESTION 4 a. Specific dates/times to buy b. Do the dates vary c. How do farmers connect with you and how does the buying process work	QUESTION 5 a. State the product must be in b. Handling requirements/limitations c. Transportation mode available
26	Farmer Direct Marketing White Bear Lake, MN Trader	a. Soybeans Corn Wheat b. Hard white spring wheat Durum wheat Soft red winter wheat	a. Varies b. Yes c. No max or min	a. Cash and basis b. See CBOT	a. No b. No c. Call directly	a. Bulk b. Trader/broker only c. Can outsource to any type of facility
27	DK Commodities Eden Prairie, MN Trader	a. Wheat and barley only b. Hard white spring wheat Durum wheat Soft red winter wheat	a. Any and all b. Yes c. No max or min	a. Cash and basis b. See CBOT	a. No b. No c. Call directly	a. Bulk b. Traders only c. Can outsource to any type of facility
28	Grain Millers Inc. Eden Prairie, MN Mill	a. Flax Beans Oats Wheat b. Hard white spring wheat Soft red winter wheat Durum wheat Flaxseed Mustard seed Canola	a. 5-20,000 bushels b. Yes, only organic c. No max or min	a. Cash and basis b. See CBOT	a. No b. No c. Call directly	a. Bulk b. Only certified organic c. Road and rail
29	Huron Commodities Clinton, ON Trader	a. Soybeans only b. None	a. 5-10,000 bushels b. Yes but only soybeans c. No max or min	a. Cash and basis b. See CBOT	a. No b. No c. Call directly, forward contracts only	a. Bulk b. No
30	Greenline Distributors Saskatoon, SK Distributor	a. What they purchase varies b. Will consider buying any type of crop	a. Varies b. Yes c. No max or min	a. Cash basis	a. No b. No. c. Call directly	a. Bulk 50lbs bags

Survey Respondents who were **not** interested

1. Agra Canes, Eston SK
2. FNA Foods, Saskatoon SK
3. Agro-Haribec, Brousard QC
4. St. Lawrence Beans
5. Horizon Argo, Morris AB
6. Paterson Global
7. Ilta Grain, Surrey BC
8. P&H Milling
9. Kraft Canada
10. Robin Hood Multi Foods
11. TG Canada Inc
12. Altman Enterprises, Minnesota
13. Barrett Farm Supply, Barrett MN
14. Beltrami Farms, Beltrami MN
15. Bluegrass Farms of Ohio, OH
16. Brushvale Seed Inc, Breckenridge, MN
17. Colfax Farmers, Colfax ND
18. Farmers Co-Op
19. Crooked Creek Acres,Strathroy, ON

There are a few options for moving goods from the Emo/Rainy River area. Al Mitchell of AgraTactics Agronomy had discussions with a couple companies on behalf of farmers in the Emo/Rainy River area. The following companies showed interest in working with famers in the region.

Koch Grain Elevators Norman Koch (owner)

- They can arrange trucking
- Buy all types of grain/volumes
- Already dealing in Thunder Bay area
- Can arrange to haul to Thunder Bay Terminal/Elevator

Grain Handlers

- Ben Peters (Winnipeg)
- Company based on trucking grain (18 trucks)
- They buy and sell grain that they transport for themselves and customers (market 10 million bushels/year)
- Hauls into the United States or wherever needed

Western Grain By-Products Storage Ltd

- Maurice Mailhot (owner)
- Company is waterside in Thunder Bay
- Buy grains and ship them via seaway
- Does not arrange trucking to Thunder Bay

Morrow Grain Co Ltd

- Al Morrow (owner)
- Buys and Markets all types of grains

Analysis

The research illustrates that there is a market for specialty crops and most customers determine the price through the Chicago Board of Trade (CBOT) or the current cash trading price. Traders, elevators and dealers are those most interested in purchasing from small NWO producers. Most food processors were not interested in purchasing directly from farmers.. One food processor in Minnesota was interested in purchasing direct. The dealers, elevators, millers, processors are market intermediaries and therefore take a % selling price for their role in the path to the final consumer. There are a number of things to consider when assessing the opportunity for specialty crop production the main factors are:

Estimating Revenue

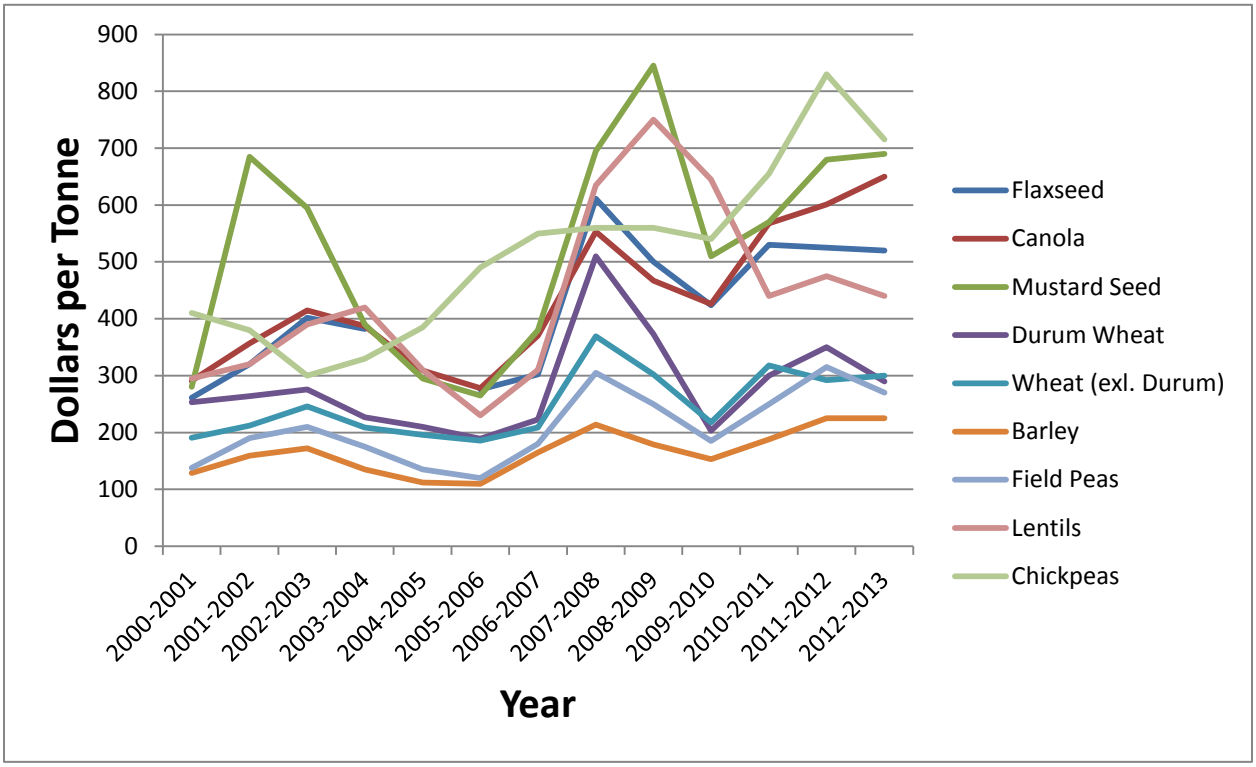
Specialty crops offer the opportunity for producers to achieve higher net incomes but it does require management involvement and planning to mitigate the risks.

Price

No one can predict prices with absolute certainty. There is plenty of information available regarding both market fundamentals and technical information (much of it at little or no cost) to help determine appropriate prices to buy and sell. Historical pricing and the forecasted pricing for each crop is illustrated in the chart below.[39]

[39] * Source: Canadian Major Field Crop Prices- Crop Year Averages from Agriculture and Agri-Food Canada

Figure 2 Specialty Crops - Historical Pricing Data



For cash markets, prices are mainly driven by fundamentals and for futures it is a combination of fundamental and technical signals. Market fundamentals involve a combination of supply and demand factors that are constantly changing. Numerous government and private forecasts and analyses are available to assist in tracking these changes. Demand and supply factors include:

- Weather / natural disasters that can drastically cut production in major production areas.
- Crop harvests / final quantities, quality and timing
- Transportation logistics
- World politics / population growth rates / economic prosperity will all determine consumers' purchasing power
- Currency values
- Consumer preferences / consumption patterns change with price, time and technology
- Changes in government farm programs and payments[40]

[40] http://barley.idaho.gov/pdf/Develop%20a%20Marketing%20Plan%20Dec%2012.pdf

Yields

The information from the Thunder Bay Agriculture Research Station provides information on expected yields. These yields will depend on crop rotation, fertilizing, soil conditions, weather therefore yields will vary and assumptions on revenue should reflect potential ranges of yields. The financial modeling provided allows for producers to indicate optimistic, pessimistic and expected yields to assess risk.

Cost of Production[41]

Cost of production can and should be calculated on a per acre basis when you wish to make a comparison among alternative crops. Use the gross margins analysis to rank the alternatives, where Gross Margin = Gross Revenue (per acre) – minus operating costs (per acre).

For marketing purposes, however, you need to look at production costs on per unit of production basis, i.e. bushels or hundredweight. Again, there are several alternatives. First, the calculation can be done on a whole-farm basis. Simply take the total cost of producing a commodity and divide by the actual or expected yield. For planning purposes using actual production history is recommended. The downside to this approach is that it assumes that cost of production is equal across the farm. A second, preferred alternative is to calculate cost of production for each field or groups of similar fields if your record keeping system allows for this. This is particularly important in looking at cost of production on owned vs. leased ground. If production costs are significantly higher on some rental property, perhaps it's time to renegotiate the lease.

Costs can be categorized a number of different ways. First, there are operating costs. These vary directly with production and include such things as seed, fertilizer, fuel, etc. These inputs are used up during the year and are generally cash expenses. Other inputs, such as tractors and equipment, last for several years and these must be allocated to different enterprises in a way that reflects their change in value (depreciation) over time. For calculating cost of production, management depreciation that uses the expected years of useful life rather than the tax life, is preferred. The type of record system that you use will influence how easy or difficult it is to get this information. These costs need to be allocated to different enterprises based on use.

Another complicating factor in calculating cost of production is how to handle other sources of revenue. For example, wheat and barley produce straw in addition to grain, which also can be

[41] http://barley.idaho.gov/pdf/Develop%20a%20Marketing%20Plan%20Dec%2012.pdf

sold. To know the cost of production for grain independent of the straw price, initially ignore the cost of harvesting straw as well as the revenue. Next, subtract the gross margin for straw from the total per acre costs of wheat or barley and recalculate the cost per bushel or per hundredweight. Production costs can be for the entire farm, one field, or a group of similar fields. Production costs and costs and wheat bushels can be either projected, using historical farm data or actual values for a given year. The average costs of production for various crops from this year's provincial estimates (Ontario has been used where available but because some of the specialty crops analyzed are not grown in Ontario other provincial data has been used – Eastern Manitoba and then Saskatchewan data). Under the Resources section in Appendix G is the link to the Crop Planner Ontario 2013 worksheets where producers can input their own specific production costs or forecasts. See Appendix D for a crop planning worksheet.

Timing

When planning the selling and marketing of specialty crops timing becomes an additional variable to manage. Things to consider include:

- ❑ Consider your personal situation and risk-bearing ability
  1. Farm and family financial situation –What profit level are you aiming for?
  2. What are your cash flow needs?
  3. How much storage capacity do you have available?
  4. Can you keep the product at the moisture levels required by the market?

- ❑ Also consider
  1. Expected production
  2. Your cost of production/break-even prices
  3. Potential transportation efficiencies – are their backhaul opportunities in your area that will substantially lower your transportation costs (fertilizer shipments, delivery of other seasonal commodities or products to your area) this could greatly influence timing.
  4. Market outlook and realistic price expectations
  5. Contingencies – rising and declining prices

- ❑ Then begin to identify decision dimensions
  1. By what **date** would you like to have some pre-harvest sales made?
  2. What **price** is needed pre-harvest versus what would be accepted post-harvest?
  3. Are there some **seasonal price tendencies** you should try to capture?
  4. Should tax considerations play a role in your decision of when to sell?

A basic price with the "farm gate" as the pricing point, that is, the price of the product available at the farm, excluding any separately billed transport or delivery charge.

The Budget Planning Spreadsheets have been gathered to provide an estimated return, breakeven point and risk for the crops in this study. Cost of production are estimated based on the available data and will have to be adjusted to reflect each producer's specific costs.

Financial Analysis Worksheet - Based on 2/3 of TBARS Yields

TBARS YIELDS (2/3)	#1 Desi	#1-9mm	Durum					Soft	Spring	Soybean
CROP	Chickpea	Kabuli Chickpea	Wheat	Peas	Lentils	Flax	Mustard	Winter Wheat	Canola	
REVENUE PER ACRE										
Estimated Yield (bu./ac., lb./ac.) (A)	36.08	33.71	32.58	44.07	26.99	29.61	14.24	45.74	23.73	42.00
Est. On Farm Market Price/bu., lb. (B)	16.20	21.00	7.95	7.12	12.00	12.70	13.20	6.40	12.73	11.10
Estimated Gross Revenue/ac (AxB)=C	**584.46**	**707.99**	**259.01**	**313.77**	**323.84**	**376.08**	**187.96**	**292.72**	**302.04**	**466.20**
EXPENSES PER ACRE										
Variable Expenses/acre										
Seed	36.10	69.00	28.00	39.88	32.50	22.00	14.00	47.00	49.00	44.00
Fertilizer	13.60	13.60	73.50	13.25	13.25	44.00	59.00	81.00	77.00	28.00
Chemical*** -Herbicides/Fungicides	43.85	43.85	42.70	51.61	51.61	22.00	26.00	23.00	12.00	36.00
Machinery Operating -Fuel	22.00	22.00	17.95	17.69	17.80	24.00	11.00	24.00	17.00	19.55
-Repair/Mtce	9.44	9.44	10.00	10.50	11.00	19.00	16.00	19.00	17.00	15.90
Labour	15.00	15.00	26.25	28.25	28.25	54.00	44.00	54.00	31.00	32.85
Crop Insurance Premium	33.09	53.69	13.21	13.79	17.19	0.00	7.00	12.00	14.00	0.00
Trucking	43.20	40.37	39.01	52.77	32.32	33.10	14.21	54.77	23.68	50.29
Utilities and Miscellaneous	5.47	5.47	7.75	8.25	7.75	3.00	0.00	7.00	4.00	0.00
Interest on Variable Expenses	3.75	5.60	5.43	4.38	4.27	4.00	5.00	9.00	4.00	4.00
Total Variable Expenses (D)	**225.50**	**278.02**	**263.80**	**240.37**	**215.94**	**225.10**	**196.21**	**330.77**	**248.68**	**230.59**
Other Expenses/acre										
Building Repair, Depreciation & Investment	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96
Property Taxes	5.27	5.27	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35
Business Overhead	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
Machinery Depreciation	23.60	23.60	35.00	35.00	35.00	33.00	27.00	33.00	30.00	30.00
Machinery Investment	7.67	7.67	8.75	8.75	8.75	8.75	8.75	8.75	8.75	15.00
Land Investment	19.69	19.69	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Storage Costs	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	22.00
Interest on Term Loans	16.00	16.00	16.00	16.00	16.00	16.00	19.00	16.00	15.00	15.00
General Fixed Costs	12.00	12.00	12.00	12.00	12.00	12.00	5.00	12.00	12.00	12.00
Total Other Expenses (E)	**91.25**	**91.25**	**103.12**	**103.12**	**103.12**	**101.12**	**91.12**	**101.12**	**97.12**	**121.85**
Total Expenses (D+E+F)=(G)	**316.75**	**369.27**	**366.92**	**343.49**	**319.06**	**326.22**	**287.33**	**431.89**	**345.80**	**352.44**
Fallow Variable Cost (H)****	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fallow Total Expense (I)****	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Rotation Expense (G+I)=(J)	**316.75**	**369.27**	**366.92**	**343.49**	**319.06**	**326.22**	**287.33**	**431.89**	**345.80**	**352.44**
RETURNS PER ACRE										
Return over Variable Expenses (C-D-H)	**358.96**	**429.97**	**-4.79**	**73.40**	**107.90**	**150.98**	**-8.25**	**-38.05**	**53.36**	**235.61**
Return over Total Rotation Expenses (C-J)	**267.71**	**338.72**	**-107.91**	**-29.72**	**4.78**	**49.86**	**-99.37**	**-139.17**	**-43.76**	**113.76**
BREAK-EVEN YIELD (lbs. or bu. per acre)										
To Cover Variable Expenses	**13.92**	**13.24**	**33.18**	**33.76**	**17.99**	**17.72**	**14.86**	**51.68**	**19.54**	**20.77**
To Cover Total Rotation Expenses	**19.55**	**17.58**	**46.15**	**48.24**	**26.59**	**25.69**	**21.77**	**67.48**	**27.17**	**31.75**
BREAK-EVEN PRICE (per lb. or bu.)										
To Cover Variable Expenses	**6.25**	**8.25**	**8.10**	**5.45**	**8.00**	**7.60**	**13.78**	**7.23**	**10.48**	**5.49**
To Cover Total Rotation Expenses	**8.78**	**10.95**	**11.26**	**7.79**	**11.82**	**11.02**	**20.18**	**9.44**	**14.57**	**8.39**

Financial Analysis Worksheet - Based on Provincial Average Yields

PROVINCIAL AVERAGES CROP	#1 Desi Chickpea	#1-9mm Kabuli Chickpea	Durum Wheat	Peas	Lentils	Flax	Mustard	Soft Winter Wheat	Spring Canola	Soybean
REVENUE PER ACRE										
Estimated Yield (bu./ac., lb./ac.) (A)	19.13	21.40	43.00	39.00	17.82	28.00	23.33	76.00	40.00	42.00
Est. On Farm Market Price/bu., lb. (B)	16.20	21.00	7.95	7.12	12.00	12.70	13.20	6.40	12.73	11.10
Estimated Gross Revenue/ac (AxB)=C	**309.85**	**449.40**	**341.85**	**277.68**	**213.80**	**355.60**	**308.00**	**486.40**	**509.09**	**466.20**
EXPENSES PER ACRE										
Variable Expenses/acre										
Seed	36.10	69.00	28.00	39.88	32.50	22.00	14.00	47.00	49.00	44.00
Fertilizer	13.60	13.60	73.50	13.25	13.25	44.00	59.00	81.00	77.00	28.00
Chemical*** -Herbicides/Fungicides	43.85	43.85	42.70	51.61	51.61	22.00	26.00	23.00	12.00	36.00
Machinery Operating -Fuel	22.00	22.00	17.95	17.69	17.80	24.00	11.00	24.00	17.00	19.55
-Repair/Mtce	9.44	9.44	10.00	10.50	11.00	19.00	16.00	19.00	17.00	15.90
Labour	15.00	15.00	26.25	28.25	28.25	54.00	44.00	54.00	31.00	32.85
Crop Insurance Premium	33.09	53.69	13.21	13.79	17.19	0.00	7.00	12.00	14.00	0.00
Trucking	43.20	40.37	39.01	52.77	32.32	33.10	14.21	54.77	23.68	50.29
Utilities and Miscellaneous	5.47	5.47	7.75	8.25	7.75	3.00	0.00	7.00	4.00	0.00
Interest on Variable Expenses	3.75	5.60	5.43	4.38	4.27	4.00	5.00	9.00	4.00	4.00
Total Variable Expenses (D)	**225.50**	**278.02**	**263.80**	**240.37**	**215.94**	**225.10**	**196.21**	**330.77**	**248.68**	**230.59**
Other Expenses/acre										
Building Repair, Depreciation & Investment	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96
Property Taxes	5.27	5.27	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35
Business Overhead	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
Machinery Depreciation	23.60	23.60	35.00	35.00	35.00	33.00	27.00	33.00	30.00	30.00
Machinery Investment	7.67	7.67	8.75	8.75	8.75	8.75	8.75	8.75	8.75	15.00
Land Investment	19.69	19.69	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Storage Costs	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	22.00
Interest on Term Loans	16.00	16.00	16.00	16.00	16.00	16.00	19.00	16.00	15.00	15.00
General Fixed Costs	12.00	12.00	12.00	12.00	12.00	12.00	5.00	12.00	12.00	12.00
Total Other Expenses (E)	**91.25**	**91.25**	**103.12**	**103.12**	**103.12**	**101.12**	**91.12**	**101.12**	**97.12**	**121.85**
Total Expenses (D+E+F)=(G)	**316.75**	**369.27**	**366.92**	**343.49**	**319.06**	**326.22**	**287.33**	**431.89**	**345.80**	**352.44**
Fallow Variable Cost (H)****	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Fallow Total Expense (I)****	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total Rotation Expense (G+I)=(J)	**316.75**	**369.27**	**366.92**	**343.49**	**319.06**	**326.22**	**287.33**	**431.89**	**345.80**	**352.44**
RETURNS PER ACRE										
Return over Variable Expenses (C-D-H)	**84.35**	**171.38**	**78.05**	**37.31**	**-2.14**	**130.50**	**111.79**	**155.63**	**260.41**	**235.61**
Return over Total Rotation Expenses (C-J)	**-6.90**	**80.13**	**-25.07**	**-65.81**	**-105.26**	**29.38**	**20.67**	**54.51**	**163.29**	**113.76**
BREAK-EVEN YIELD (lbs. or bu. per acre)										
To Cover Variable Expenses	**13.92**	**13.24**	**33.18**	**33.76**	**17.99**	**17.72**	**14.86**	**51.68**	**19.54**	**20.77**
To Cover Total Rotation Expenses	**19.55**	**17.58**	**46.15**	**48.24**	**26.59**	**25.69**	**21.77**	**67.48**	**27.17**	**31.75**
BREAK-EVEN PRICE (per lb. or bu.)										
To Cover Variable Expenses	**11.79**	**12.99**	**6.13**	**6.16**	**12.12**	**8.04**	**8.41**	**4.35**	**6.22**	**5.49**
To Cover Total Rotation Expenses	**16.56**	**17.26**	**8.53**	**8.81**	**17.91**	**11.65**	**12.31**	**5.68**	**8.65**	**8.39**

Transportation Cost Assumptions

	Range - Depending on Mrkt[42]	Assumed Max per Tonne	Bushel Per Tonne	Transport Cost per Bushel	Yield bu/ac	Transport per Acre
Thunder Bay	**$32 - $56**	**44**				
Desi Chickpea			36.744	1.20	36	$ 43.20
Kabuli Chickpea			36.744	1.20	34	$ 40.37
Durum Wheat			36.744	1.20	33	$ 39.01
Peas			36.744	1.20	44	$ 52.77
Lentils			36.744	1.20	27	$ 32.32
Flax			39.368	1.12	30	$ 33.10
Mustard			44.092	1.00	14	$ 14.21
Soft Winter Wheat			36.744	1.20	46	$ 54.77
Spring Canola			44.092	1.00	24	$ 23.68
Soybean			36.744	1.20	42	$ 50.29
Rainy River District	**$36 -$54**	**45**				
Desi Chickpea			36.744	1.22	36	$ 44.18
Kabuli Chickpea			36.744	1.22	34	$ 41.29
Durum Wheat			36.744	1.22	33	$ 39.90
Peas			36.744	1.22	44	$ 53.97
Lentils			36.744	1.22	27	$ 33.05
Flax			39.368	1.14	30	$ 33.85
Mustard			44.092	1.02	14	$ 14.53
Soft Winter Wheat			36.744	1.22	46	$ 56.01
Spring Canola			44.092	1.02	24	$ 24.22
Soybean			36.744	1.22	42	$ 51.44
NOTE: For this region targeting only Winnipeg or Minneapolis not Toronto						
Dryden/Kenora	**$20 - $68**	**44**				
Desi Chickpea			36.744	1.20	36	$ 43.20
Kabuli Chickpea			36.744	1.20	34	$ 40.37
Durum Wheat			36.744	1.20	33	$ 39.01
Peas			36.744	1.20	44	$ 52.77
Lentils			36.744	1.20	27	$ 32.32
Flax			39.368	1.12	30	$ 33.10
Mustard			44.092	1.00	14	$ 14.21
Soft Winter Wheat			36.744	1.20	46	$ 54.77
Spring Canola			44.092	1.00	24	$ 23.68
Soybean			36.744	1.20	42	$ 50.29
NOTE: For this region targeting only Winnipeg or Minneapolis not Toronto						

[42] See Transportation Section for more details

Direct to Consumer

An option local producers can consider to increase potential revenues by eliminating the market intermediaries is selling their crop directly to the final consumer. This is not an option for the wheat, canola and barley crops because they require additional processing. For crops such as lentils, flax seed, chickpeas, mustard seed, and peas there could be an opportunity. Possible sales channels could include: selling at a farmers market in small packages, direct selling to local retailers or restaurants and online sales. Flax seed, lentils and chickpeas are growing in popularity due their health benefits and the changing diets of Canadians.

Clover Valley Farmers' Market in Fort Frances, Ontario operates a very successful Food Box Program focusing on fresh produce. This program is offered not only in Fort Frances but surrounding communities such as Atikokan, Kenora, Nestor Falls. The growth of these programs represents potential outlets for local products and should be explored by producers as one potential outlet for distribution.

The Thunder Bay Country Market is another potential avenue for direct sales. Between 40 and 70 vendors attend every Market day; they are the largest producer-based market in Northwestern Ontario. An average of 6,000 visitors shop for local meats, cheese, eggs, produce, baking, meals and crafts every week. The Market is a sustainable engine of the Thunder Bay economy, with a real impact of close to $5 million on the community.

The research conducted by the Food Security Research Network for the market potential for locally milled flour indicated a strong demand for locally produced food products from both the end consumer and local restaurants. The FSRN is currently undertaking a market research study for locally produced chickpeas. This market information will provide excellent information to local farmers regarding attitudes and market demands for chickpeas.

Although there are distribution and marketing options for selling to consumers in NWO the size of the market is very small. The table below provides a rough estimate of the local consumption of these products.

	Total Domestic Use (tonnes)	Total Human Food (tonnes)	Human Food/Total Consumption
Pulse Crop Consumption	980000	140000	14.286%
	Canada (2011)	Northwestern Ontario (2011)	Population NOW / Population Canada
Population	34,278,400	240,300	0.701%

Crop	Domestic Use	Human Consumption	Human Consumption In NWO
	In Tonnes		
Dry Peas	485,000	69,286	485.71
Lentils	220,000	31,429	220.32
Dry Beans	37,000	5,286	37.05
Chickpeas	53,000	7,571	53.08
Flaxseed*	98,500	14,071	98.64
Mustard Seed*	25,000	3,571	25.04
* the 14% is a generalization as these crops were not included in the initial study			

Crop	Yield (bu/acre)	Production in bushels for 200 acres	Production in Tonnes	NWO Consumption in Tonnes	% of Consumption
Peas	39	7800	212	486	44%
Lentils	17	3400	93	220	42%
Chickpeas	20	4000	109	53	206%
Flaxseed	28	5600	152	99	154%
Mustard Seed	23	4600	125	25	500%

The above table illustrates that with only 200 acres in production for any of these crops, the local market would not be sustainable. Therefore, selling to the local market could be used to test product and packaging but it would not provide the volume needed for the producer to commit to substantial levels of production. There would be greater potential if the producer, a group of producers or another local entity were to add value by processing, packaging and perhaps incorporating the crops as ingredients in other products.

Cooperative Option

Thunder Bay Farm Supply Coop - Discussions with the Manager of the Thunder Bay Farm Supply Coop indicated that from his perspective he does not see the marketing of specialty crops as feasible in this region. There was no interest in exploring a coop model for packaging

and marketing specific crops. Reasons cited were: small volumes, transportation challenges and costs and profitability.

Cloverbelt Local Food Co-op - This Co-op is in the process of organizing as a multi-stakeholder, non-profit co-op for effective marketing and distribution of goods, enticing and uniting area producers by providing opportunities for mentorship, education, and eventually, cost savings on inputs. They are planning to provide one-stop online shopping, with convenient, regularly scheduled deliveries of fresh, locally produced meat, eggs, produce, preserves, and baked goods. They plan to market other goods from within the NWO region, that are not available locally (such as flour, wild rice, maple and/or birch syrup, Boreal teas, and other goods with good shelf life). The organization is in its initial stages but was open to discussions on how they could play a role in the distribution and marketing of locally produced specialty crops.

The pricing information illustrates that the margins increase by going direct but there must be consideration for the increase variable costs (packaging and labour) and the increased fixed costs (marketing, management, sales labour etc). Many producers do not have an interest in marketing and selling but for those that do there may be an opportunity.

	Chickpea	Flaxseed	Lentils	Mustard Seed	Peas
Price for 1lb Bag[43]	3.68	3.44	3.65	5.99	3.49
Farmer price/lb	0.35	0.23	0.20	0.24	0.12
% of cost at retail	10%	6%	5%	4%	3%

[43] See Appendix E for detailed online direct to consumer pricing.

Section 4: Transportation and Infrastructure Analysis

Prepared by Wayne VanderWees, CMA, FCMA, President, Freight Managers Inc.

Definition of the Transportation Opportunity Being Investigated

To examine the different modes of transportation available to ship specialty crops out of the target areas in Northern Ontario to buyers in Winnipeg, Minnesota and Toronto in order to provide guidance in building the most practical and cost efficient system of getting the products to the most profitable market based on the constraints identified

Constraints and Consequences

Geographical Issues

One of the main factors when you deal with any logistic problem in Northern Ontario is the distance that the product has to travel. Below is a chart reflecting the approximate mileage for the different target areas and markets. (Transportation still uses miles.)

From / To	Winnipeg	Minneapolis	Toronto
Kenora	130	429	1,178
Fort Frances	267	295	1,089
Dryden	219	412	1,093
Thunder Bay	440	345	871

Sizes of Shipments

Crop yield cannot be predicted before harvest so the size of shipments will vary from season to season and year to year as well as farmer to farmer. This makes pre planning very difficult.

Seasonality

Unless storage facilities are built to warehouse the product, almost all of the product will be ready at approximately the same time resulting in an uneven demand on transportation services.

Specialized Equipment Requirements

Due to the nature of the bulk product, specialized equipment is most efficient for loading and unloading. This can be either the type of trailer used or the type of loading and unloading equipment required. Specialized equipment requires longer lead times to compensate for its rareness. Loading equipment required for grain trailers will be available on most farms as only a feed auger is required. To load vans with bulk a grain vacuum would be required to blow the grain into the trailer. Used ones can be bought for under $5000. See attached for examples of equipment. If the option is bulk bags, loader forks would be required to load into the back of a semi trailer.

Loading Facilities

The only form of transportation that a farmer can readily load is a grain truck / transport. As we look at other options, (ie rail or non specialized equipment) extra costs for purchasing or renting the equipment required will have to be taken into account.

Commodity Cannot be Mixed

Unless bulk bags are used which can be combined on the same truck, each type, quality and farmer's crop has to be kept separate when shipped in bulk. This will allow individual grading and weighing. As well it protects from a whole load being contaminated if the contamination is only from one source. This also would be a requirement for customs purposes if travelling over the US border. This could mean paying for a full load when there is not a full load to be shipped skewing the approximate price per ton.

Market Locations and Pricing Differential

Different commodity and grades will mean different destinations for the highest price for a load. Locations of actual facilities are not likely side by side or even in the same city so extra mileage calculations would have to be determined for each plant. Once this is done a total cost calculation can be performed to determine highest profit. Pricing is not stagnant and changes over time so what may be the best place to ship in the spring may not be the best place to ship it in the fall.

Cost of Selling Out of Town vs. Using Locally

If the cost of transportation becomes too high, it may become more economical for the farmer to use the grain to feed their own livestock or to sell it to a local feed mill or elevator.

Examination of Different Modes - Overview

Rail

The majority of the grain in Canada is sent by rail. However it tends to be in large quantities and from terminal to port terminal. Like trucking, the railcars are specialized and can only be used for grain. ie if you are sending a load to Toronto, the car will come back west empty. A rail car can hold around 90 tons of material depending on the type of grain you are sending. Loading facilities are required and the receiving terminal must have unload facilities as well. There are 2 major railroads in Canada, CN and CP. If the receiver or shipper receives or ships a car from a different railroad than the track that connects to their yard, extra charges will apply. Availability can be very good or very bad depending if it is grain hauling season. The main problem with rail is that shipping to and from most of the indicated areas will not fit in with their current lanes. When asked to quote, the only lane the railroad provided rates for was Thunder Bay to Toronto.

Road

Road Transport by semi grain trailer has the advantage of, in many of the areas we are looking at, the availability of paying for a one way trip instead of a round trip. As well, the transport can pick up right at the location where the grain is being stored. Quantity shipped is smaller so the cost per ton would be higher on average than rail if round trips were required. Although not as seasonal as rail, availability would still be a concern if all the grain had to be shipped right after harvest.

Another option for road transport is to ship the bulk grain inside of existing van trailers. Especially on lanes where round trips for grain trailers are likely, the use of 53' van trailers would reduce the cost of transport significantly. This would have to be offset with the additional costs of loading the vans with a specialized machine and the ability of the receiver to unload vans.

If there are only small quantities to be shipped, a third option is to use bulk bags. Although the cost per ton will tend to be higher, the minimum of one ton allows more flexibility.

Comparison of Modes vs. Constraints.

Geographical issues

For ease of access in all areas, especially areas that do not have regular grain movements in them, using transport trucks has a definite advantage. The only area in the study where grain cars would be readily available is Thunder Bay. Since both Minneapolis and Winnipeg are within 800 km (sometimes much less) the cost per ton or transferring to rail cars may outweigh any potential savings using rail.

Sizes of Shipments

Since there is not a definite quantity of supply known, all transportation would be on an adhoc basis. A transportation company cannot plan that every year it will have X number of loads from an area so it can look for loads to match it with. There might be zero there might be 5 times as many. As well, there is no guarantee on the size of a shipment. If a farmer only has 10 ton to ship but they have to pay for a railcar that holds 90, the cost per ton just increased 9 times. If the farmer ships it in a trailer that holds 22 ton, the additional cost per ton has only just over doubled. The use of bulk bags will allow for smaller shipments with readily available capacity for smaller quantity crops or selling amounts.

Seasonality

All modes would have the same problems dealing with a large amount of grain at a single point of time. The road would have more of a problem with the availability of trucks where the rail would have the problem of the cars being already booked for grain shipment from the west.

Specialized Equipment Requirements

Rail has the advantage due to a large fleet of grain cars. However this is offset by constraint number 5 that farms are not serviced by rail directly to the farm. Road transport is constrained by the limited availability of grain trailers in our region. If the option of using standard 53' trailers or bulk bags are added into the mix, this restraint would not be a problem on the transportation side, just on the loading side.

Loading Facilities

Grain trailers are the easiest to load with most farmers having the facilities on site. 53' Van trailers can also be loaded on at a farmer's residence but require special equipment to load it such as a grain vacuum. Rail would require renting a spur to load the car as well as paying to

transfer it to the spur from the farmers location. Bulk bags require loading forks to load the units into a van.

Commodity Cannot be Mixed

The ability to ship in smaller load sizes definitely lends itself to truck transport vs rail transport.

Market locations and pricing differential

Since different grains (both quality and type) will have different markets that provide the highest spot prices for the grain, the more nimble and flexible the transportation mode, the greater the chance of the farmer receiving maximum value. The most flexible form bulk bags as small quantities can be shipped through an existing network. Second is trucking with specialized grain trailers due to their ease of loading and unloading. This is followed by 53' vans due to the inability of all receivers to unload, and finally by rail which has a very static structure.

Cost of Selling Out of Town vs Using Locally

With all modes, if the cost becomes too prohibitive, local usage becomes as option and should be examined as a viable alternative.

Recommendations

After examining the different modes of transportation and gathering costs for each market option (at end of section), the following is recommended:[44]

1. During the start-up period, when initial volumes will be low, use bulk bags for small shipments and hopper bottom trailers for larger ones to get the grain to markets. It is important to calculate the cost per ton for the different destinations to determine the highest overall profit for the farmer.

   The problem with relying on limited use grain carriers for larger shipments will be that farmers will have to wait for loads to the farmer's area become available. As grain is often on spot prices, this would be a concern. If the load has to be moved immediately, the rate per ton could double.

2. As volumes increase, and as the availability of grain trailers reaches capacity, examination at that time of loading 53' vans or in some areas rail as an option should be reviewed.

[44] See Appendix G for some key resources

Approx Transportation Costs

Kenora to Markets

Winnipeg

Mode	Approx cost per ton	Total Approx Costs	Approx transport cost	Approx loading cost	Minimum tons	Availability
Hopper bottom	$19.50	$780	$780	0	40	Limited
Van	$41.67	$1,000	$750	$250	24	Good
Rail	Declined	to	rate	NA	NA	None
Bulk Bag	$69.96	$69.96	$69.96	0	1	Good

Toronto

Mode	Approx cost per ton	Total Approx Costs	Approx transport cost	Approx loading cost	Minimum tons	Availability
Hopper bottom	$86.88	$3,475	$3,475	0	40	Very Limited
Van	$108.33	$2,600	$2,350	$250	24	Good
Rail	Declined	to	rate	NA	NA	None
Bulk Bag	$265	$265	$265	0	1	Good

Minneapolis

Mode	Approx cost per ton	Total Approx Costs	Approx transport cost	Approx loading cost	Minimum tons	Availability
Hopper bottom	$68.18	$1,500	$1,500	0	22	Limited
Van	$56.59	$1,245	$995	$250	22	Good
Rail	Declined	to	Rate	NA	NA	None
Bulk Bag	$470	$470	$470	1	1	Good

Thunder Bay to Markets

Winnipeg

Mode	Approx cost per ton	Total Approx Costs	Approx transport cost	Approx loading cost	Minimum tons	Availability
Hopper bottom	$32.50	$1,300	$1,300	0	40	Limited
Van	$63.41	$1,395	$1,145	$250	24	Good
Rail	Declined	to	rate	NA	NA	None
Bulk Bag	$100	$100	$100	0	1	Good

Toronto

Mode	Approx cost per ton	Total Approx Costs	Approx transport cost	Approx loading cost	Minimum tons	Availability
Hopper bottom	$64.50	$2,580	$2,580	0	40	Very Limited
Van	$65.90	$1,450	$1,200	$250	24	Good
Rail	$51.42	$4,628	$4,128	$500	90	Good
Bulk Bag	$180	$180	$180	0	1	Good

Minneapolis

Mode	Approx cost per ton	Total Approx Costs	Approx transport cost	Approx loading cost	Minimum tons	Availability
Hopper bottom	$37.36	$822	$822	0	22	Limited
Van	$56.59	$1,245	$995	$250	22	Good
Rail	Declined	to	quote	NA	NA	None
Bulk Bag	$475	$475	$475	0	1	Good

Dryden to Markets

Winnipeg

Mode	Approx cost per ton	Total Approx Costs	Approx transport cost	Approx loading cost	Minimum tons	Availability
Hopper bottom	$32.50	$1,300	$1,300	0	40	Limited
Van	$52.27	$1,150	$900	$250	24	Good
Rail	Declined	to	quote	NA	NA	None
Bulk Bag	$81.62	$81.62	$81.62	0	1	Good

Toronto

Mode	Approx cost per ton	Total Approx Costs	Approx transport cost	Approx loading cost	Minimum tons	Availability
Hopper bottom	$80.63	$3,225	$3,225	0	40	Very Limited
Van	$108.33	$2,600	$2,350	$250	24	Good
Rail	Declined	to	quote	NA	NA	None
Bulk Bag	$245	$245	$245	0	1	Good

Minneapolis

Mode	Approx cost per ton	Total Approx Costs	Approx transport cost	Approx loading cost	Minimum tons	Availability
Hopper bottom	$61.64	$1,356	$1356	0	22	Limited
Van	$60.23	$1,325	$1,075	$250	22	Good
Rail	Declined	to	quote	NA	NA	None
Bulk Bag	$482	$482	$482	0	1	Good

Fort Frances to Markets

Winnipeg

Mode	Approx cost per ton	Total Approx Costs	Approx transport cost	Approx loading cost	Minimum tons	Availability
Hopper bottom	$36.25	$1,450	$1,450	0	40	Limited
Van	$63.75	$1,530	$1,280	250	24	Good
Rail	Declined	to	Quote	NA	NA	None
Bulk Bag	$81.62	$81.62	$81.62	0	1	Good

Toronto

Mode	Approx cost per ton	Total Approx Costs	Approx transport cost	Approx loading cost	Minimum tons	Availability
Hopper bottom	$80.63	$3,225	$3,225	0	40	Very Limited
Van	$108.33	$2,600	$2,350	$250	24	Good
Rail	Declined	to	quote	NA	NA	None
Bulk Bag	$245	$245	$245	0	1	Good

Minneapolis

Mode	Approx cost per ton	Total Approx Costs	Approx transport cost	Approx loading cost	Minimum tons	Availability
Hopper bottom	$54.55	$1,200	$1,200	0	22	Limited
Van	$53.64	$1,180	$930	$250	22	Good
Rail	Declined	to	quote	NA	NA	None
Bulk Bag	$482	$482	$482	0	1	Good

Assumptions for transportation rates

1. Based on current fuel prices.
2. Loads are based on one way trips, not round trips.
3. Receiver has facility to unload van trailers.
4. “Approx cost per ton” is based on minimum tons.
5. For Bulk bags, prices will decrease 5 to 10% per ton for every extra bag added.
6. Farmers will be able to provide paperwork necessary to cross border for Minneapolis shipments.
7. Deliveries are to Winnipeg, Minneapolis and Toronto proper. Extra charges will apply for added distance.
8. There is no excessive waiting time or demurrage charges will apply.
9. Truck rates are based on a cross section contacted by Freight Manager Ins’s staff. Only the lowest was used.
10. Farmers will pay for freight within 21 days or sooner if required.

Section 5: Opportunities and Recommendations

Assessing the market opportunity for NWO producers to grow specialty crops is challenging for a number of reasons. The challenge lies in the complexity and the multiple variables that can impact viability and profitability. Key Factors:

1. **Yields:** The research conducted by TBARS indicates that there is a clear opportunity to achieve very competitive yields when growing these crops. It is important to note that these yields can only be achieved if the producer follows the best practice guidelines to create the best growing conditions. The use of soil sampling and precision agriculture techniques can be a cost effective method of reducing costs and increasing yields. **RECOMMENDATION:** Read TBARS Annual Report and other documentation and connect with Dr. Tarlok Singh Sakota for additional guidance.

2. **Pricing:** The pricing used in the financial analysis are based on Agriculture and Agri-Food Canada - Outlook for Principal Field Crops 2013. These prices are conservative estimates for the coming season. **RECOMMENDATION:** To monitor pricing for the crops under consideration and discuss the current price expectations with potential buyers, experts and stakeholders. Link to various sites that provide pricing analysis and insight are provided in Appendix G.

3. **Selling Commodities:** There are various approaches to selling specialty crops from NWO. Contact information and details of those interested have been provided in the report. There is also a list of those that would not purchase these products or from small suppliers in our region. **RECOMMENDATION:** Producers should have personal conversations with potential buyers, dealers and elevators to determine best fit (willingness to deal with smaller quantities, connection to potential transportation solutions (some producers own trucks), flexibility, timing, quality expectations and willingness to explore solutions when purchasing from a new region. In the end, successful sales is based on mutually beneficial relationships and it is important to begin discussions. **RECOMMENDATION:** To start discussions with geographically accessible buyers (Winnipeg and Minneapolis) for producers west of Thunder Bay.

4. **Transportation Costs:** There is a wide spread perception that transportation costs significantly inhibit the producers ability to be competitive with specialty crops. The transportation analysis is provides information on the highest potential costs of moving the product to market. Inputting this cost into the financial analysis worksheets indicates that a number of crops at the expected pricing can be very profitable and others are marginal or unprofitable. It is expected that this is the worst case scenario. This cost can be lowered by exploring creative solutions including backhaul opportunities, timing of shipments and cooperating with other producers.

There is a willingness on the part of market intermediaries in Thunder Bay, Winnipeg, Southern Ontario to explore options with interested producers. **RECOMMENDATION:** As the transportation cost can be a significant cost impacting the bottom line, producers should actively pursue all potential solutions and target sales to the most those buyers that are geographically close and where low cost transportation options exist.

5. **Gross Margin Options:** Local markets do not consume enough of these products to support production they do offer the opportunity to test market various packaging and marketing options should a producer, new or existing business or group of producers wish to consider selling direct to consumers, retailers and restaurants. There is also the opportunity to explore potential food products that could include these specialty crops as a key ingredient. The Food Security Research Network's research into the local market for chickpeas will provide additional information on the consumer market. **RECOMMENDATION:** To have discussions with among those farmers interested in pursuing specialty crops and the existing cooperatives and agricultural organizations and explore the interest in moving forward with a small scale pilot project for the marketing and selling of one or two crops. If there is interest and production potential financing for start-up could be sought.

Appendices

Appendix A - Thunder Bay Agricultural Research Station Yield Statistics

High Yielding Varieties at TBARS (2012) - Grain Legumes

Soybean Varieties

Variety	Yield (kg/ha)	Yield Index
TH 32004R2Y	4794	150
SC2375R2	4540	142
HX 007RY32	4476	140
NSC Warren RR*	3198	100

* NSC Warren RR was used as check.

Edible Beans

Variety	Yield (kg/ha)
Pintoba (Brown & white)	4197
Earlired (Red)	3267
Winmore (Brown & white)	3212
Carman (Black)	3032
Portage (White)	2627

Spring Pea Varieties

Variety	Yield (kg/ha)	Yield Index
Sorrento	4168	122
CDC Patrick	3884	114
Fushion	3871	113
CDC Golden (check)	3414	100

Chickpea Varieties

Variety	Yield (kg/ha)
Orion- Kabuli	6006
Luna- Kabuli	5727
Vanguard- Desi	5175

Lentil Varieties

Variety	Yield (kg/ha)
Viceroy	4165
Rosetown	3767
Meteor	3543

High Yielding Varieties at TBARS (2012) - Forages

Alfalfa varieties 2010 dry matter yield (kg/ha)

Variety	2011	2012	Mean	Yield Index
SF 2101	5992	8440	7216	110
CLF 1003	5446	8843	7145	109
54Q32	5471	8614	7043	107
OAC Superior (check)	5381	7752	6567	100

Late timothy dry matter yield (kg/ha)

Variety	Yield	Yield Index
Express	6704	118
Itasca	5936	104
Normax	5928	104
Climax (check)	5692	100

Two cut alfalfa 2009 dry matter yield (kg/ha)

Variety	2010	2011	2012	Mean	Yield Index
Valiant	5817	5960	6161	5979	108
Forecast	5884	5713	6080	5892	106
QS05009	5866	5707	5893	5822	105
OAC Superior (check)	5210	5702	5726	5546	100

Three cut alfalfa 2009 dry matter yield (kg/ha)

Variety	2010	2011	2012	Mean	Yield Index
QS44031	8444	5962	8141	7516	106
Survivor	7828	6424	8082	7445	105
Forecast	8031	6421	7835	7429	105
OAC Superior (check)	7124	6421	7634	7060	100

High Yielding Varieties at TBARS (2012) - Cereals

Wheat performance

Variety	Yield (kg/ha)	Yield Index
Major	4381	117
Tokson (FW)	4209	113
Griffon	4111	110
Richelieu	4046	108
Sable (check)	3740	100

Durum wheat

Variety	Yield (kg/ha)	Yield Index
Hallmark	3371	106
CDC Verona	3325	105
Enterprise	3248	102
Sable (check)	3175	100

US HRS wheat

Variety	Yield (kg/ha)	Yield Index
Prosper	3951	115
WR859CL	3804	111
Barlow	3430	100
Sable (check)	3422	100

Specialty wheat

Variety	Yield (kg/ha)	Yield Index
WR859CL	5072	123
Waskada	5002	122
Minnedosa	4896	119
Sable (check)	4107	100

Triticale

Variety	Yield (kg/ha)	Yield Index
Bumper	4035	127
Taza	3982	125
T-200	3634	114
Sable (check)	3175	100

Barley performance

Variety	Yield (kg/ha)	Yield Index
Amberly	3931	140
Synasolis	3390	121
Synabelle	2903	103
Cyane (check)	2808	100

Specialty barley

Variety	Yield (kg/ha)	Yield Index
CDC Austenson	3334	136
CDC Troy	3113	127
Quest (M122)	2891	118
CDC Coalition (check)	2460	100

Western oats

Variety	Yield (kg/ha)	Yield Index
AC Jordan	3881	97
Summit	3664	92
Dieter	3419	86
AC Rigodon (check)	3985	100

Oat performance

Variety	Yield (kg/ha)	Yield Index
Avatar	3538	136
Nice	3526	136
Dieter	3130	120
Robust (check)	2599	100

Ontario winter wheat

Variety	Yield (kg/ha)	Yield Index
Keldin	4888	111
Priesley	4853	111
Princeton	4285	98
CDC Falcon (check)	4391	100

Manitoba winter wheat

Variety	Yield (kg/ha)	Yield Index
Peregrine	4669	144
CDC Ptarmigan	3998	123
Moats	3932	121
CDC Falcon (check)	3244	100

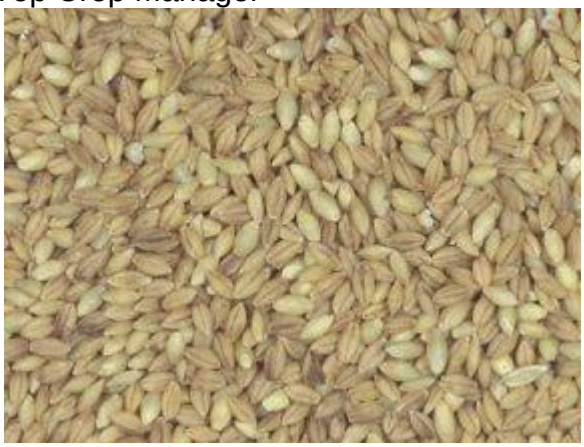
Barley varieties for silage and grain

	....Forage Dry Matter....		.....Grain.....	
Variety	Yield (kg/ha)	Yield Index	Yield (kg/ha)	Yield Index
CDC Haymaker (oat)	5203	215	3450	169
Major (2R)	3900	161	1514	74
CDC Maverick (2R)	3573	148	1394	68
Bentley (2R)	3336	138	1745	86
Oceanik (6R)	3189	132	2272	111
CDC Coalition (2R)	2557	106	2055	101
Conlon (2R)	2112	87	2061	101
Cyane (6R) (check)	2415	100	2040	100

Note: Varieties listed in all Tables are in decending order of yield!

Appendix B - Millhouse Barley

Hulless barley: challenges and prospects -Slow progress made in market development.
by Carolyn King | Feb 2012 AgAnnex.com
Top Crop Manager



CDC McGwire, a two-row hulless barley developed for food and feed markets. Photo by courtesy of Canadian Grain Commission.

Hulless barley has many positive characteristics for feed, food and malt uses. Yet according to the Canadian Wheat Board's 2011-12 Variety Survey, hulless barley is estimated to account for less than one percent of the barley grown in Western Canada. Nevertheless breeders, food scientists, industry development specialists and others continue to work on many fronts to help realize hulless barley's full potential.

Hulless barley is not truly hulless, but the hull is much more loosely held onto the seed than in hulled barley, and the hulls are removed during combining. The absence of hulls means the grain has more nutrients and higher energy per unit weight than hulled barley and it requires less space to store and transport. The absence of hulls also means the seed is more easily damaged during handling, yields may sometimes be lower because the hulls are left in the field, and in some cases food and beverage processing is different than for hulled.

Feed uses: a price problem

Hulless feed barley has higher digestibility, higher protein and energy contents, and lower fibre than hulled barley, but that hasn't been enough to ensure its success yet.

"We started developing hulless barley varieties here at Lacombe in the 1970s," says Dr. Jim Helm, a barley breeder at the Field Crop Development Centre (FCDC) of Alberta Agriculture and Rural Development (AARD). At the time, Helm and other Western Canadian breeders were excited by the potential of hulless feed barley. The first varieties were Scout (released in 1982) and Tupper (1984) from the Crop Development Centre (CDC) at the University of Saskatchewan, and Condor (1988) from FCDC.

Helm notes, "Condor was our first variety, and it quickly took a large part of the acreage. When we released the semi-dwarf, six-row hulless barleys, like Falcon, that really boosted the acreage. But then the producers began to find that buyers would only pay regular barley prices for it, and not what it was actually worth, which caused them to quit growing it."

He explains, "Hulled barley is approximately 15 percent hull, so in 100 truckloads of hulled barley, there are about 15 truckloads of just fibre. So producers should only have to bring 85

truckloads of hulless barley to get the same price as 100 truckloads of hulled. But they are not getting that. Right there they are starting to suffer a 15 percent loss."

The price problem remains today. Helm says, "I think people especially in the hog industry would like to have it, but they still don't want to pay for its value. So you can't get seed growers and regular growers to grow it."

Bill Chapman with AARD's Crop Business Development Branch identifies several challenges for hulless feed barley over the years. "Early yields on the hulless varieties were a little lower than hulled barley. And the price was also a problem. Originally Palliser Grain [a Calgary-based grain trading company] had paid a premium for it because they had developed some premium markets for hulless. But then Palliser went by the wayside. And the feed industry wouldn't give a premium for hulless." He adds, "And then just when the feed market for hulless started to come back, the pork industry went into the tank and prices fell again."

Chapman sees another obstacle. "With our grain industry going to larger terminals, they don't have the small bins anymore for specialty products. And grain shipping is in 50-car or 100-car units for trains. So you won't see a lot of large commercial interests getting into speciality products unless the products have really high premiums attached."

Nevertheless breeders haven't given up on hulless feed barley. For instance, Dr. Joseph Nyachiro, FCDC's breeder for six-row barley and hulless barley, continues to work on improving hulless multipurpose barley that can be used for feed and food. Nyachiro says, "I think hulless barley has potential for further improvements in agronomics, quality and multi-end uses to help capture opportunities that are yet to be exploited."

As well, Helm and others at FCDC are addressing that crucial issue: the price problem. They have been working with the hog and cattle industries on feed value and the advantages of using near infrared reflectance spectroscopy. This rapid, accurate method to measure feed quality allows producers to buy feed based on its quality, not just its weight.

Helm explains, "If livestock producers can actually put a figure on the true value of hulless barley in their feeding operation, and that value is significantly higher than regular barley or wheat, then they can decide if they can pay the grower a little more for hulless barley and still get a better advantage and make more money on the livestock end. That way, the two parts of the industry are working together. That's our hope for future."

Food uses: big potential, some risk, small supply

Western Canadian researchers are working on various aspects of hulless barley for food uses, including developing food products, validating health benefits and breeding better varieties.

For example, Dr. Linda Malcolmson with the Canadian International Grains Institute (CIGI) led a recent project on hulless barley food products. CIGI and AARD's Food Processing Development Centre partnered on this project, with funding from Agriculture and Agri-Food Canada, the Alberta Barley Commission and the Canadian Wheat Board (CWB).

"We thought a flour application might be the easiest way to get uptake of barley ingredients by food manufacturers.

We chose hulless over hulled types because the miller doesn't have that extra step of removing the hull to produce flour from hulless barley. Also, only the hulless types have the high beta-glucan content, and we thought the enhanced soluble fibre would be compelling to food companies [because of the health advantages]," notes Malcolmson.

The researchers used whole grain flour from five hulless varieties: CDC Rattan and CDC Fibar, which are waxy hulless barleys with high beta-glucan contents that were bred for food uses; Falcon, developed as a multipurpose variety; CDC McGwire, which is for both food and feed markets; and Millhouse, a milling variety that can be processed in the same way as wheat.

They developed product prototypes, including bakery products, snack foods, nutrition bars and meat products (flour is added to hold water and to bind the meat). She says, “The products we developed were fantastic. The flavour of barley is unbelievably good. I was quite disappointed that the flavour alone didn’t translate into more motivation for food companies.”

There has been some interest from some smaller food companies. Malcolmson explains: “A large food company doesn’t make a change overnight, whereas a smaller food company is more willing to maybe make a switch or offer a new product.
“But the biggest problem was the hulless supply just wasn’t there. One company in particular was very interested, but they had difficulty sourcing the hulless barley. Unless the supply problem is taken care of, hulless barley is never going anywhere.”

A coalition of barley stakeholders is pursuing another angle – they have submitted a health claim for food barley to Health Canada. Government-approved health claims help consumers make healthy choices and encourage product innovation by food manufacturers. Chapman says barley’s beta-glucan soluble fibre lowers blood cholesterol, reduces the risk of heart disease, helps with weight control, and improves glucose tolerance. He hopes approval of the health claim might increase interest along the value chain in hulless barley for food uses.

“If a company decides to take a chance and champion barley, that could make all the difference for hulless barley,” says Doug Munro of the CWB. But he cautions, “People had hoped that the health claim in the United States would significantly improve the market for food barley, but it doesn’t seem to have impacted it that much so far.” In 2006, the U.S. Food and Drug Administration finalized its approval of a health claim for barley.

Munro adds, “It’s a big investment for food companies to bring a new product along. So, for instance in a product where they could use either oats or barley, they might choose oats because oats are already well known as healthy by consumers.”

The efforts of some small food companies on the Prairies could help spark greater interest in hulless barley. Nyachiro says, “There are some things happening in the niche markets, with companies embracing the use of hulless barley. Right off the top of my head are: Hamilton’s Barley Flour, which has done a great job of making barley flour available to grocery stores; and Progressive Foods Inc., which has made great progress in inventing quick-cooking barley and promoting the use of barley as a healthy food.”
Malting: innovation versus tradition
“I started working on hulless barley for malting over 15 years ago. At that time none of the hulless lines had been bred for malting, but they tended to have not bad malting quality,” says Dr. Michael Edney with the Grain Research Laboratory of the Canadian Grain Commission.

“We analyzed the lines coming through the system for a number of years, and we talked to the malting industry and showed them the potential. Hulless barley has higher extracts (which indicates how much beer can be made). Also, there is less spent grain afterwards and reduced transportation costs for both the barley going to the malt house and the malt going to the brewhouse. The maltsters got excited, but they never got excited commercially.

“Then a few years ago the malting industry finally said, ‘If we were ever to use hulless malt, only certain quality parameters should be worried about.’ So the breeders started breeding specifically for hulless malt. In 2009, Dr. Bill Legge from AAFC in Brandon released a variety called Taylor, and Dr. Brian Rossnagel and Dr. Aaron Beattie from the University of Saskatchewan released a variety called CDC ExPlus. Those varieties had really high extract, low grain protein, no adhering hulls, and low wort beta-glucan. The breeders are continuing to breed hulless barley for malting, mainly concentrating on disease and agronomics. But they are also waiting for commercial demand from maltsters and brewers.”

There have been small bubbles of interest from the industry. Edney gives an example: “In the winter of 2011, some hulless barley was moved into the US and malted as a specialty malt. I heard they were very happy with the final product, especially the craft brewers.”

He thinks several factors are barriers to commercial use of hulless malting barley. “One factor is that the big brewers only have so many silos and they figure they have to keep hulless separate, so they are not sure how to handle hulless malt. Also, to use hulless malt, they need equipment called mash filters and not very many companies in North America have those. Another problem is that hulless barley behaves differently in the malt house because it’s very sticky. For instance when they are moving it between vessels, it sticks to the belt, and it sticks to the vessels when they are trying to empty them. However, they could work around that if there was demand for hulless malt.”
The supply of hulless malting barley is also an issue. Edney says, “Right now, if someone asked me to find even 10 tonnes of one of the new varieties I’d probably have a hard time finding it.”

Helm identifies another challenge. “The brewers really like to stay with tradition. . . . When we release a new [hulled] malting barley that has virtually the same qualities as one of the old ones, the brewers are very reluctant to try it in case somehow the new variety has a slightly different taste or they have to change their process in some way to make it work. I think it would be even harder to get them to use hulless varieties.”

Edney believes the greatest potential for hulless could be with moderate-sized breweries. “A lot of them have mash filters and they are willing to put up with the annoyance of an extra silo if they can make a product that is more economical or more interesting from a marketing perspective.”

He is “cautiously optimistic” about the future of hulless malt barley. “When I did my master’s back in the early 1980s, I worked with Scout, the first hulless barley, and I was feeding that to chickens. There was all this excitement then, but nothing really came of it. So I don’t want to get too optimistic about malting, but we’ll continue to work on it.”

He adds, “Maybe if we keep plugging away at it, eventually we’ll have demand for this unique product. Maybe we need a new name for it. That’s what canola did, and look where it is now!”

Some people already refer to hulless barley as “naked barley.” There’s a name that conjures up marketing possibilities for Naked Barley Nutrition Bars, or Naked Barley Pancakes, or Naked Beer!
Growing hulless barley
Management practices for hulless barley are similar to those for hulled barley. The main differences are in seeding and harvesting practices.

At seeding, the key factor is that the hulless embryo is exposed so it is more easily damaged. Damaged embryos result in lower emergence and poorer competition with weeds. A few years ago, Dr. John O'Donovan, now with Agriculture and Agri-Food Canada, was involved in a three-year study to assess seeding practices for hulless barley. The researchers compared the effects of different seeding rates and depths on emergence for AC Harper (hulled) and Peregrine (hulless) at Beaverlodge, Lacombe, and Fort Vermilion.

"We found generally that, with the hulled variety AC Harper, you needed to seed about 300 seeds per square metre to get 200 to 240 plants per square metre; some of our recent work with hulled malting barley varieties has corroborated that rate. But for the hulless variety Peregrine, you needed to seed 400 seeds per square metre and that was with a seeding depth of about an inch. When we seeded to 2.5 inches deep, emergence of the hulless variety was even lower – we had to seed 500 seeds per square metre to get the target number of plants," says O'Donovan.

He adds, "We also found that emergence tended to be more variable with the hulless variety. You couldn't depend on it as much to get that target number of plants per square metre at a specific seeding rate. That makes sense because damage to the embryo can be variable depending on what processes the seed has gone through."

Bill Chapman with AARD's Crop Business Development Branch says, "Because hulless barley is not as competitive as hulled barley during early growth until tillering, your seeding density should be at the maximum for your moisture level. In the drier parts of Alberta, that's 130 to 150 plants per square metre (13 to 15 plants per square foot). In areas with medium moisture, the range is 180 to 220 plants per square metre, depending on the soil's moisture-holding capacity. With some of the clay soils, you can seed at the high end of that range. You can gain almost three to four days maturity by seeding a little heavier, but if it's too heavy then you'll get a lower percent plump. In wet areas, the range is 250 to 280 plants per square metre."

Chapman also notes, "Because hulless barley is not as competitive, it's important to spray early for good weed control."

For harvesting hulless barley, he advises, "Set your combine like you would for combining wheat because hulless barley is a denser product; it is about 58 to 60 pounds per bushel.

"Also, adjust your cylinder speed and cylinder clearance or spacing to try to remove as many hulls as possible." He explains that commercial users want less than about five percent of the grain to have the hulls attached. Because it can be very difficult to get down to five percent at the combine, some seed cleaners have de-bearders to remove the last few hulls.

Appendix C - Sample of Market Research Questionnaire

Agricultural Marketing Primary Research Survey

Survey begins with short description of the Innovation Centre and a brief explanation of the study.

Company Profile:

Company:	Location:
Name of Individual:	Type of Business:
Position:	Multinational or Independent:
Size:	

Business Practice Questions:

1. Which Products/Commodities do you normally handle?

   a. If you do not currently trade/handle any of the crops we are studying would consider buying/trading?

Chickpeas	
Lentils	
Peas	
Hard White Spring Wheat	
Millhouse Barley	
Durum Wheat	
Soft Red Winter Wheat	
Flaxseed	

Mustard Seed	
Canola	

2. What is the typical volume (bushels/tonnes) purchased from each farmer?

    a. Would you buy small volumes from Northwestern Ontario Farmers?

    b. If yes, what is the minimum and maximum volume you would buy?

Minimum:	Maximum:

3. How do you determine the price you pay to producers?

    a. Pricing History

	Current Price	Average Price YTD
Chickpeas		
Lentils		
Peas		
Hard White Spring Wheat		
Millhouse Barley		
Durum Wheat		
Soft Red Winter Wheat		
Flaxseed		
Mustard Seed		

Canola		

4. Are their specific dates/times of year that you buy from producers?

    a. Do these dates and times vary depending on type of crop?

        i. If so how?

    b. If a producer was interested in selling to you when should they connect with you and how does the buying process work?

5. What is the state or package that you normally receive grain from producers in (raw, cleaned, dried, bagged etc.)

    a. Does your facility have any handling requirements and/or limitations?

    b. What transportation mode(s) are you equipped to handle?

6. Is there any other person(s) or company(s) who you feel would an appropriate referral or follow-up to this discussion?

Appendix D - Sample Crop Planning Worksheet

Ontario

FLAX (GRAIN) ENTERPRISE BUDGET — **Revised: Jan '12**

Number of Acres =	1	Return Per Acre	$95.97
		1 t =	39.368 bu

	Optimistic	Expected	Pessimistic
Yield - bu/ac	40	28	15
Price - $/bu	16.00	12.70	6.00
Production - bu	40	28	15

Insurance Evaluation

Crop Insurance	
C.I. Premium/ac:	0.00
Level of Coverage	0%
Guaranteed Yield/ac.	0.00
Probability of a payout	1.26%
Expected Payout/ac	0.69
Participate in CI? (y/n)	n

Expenses		Unit/Ac	Number	Cost/Unit	$/Acre	$/Year
		-------	------	---------	------	------
Variable Costs:						
Seed		kg	17	1.31	22	22
Seed Treatment		ml			0	0
Fertilizer #1	N	kg	18	1.400	25	25
#2	P	kg	8	1.280	10	10
#3	K	kg	8	1.140	9	9

Herbicide	Unit/Acre	Number	Cost/Unit	$/Acre	$/Year
	-------	------	---------	------	------
Annual Grasses and Broadleaf	kg or l	1	15.00	15	15
Dessicant	kg or l	1	6.75	7	7
Other Herbicides	kg or l	0	0.00	0	0
Insecticides	kg or l	0	0.00	0	0
Fungicides	kg or l	0	0.00	0	0
Crop Insurance	Insurance	0	0.00	0	0
Program Premium		0	0.00	0	0
Custom Work #1	Chem. Application	2	10.20	20	20
#2	Fert. Appl.,mix, delivery	1	10.20	10	10
Drying	tonnes	0.78	0.00	0	0
Storage	tonnes	0	0.00	0	0
Trucking	tonnes	0.71	8.35	6	6
Marketing Fees	tonnes	0.71	0.00	0	0
Twine		1	2.50	3	3

Go to General Costs Allocation Worksheet

		Typical $/Acre	$/Acre	$/Year
Fuel		24	24	24
Mach. Repair & Maint.		19	19	19
Bldg. Repair & Maint.		0	0	0
Labour		24	24	24
General Variable Costs		0	0	0
Interest on	%int	%year		
Operating Capital	4	50	4	4
			---	---
Total Variable Costs			198	198

Fixed Costs:	Typical $/Acre	$/Acre	$/Year
Depreciation	33	33	33
Interest on Term Loans	16	16	16
Long-term Leases	0	0	0
Land Costs	-	-	0
General Fixed Costs	12	12	12
		---	---
Total Fixed Costs		62	62

Revenues:	$/Acre	$/Year
Total Expected Revenues	356	356
less: Variable Costs	198	198
	---	---
Expected Operating Margin	158	158
less: Fixed Costs	62	62
	---	---
Expected Net Revenue	96	96

Break-even $/bu to cover:		
	Variable Costs	7.06
	Fixed Costs	2.21

	Total Costs	9.27

Chance of at least breaking even	==>		67%	
Chance of at least	0	$/acre return ==>	67%	
Risk Indicator - Coefficient of variation		==>	0.62	High Risk

Returns $/acre	Chances of at least this return per acre
310	17 %
191	33 %
96	50 %
1	67 %
-118	83 %

Allocation of General Variable and Fixed Costs

General Variable and Fixed Costs or general overhead costs are those whole farm costs that can be difficult to allocate to a specific enterprise. These costs will show little or no change whether one crop or another is grown. That is to say, your crop mi

Back to the Budget

Total acres of Flax: 1

Transfer General Costs to the Budget

Cost Item	Whole Farm $	Percent allocated to Flax	Total Dollars allocated to Flax	Per acre costs for Flax	Optional: Percent Allocation to other enterprises				Total allocated
					Enterprise 2	Enterprise 3	Enterprise 4	Enterprise 5	
Example: *100 acres of Flax*					*Soybeans*	*Wheat*	*Canola*	*Barley*	
Legal and accounting fees	***$ 1,500.00***	***20%***	***$ 300.00***	***$ 3.00***	***20%***	***20%***	***20%***	***20%***	100%
General Variable Costs	**Whole Farm $**	**Flax**	**Flax**	**Flax**	**Enterprise 2**	**Enterprise 3**	**Enterprise 4**	**Enterprise 5**	
Advertising			$ -	$ -					0%
Electricity and heating fuel			$ -	$ -					0%
Telephone			$ -	$ -					0%
Memberships/subscription fees			$ -	$ -					0%
Office expenses			$ -	$ -					0%
Legal and accounting fees			$ -	$ -					0%
Motor vehicle expenses			$ -	$ -					0%
Small tools			$ -	$ -					0%
Soil testing			$ -	$ -					0%
Licenses/permits			$ -	$ -					0%
Other general variable costs			$ -	$ -					0%
Total General Variable Costs	$ -		$ -	$ -					
General Fixed Costs									
Property taxes			$ -	$ -					0%
Other insurance premiums			$ -	$ -					0%
Other general fixed costs			$ -	$ -					0%
Total General Fixed Costs	$ -		$ -	$ -					

Appendix E - Sample of Online Direct to Consumer Pricing

Direct to Consumer Pricing

Sample online pricing for various package sizes[45]

Chana Dhal Chick Peas (Split Desi)
- lb Package $3.68 CAD
- 50.0 lb PolyBag $116.00 CAD

Garbanzo Chick Peas (Kabuli)
- lb Package $3.58 CAD)

Milled Brown Flax
- Organic 425.0 g Vacuum Foil $8.99 CAD

Brown Flax
- 1lb Package $3.44 CAD
- Organic 1.0 lb Package $3.86 CAD
- Organic 50.0 lb PolyBag $123.50 CAD

Golden Flax
- 1lb Package $3.53 CAD
- 50.0 lb PolyBag $109.50 CAD
- Organic 1.0 lb Package $4.08 CAD
- Organic 50.0 lb PolyBag $132.50 CAD

Golden Milled Flax
- 1.0 lb Package $3.70 CAD
- 25.0 lb PolyBag
- Organic 1.0 lb Package $4.25 CAD

Roasted Golden Flaxseed
- Organic 425.0 g Vacuum Foil $9.99 CAD

Crimson Split Lentils
- 1.0 lb Package $3.65 CAD
- 50.0 lb Paper Bag $114.50 CAD
- Organic 1.0 lb Package $4.06 CAD
- Organic 50.0 lb Paper Bag $131.50 CAD

Laird Green Lentils
- 1.0 lb Package $3.54 CAD
- Organic 1.0 lb Package $4.33 CAD

Brown Mustard Seeds [46]
- 5 lbs - $14.09
- 25 lbs -. $58.09
- 1 lb - $5.99

Shelled Dried Whole Peas
- 5 lbs -$7.54
- 1 lb $3.49
- 50 lbs - $63.09

[45] http://www.quinoa.com
[46] www.bulkfoods.com

Appendix F - Glossary of Terms

The Following is a comprehensive list of specialized terms used in agriculture trading.[47]

Actuals - The physical commodities that are being traded.

Arbitrage - The simultaneous purchase of commodities in one market and sale in the same or different market. Arbitrage is profiting from a discrepancy in prices.

Basis- The difference between the futures price for a commodity and its cash price at a specific location. The nearby futures delivery month is usually used.

- **Basis risk** - Risk of change or variation in the basis.
- **Even basis** - A condition that exists when the local cash price is equal to the futures price.
- **Over basis** - A condition that exists when the local cash price is higher than the futures price.
- **Under basis** - A condition that exists when the local cash price is lower than the futures prices. Also called negative basis.
- **Weakening basis** - Basis movement over time that occurs when the cash price is declining relative to the futures price.
- **Strengthening basis** - Basis movement over time that occurs when the cash price is rising relative to the futures price.

Breakeven price - The price a producer must receive for a commodity in order to recover all of the costs associated with producing and/or storing the commodity.

- **Cash flow breakeven** - The price needed to recover the cash expenditures associated with producing the commodity.
- **Accounting cost breakeven** - The price needed to recover all costs except the opportunity costs (costs for using the producer's labor and capital) associated with producing the commodity.

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http://www.agmrc.org/business_development/getting_prepared/valueadded_agriculture/glossaries_of_terms/commodity-grain-marketing-terms/

- **Economic cost breakeven** - The price needed to recover all costs including the opportunity costs (cost for using the producer's labor and capital) associated with producing the commodity.

Broker - One who executes futures trading orders for customers. The broker may be an employee in a local office of a brokerage firm, or a floor broker or pit broker executing orders on the trading floor.

- **Brokerage** - The fee charged by brokerage firms for the execution of a transaction. Also called commission. This fee may vary from firm to firm.
- **Brokerage house** - An organization that buys and sells for the accounts of customers. Also called Commission House or Wire House.

Cash market - The market in which physical commodities are bought and sold. This term refers not only to elevator companies and processors buying products but also to the organized cash sales at commodity exchanges and over-the-counter cash trading.

Charting - A part of technical analysis for forecasting price movements which analyze past price behavior through the use of charts and graphs.

- **Bar chart** - A graph showing the high, low, and settlement prices for each trading period over time.
- **Moving average** - An arithmetic average (often using closing prices) over a given period of time. The period is constantly moving forward in time so the average reflects only the most recent prices.
- **Linearly weighted moving average** - The more recent prices are given more weight in computing the average.

Coarse grains - Corn, barley, oats, grain sorghum, and rye. Millet is also included in the statistics of some foreign countries. These are generally considered feed grains.

Commodity - Any physical product traded on a futures exchange. A fungible product (each unit is the same).

Consignment - Commodity shipped to a third party for sale by the third party. On Consignment grain - Grain shipped to a broker for sale in the cash market.

Corner - To secure control of a commodity so that its price can be manipulated.

Delivery - The transfer of the physical commodity in satisfaction of a futures contract.

- **Deliverable grades** - Commodity grades that can be delivered to satisfy a futures contract.
- **Delivery month** - The month in which a futures contract matures and delivery may be made or contract settlement made.
- **Delivery notice** - A notice of the intent to deliver or a request to receive delivery of a commodity under the terms of a futures contract.
- **Delivery points** - The locations at which commodities may be delivered to satisfy a futures contract.
- **Quality premium** - The additional payment an exchange specifies for delivery of a commodity of higher than required quality against a futures contract.
- **Tender** - Delivery against a futures position.

Elevator cash contracts - Contracts for the purchase of grain, usually from producers.

- **Basis contract** - An agreement in which grain is delivered and legal title passes to the elevator. The agreement establishes the basis but not the futures price. The producer later selects the day on which he/she wishes to establish the futures price. At that time, the producer will receive the futures price minus the previously agreed upon basis.
- **Delayed payment contract** - An agreement in which the price is established and the grain is delivered but payment is postponed until later. It is used to shift taxable income into the following year.
- **Forward contract** - An agreement requiring the producer to deliver a specific quantity and quality of grain to the elevator at a specified time and location for a previously agreed on price.
- **Hedge-to-arrive-contract** - An agreement where a producer chooses a future contract month and establishes the futures price for grain he/she intends to sell. The basis is established later at the discretion of the producer. The producer's price is the futures price less the basis. Hedge-to-arrive contracts can often be rolled forward to another futures contract month. The elevator performs the hedging transaction.
- **Minimum price contract** - An agreement in which a minimum sale price is established. During the contract period, the producer is guaranteed either the current cash price or the minimum sale price previously established, whichever is greater. In exchange for the

minimum price guarantee the producer must pay a fee similar in size to an option premium.

- **Offer contracts** - A producer signs a contract with an elevator indicating his/her wishes to sell a specific number of bushels of grain any time cash price reaches a designated price.
- **Price-later (delayed price) contract** - An agreement in which grain is delivered and legal title passes to the elevator but price is established later at the discretion of the producer. The price to the producer on any given day is the elevator cash price less a service charge.

Exercise - Action taken when the buyer of a call (put) option converts the option to the purchase (sale) of the underlying futures contract.

- **Exercise price** - The price (strike price) at which an option can be exercised.
- **Expiration** - When an which an option can no longer be exercised.

Exchange rate - The number of units of one currency that can be exchanged for one unit of another currency. The exchange rate affects the price of grain to foreign buyers. For example, a decline (increase) in the value of the US dollar reduces (increases) the price of US commodities for foreign buyers.

- **Devaluation** - An official reduction of the exchange rate of a nation's currency.
- **Fixed exchange rate** - The relative values of currencies are established and maintained by government intervention.
- **Flexible exchange rate** - The value of a country's currency varies and is determined by the supply and demand for the currencies.

Exports - Domestically produced commodities that are sold abroad.

- **Export tax** - A fee charged on exports that is paid to the government of the originating country.
- **Export subsidies** - Special incentives such as cash payments, tax exemptions, preferential exchange rates, and special contracts extended by governments to encourage increased foreign sales.
- **Export license** - A government document authorizing exports of special goods in specific quantities to a particular destination.

Fundamentals - One of two major sets of factors that affect prices. Fundamentals are supply and demand factors that influence prices of commodities. Technical analysis (chart patterns) is the other major set of factors affecting prices.

- **Marketing year** - The twelve month period during which a crop normally is marketed. For example, the marketing year for the 2005 corn crop is from Sept. 1 of 2005 to Aug. 31 of 2006. The year begins at harvest and continues until just before harvest of the following year.
- **Carryover** - The quantity of a grain commodity remaining at end of marketing year.
- **Free supply** - The amount of grain available to the market. It excludes government held grain.
- **Pipeline stocks** - The minimum quantity of a commodity needed to carry on normal processing and marketing operations. Tends to be relatively constant from year to year.
- **Buffer carryover stocks** - Carryover stocks in excess of pipeline stocks that are carried over for use in the next marketing year. Buffer stocks fluctuate substantially from year to year.

Futures contract - A contract traded on a futures exchange that calls for delivery of a standardized amount and quality of a commodity during a specific month. The contract price (per unit of commodity) is established through competitive trading at the organized exchange (i.e, Chicago Board of Trade).

- **First notice day** - The first day on which notice intentions can be made or received to deliver actual commodities against futures contracts. It usually precedes the beginning of the delivery period.
- **Futures contract months** - The delivery months in which futures contracts are traded.
- **Futures premium** - The amount that the price for one futures contract month exceed that of another futures contract month.
- **Last trading day** - The last day of trading in a particular futures or options contract month. Unsettled contracts at the end of the last trading day must be fulfilled by delivery of the physical product or closed through cash settlement procedures if the contract does not permit delivery.
- **Life of contract** - The time period during which a specific contract month has been trading.

- **Maturity** - The period when a futures contract can be settled by delivery of the actual commodity or through cash settlement if that is an alternative to delivery.
- **Nearby delivery month** - The futures contract month closest to maturity.
- **Open contracts** - Contracts that are outstanding. Futures transaction which have not been completed by an offsetting trade, or by delivery or receipt of the commodity.

Futures market - A centralized market where traders buy and sell futures contracts.

- **Clearing house** - A separate agency for the collection and dispersion of margin money and the financial settlement of futures contracts.
- **Commission houses** - Brokerage firms which buy and sell futures contracts for customers. Their earnings come from commissions charged on trades.
- **Floor trader** - An exchange member who personally executes trades on the floor (trading pits) of the trading exchange.
- **Licensed warehouse** - An exchange designated delivery warehouse (elevator) where a commodity must be delivered on a futures contract.
- **Thin market** - A market characterized by few potential traders and few or infrequent trades.
- **Overbought** - A condition in which prices are thought to have increased too much or too rapidly. Can be measured by the Relative Strength Index.
- **Oversold** - A condition in which prices are believed to have declined too far or too rapidly. Can be measured by the Relative Strength Index.
- **Pit** - The location on the trading floor where traders and brokers buy and sell futures or options contracts.
- **Liquidity** - The amount of trading in a particular contract on a given day.
- **Open interest** - The number of outstanding futures contracts for a commodity that have not been offset by opposite future transactions or fulfilled by delivery of the commodity.
- **Volume of trading** - The total number of futures transactions made in one trading session. Because purchases equal sales, only one side of the trade is counted.

Futures price - The value of a commodity at a point in time. It is determined through open competition between buyers and sellers on a trading floor of the exchange.

- **Opening price** - The first price occurring at the beginning of the trading day.

- **Close** - The period during which all trades on a given day are officially declared as having been executed at the close. The closing range is the range of prices during this designated period.
- **Settlement price** - The midpoint of the closing price range.
- **Range** - The difference between the high and low prices recorded during a trading session or any given period. The range is used in technical analysis to identify chart formations.
- **Limit price move** - The maximum permitted price increase or decrease from the previous day's closing price.
- **Quotations** - The price of cash transactions or futures contracts for a commodity at a specific time.
- **Nominal price** - The estimated futures price quotation for a period when no actual trading took place.
- **Point** - The minimum price fluctuation (1/8 of one cent) in US grain futures and options trading.
- **Volatility** - The amount by which futures prices fluctuate or are expected to fluctuate in a given period of time.

Futures trading - A market activity to buy, sell, or both.

- **Bid** - A willingness to buy a commodity at a specified price.
- **Offer** - A willingness to sell a commodity at a specified price. Also called asking price.
- **Long** - Purchased futures contracts that have not been offset by sold contracts or delivery.
- **Short** - Sold futures contracts that have not been offset by purchased contracts or delivery.
- **Position** - Describes the position of a trader as a buyer (long position), a seller (short position), or a spread trader (long and short).
- **Position limit** - The maximum futures market position speculators are legally permitted to own or control.
- **Net position** - The difference between the long open contracts and the short open contracts of a commodity for a specific trader or type of trader.
- **Liquidation** - Offsetting an existing position by selling (buying) a futures or option contract that was previously purchased (sold). Also called offset or covering.

- **Opening transaction** - A trade that establishes a new position.
- **Round turn** - A complete buy and sell transaction for futures or option contracts.

Grain bank - Accepting grain on deposit from a livestock producer for redelivery to him/her as a feed product at a future date.

Hedging - The buying or selling of futures contracts as substitutes for later cash transactions to insure against price change.

- **Short hedge** - Selling futures contracts to protect against possible downward trending prices of commodities that will be sold in the future. Also known as selling hedge.
- **Long hedge** - Buying futures contracts to protect against possible upward trending prices of commodities that will be purchased in the future. Also known as buying hedge.

Imports - The quantity or value of commodities legally entering a country.

- **Import barriers** - Quotas, tariffs, and embargoes used by a country to restrict the quantity or value of a commodity that may enter that country.
- **Import quota** - The maximum quantity or value of a commodity allowed to enter a country during a specific period of time.
- **Import substitution** - A strategy that emphasizes replacing imports with domestically produced goods.
- **Competitive imports** - Imported products that are also produced domestically.

Margin - An amount of money deposited to guarantee the performance of a futures contract. It is required of both buyers and sellers of futures contracts and writers of options.

- **Initial margin** - The amount of money that must be deposited at the time a futures position is entered into. Also called original margin.
- **Maintenance margin** - A special minimum amount of margin money that must be maintained.
- **Margin call** - A call from a brokerage firm to a customer to bring margin deposits up to the required minimum after a loss has occurred in futures trading.

Market trend - The general direction of prices, either up or down.

- **Bear market** - A market where a large supply and/or small demand results in a price decline.

- **Bull market** - A market where a small supply and/or large demand results in a price rise.
- **Break** - A sudden sharp price decline.
- **Bulge** - A sudden sharp price advance.
- **Heavy** - A large number of sell orders hanging over the market without a corresponding number of buy orders.
- **Rally** - A quick advance in prices.
- **Recovery** - Advance in prices following a decline.
- **Short covering rally** - A short-lived rise in prices caused by traders buying back previously established short positions.
- **Soften** - Slowly declining market prices.
- **Sell-off** - Downward price trend after an advance caused by traders selling previously established long positions.
- **Technical rally (or decline)** - A price change led by technical market signals rather than supply and demand conditions.
- **Seller's market** - A market where grain is in short supply and sellers can obtain higher prices.
- **Buyer's market** - A market where grain is in surplus supply and buyers can obtain lower prices.

Marketing plan - A plan of when and how a farmer will sell grain.

Marketing price objective - The price a producer sets as an acceptable price for selling or buying grain.

Option - The right (but not the obligation) to buy or sell a particular futures contract at a specific price during the life of the option.

- **Call option** - An option contract giving the buyer the right, but not the obligation, to buy a futures contract at a specific price during a specific time period. The call option seller is obliged to sell futures to the call option buyer if the buyer exercises the option.
- **Put option** - An option contract giving the buyer the right, but not the obligation, to sell a futures contract at a specific price during a specific time period. The put option seller is obligated to buy futures from the put option buyer if the buyer exercises the option.
- **Naked writing** - Writing a call or a put option in which the writer has no opposite cash or futures market position. This is also known as uncovered writing.

- **Holder** - The option buyer that pays a premium in return for the right to exercise the option.
- **Writer** - The option seller that receives the premium but is obligated to perform if the option is exercised.
- **Strike price** - The price at which the buyer of a put or call option has the right to exercise the option. Each option has several strike prices to choose from. Each strike price has a different premium.
- **Series** - All options of the same class which share a common strike price.
- **Underlying futures contract** - The specific futures contract that may be bought or sold by exercising an option.
- **At-the-money** - An option with a strike price equal to the current price of the underlying futures contract.
- **In-the-money** - An option with intrinsic (exercise) value. A put option with a strike price above the current price of the underlying futures contract. A call option with a strike price below the current price of the underlying futures contract.
- **Out-of-the-money** - An option which has no intrinsic (exercise) value. A put option with the current price of the underlying contract above the strike price. A call option with the current price of the underlying futures contract below the strike price.

Option premium - The price of an option. The amount the option buyer pays to an option seller (writer) for the right to buy or sell a futures contract at a specific price during the life of the option. Premiums are determined through trading on an organized and regulated exchange.

- **Delta factor** - A ratio of the change in the option premium due to a one unit change in futures price. For example, a delta of .5 means that the premium will change by 1/2 cent for every one cent change in futures price.
- **Intrinsic value** - The amount which would be realized if the option were exercised. Also known as exercise value.
- **Extrinsic value** - An amount by which an option premium exceeds the option's intrinsic value. If an option has no intrinsic value, its premium is entirely extrinsic value. Also known as time value.

Option spread - Involves the purchase and sale of two options of the same type (call or put). It is used to take advantage of a bullish or bearish market while restricting risk to a predefined level.

- **Vertical option spread** - The options vary with respect to strike price but not maturity.
- **Horizontal option spread** - The options vary with respect to maturity but not strike price. Also called a calendar spread.

Option straddle - It involves the purchase or sale of both a put and a call option.

- **Option straddle purchase** - It involves the purchase of a put and a call option. It is designed to take advantage of a volatile market.
- **Option straddle sale** - It involves the sale of a put and a call option. It is designed to take advantage of a stable market.

Public elevators - Licensed and regulated bulk storage facilities where grain is stored for a rental fee. The elevators may also be approved for delivery on commodity futures exchanges.

Pyramiding - Using profits from an existing position to expand the size of that position.

Short the basis - A position in which a person sells a cash commodity and buys futures thus locking in the basis. This seller retains ownership by buying futures, hoping to share in rising prices but vulnerable to declining prices.

Speculator - A person who uses the futures or options market to make a profit while risking a loss. Speculative trades are not coordinated with cash market transactions.

- **Scalper** - A trader who attempts to buy at a bid price and sell at an asking price. He/she will buy and sell on minimum price fluctuations and trade in and out of thousands of bushels of grain a day.
- **Day trader** - A trader who is content to take profits on fractional gains and usually prefers to be out of the market at the end of the day.
- **Position trader** - A trader who carries long or short positions from one day to another. Short term position traders carry positions as short as one week. Long term position traders may take positions extending over a year.

Spread - The difference in price between two futures contracts with different contract delivery months. A positive spread means that the distant month price (e.g. March) is higher than the nearby month (e.g. December). Spread can also be the difference in contract price between different commodities (e.g.. corn and soybeans) or between exchanges (e.g. Chicago & Kansas City) and the same commodity.

- **Intra-crop spreads** - Intra-crop spreads are the differences in price between futures contracts with delivery in the same marketing year (e.g. Sept. 1 - Aug. 31 for corn and soybeans).
- **Inter-crop spreads** - Inter-crop spreads are the differences in price between futures contracts with delivery in different marketing years.
- **Inverted market** - A futures market in which the price for the nearby trading month contracts are higher than those for later months.
- **Carry** - The price spread between nearby and more distant futures contracts. This can be viewed as the amount the market is currently paying for storage.
- **Carrying charges** - The cost of storage and interest.
- **Full carrying charge** - An unusual situation in the futures market in which the price difference between delivery months reflects the full fixed and variable costs of storing grain for the specified period at delivery-point elevators. Delivery-point elevators are higher cost than country elevators.

Spread trading - The simultaneous purchase of one futures contract and sale of another. The purpose is to exploit price disparities and profit from a change in the price relationship.

- **Calendar spread** - The simultaneous purchase of futures in one delivery month and sale of futures in another delivery month.
- **Bull spread** - Usually refers to the simultaneous purchase of the nearby contract month and sale of the distant contract month.
- **Bear spread** - Usually refers to the simultaneous sale of the nearby contract month and purchase of the distant contract month.
- **Inter-market spread** - The simultaneous purchase of futures in one exchange and sale of futures with the same commodity delivery month in another exchange.
- **Inter-commodity spread** - The simultaneous purchase of futures in one commodity and sale of futures in another commodity.

Technical analysis- Price forecasting that uses historical price and trading volume information in chart graph formations.

- **Technical factors**- Factors used in price forecasting such as open interest, volume of trading, degree of recent price movement, price chart formations, and the approach of the first delivery notice day.

Terms of trade - The relationship over time between the price of a countries exports to the price of its imports.

Trade barriers - Means of preventing or slowing the import or export of commodities by imposing restrictions that reduce their flow.

- **Customs** - A country's governmental agency authorized to collect tariffs on imported and exported goods.
- **Embargo** - A government ordered prohibition of trade with another country restricting all trade on only that of selected goods and services.
- **Tariff** - A tax on imports. Also called duty.
- **Specific tariff** - A tariff expressed as a fixed amount per unit.
- **Ad valorem tariff** - A tariff expressed as a percentage of the value of the goods cleared through customs.
- **Tariff schedule** - A list of the rate of duty to be paid to the government for their importation.
- **Variable levy** - A tariff or import tax subject to change as world market prices change. The purpose is to assure that the import price after payment of duty will equal a predetermined set price.
- **Countervailing duty** - An additional levy imposed on imported goods to offset export subsidies provided by the exporting country.
- **Import quota** - The maximum quantity or value of a commodity allowed to enter a country during a specified time period.
- **Export quota** - Controls applied by an exporting country to limit the amount of goods leaving the country.
- **Tariff quota** - Application of a higher tariff rate on imported goods after a certain quantitative limit (quota) has been reached.
- **Surcharge** - A charge levied in addition to other taxes and duties. Also called surtax.
- **Concessional sales** - Credit sales of a commodity in which the buyer is allowed more favorable payment terms than those in the open market.
- **Technical barrier to trade** - A specification that sets forth characteristics a product must meet in order to be imported. These characteristics include levels of quality, performance, and safety.

Trading order - An order to buy or sell a futures contract

- **Market order** - A buy or sell order to obtain the best price possible when the order reaches the trading floor.
- **Buy on close** - An order to buy a commodity within the closing price range at the end of the day's trading.
- **Buy on opening** - An order to buy a commodity within the opening price range at the beginning of the day's trading.
- **Cancelling order** - An order that cancels a previous order.
- **Day orders** - An order to buy or sell at a certain price on a certain day of trading. Orders are generally considered day orders unless specified as open orders.
- **Discretionary account** - An account where a broker does not need the owner's consent to place individual buy and sell orders.
- **Fill or kill order** - An order for immediate execution or cancellation.
- **Good-till-canceled** - An order that will remain open for execution at any time in the future until the customer cancels it.
- **Limit order** - The customer sets a limit on either the price and/or the time of execution.
- **Stop order** - An order to buy or sell futures contracts when prices reach a specified level. Stop orders become market orders if the specified prices are reached.
- **Resting order** - An order to buy (sell) at a price below (above) the current market price.
- **Stop-loss order** - A standing order with a broker to close out a futures position if prices reach a specified level. Such an order is used to limit speculative losses or protect speculative profits.

Transportation - Below are common transportation terms.

- **Bill of lading** - A document evidencing the receipt of goods for shipment issued by a person engaged in the business of transporting or forwarding goods.
- **Common carrier** - A carrier that offers its facilities to the public as being in the business of transporting goods and passengers for compensation.
- **Containerization** – The use of large, standardized, easy-to-handle containers in which product can be loaded to be shipped. The containers can be shipped by truck, rail, ship, etc.
- **Contract carrier** - A private carrier. A carrier that engages to transport goods or passengers on a particular instance, but that does not hold out its facilities to the general public.

- **Cargo preference** - A policy that requires that a certain portion of commodities exported from the US be shipped in American vessels.
- **C & F (cost and freight)** - Cost and freight paid to the destination (included in the price).
- **C.I.F. (cost, insurance, freight)** - Cost, insurance and freight paid to the destination (included in the price).
- **C.O.D. (cash on delivery)** - Buyer pays the seller cash for the product when it is delivered to a specific destination.
- **F.O.B. (free on board)** - Usually covers all delivery, inspection, and elevation costs involved in putting commodities or products on board whatever shipment conveyance is being used.
- **F.A.S. (free along side)** - The seller covers all costs up to and including placing the commodity on a dock ready for loading.
- **Freight forwarder** – A transportation company that pools their shipments to achieve lower freight rates. Savings are sometimes passed on to shippers.
- **Private carrier** – A company that owns the goods that it ships.
- **Shipper's cooperative** – A group of shippers who combine their shipments to achieve lower freight charges.
- **Demurrage** - The penalty paid to a carrier for the detention of transportation equipment caused by not loading or unloading within a specified or agreed upon time period.
- **Despatch** - Credit given for loading or unloading transportation equipment faster than a specified or agreed upon time period.
- **Tariff schedule** - A published schedule of rates for services provided.

Warehousing agreements - A contractual agreement between the owner and the user of a warehouseman's service.

- **Warehouse receipt** - A document showing proof that the warehouseman is in possession of the commodity.
- **Negotiable warehouse receipt** - A document showing proof that the quantity and grade of commodity is held in storage. Ownership can be transferred by endorsing the warehouse receipt.

Appendix G - Key Resources

Business Plan Help
https://www.agplan.umn.edu/

Grain Grading Guide
http://www.grainscanada.gc.ca/oggg-gocg/2012/oggg-gocg-2012-eng.pdf

Sampling Systems Handbook and Approval Guide
http://www.grainscanada.gc.ca/guides-guides/ssh-mse/ssh-mse-eng.pdf

Futures Markets

- Chicago Board of Trade - http://www.cmegroup.com/trading/agricultural/
- Minneapolis Grain Exchange - http://www.mgex.com/quotes.html?&page=quote&sym=MW&mode=i
- Intercontinental- Exchange (ICE) - https://www.theice.com/futures_canada.jhtml

Online Calculators

- Excellent up to date graphs, comparisons and analysis of crop prices- http://www.prairiecropcharts.com/index.html
- Provides a weekly update of Canadian and United States crops and livestock commodity prices- http://www.agriculture.gov.sk.ca/markettrends

Typical deferred delivery contract (pulse crops)

- http://www.saskpulse.com/uploads/content/120815_Formatted_Final_Deferred_Delivery_Contract.pdf

Typical production contract (pulse crops)

- http://www.saskpulse.com/uploads/content/120815_Formatted_Final_Production_Contract.pdf

Appendix H - Market Alternatives

The objective in understanding and analyzing marketing alternatives is to find the alternative with the highest net return, the capacity to reduce income variability, and an acceptable level of risk.

Alternative methods are formed through combinations of **when** and **how** you market

- **When** – planting, pre-harvest, harvest, or post-harvest
- **How** – cash sale, deferred pricing, forward contract, basis contract, hedging with futures or options

Marketing methods

1. Cash sale at harvest
2. Store for later sale
3. Delayed pricing contract
4. Forward contract
5. Hedging with futures
6. Basis contract
7. Hedging with options

Each section will discuss advantages and disadvantages of the marketing method, give insight as to when the method is most effective, offer real-life scenarios and give you the opportunity to personalize the method with your own farm.

1. CASH SALE AT HARVEST -Grain is delivered and sold for cash at harvest in convenient market.

   Advantages
   - No costs or inconvenience of storage
   - No accumulating interest cost
   - Easily understood
   - Price is known immediately
   - No shrink or deterioration

   Disadvantages
   - Shortens marketing window
   - Harvest price is often lowest
   - Eliminates other cash-based alternatives
   - Congestion at elevators

   When to Use
   - When prices are favorable and at levels anticipated in the marketing plan

2. **STORE FOR LATER SALE**

Grain is placed in on-farm or commercial storage and sold at a later time determined by the grower.

Advantages

- Extends pricing decision window
- Increases flexibility with on-farm storage or increases delivery convenience with commercial storage
- Return on storage if price rises

Disadvantages

- Quality may deteriorate
- Decreased delivery flexibility if stored commercially
- Increased storage and interest costs
- Risk of adverse price change during storage

When to use

- When prices are below the level anticipated in the marketing plan, assuming the producer has adequate financial resources
- When there is a realistic expectation of a market price increase

3. DELAYED PRICING CONTRACT

Grain is delivered to a commercial elevator and title passes to the elevator but the price is to be determined in the future. Price is tied to local posted bid or a terminal market bid. Another option is delayed payment, where price is set at delivery but payment is taken at later date.

Advantages

- Extends pricing decision window
- Gain when prices rise
- May eliminate or reduce commercial storage fees (title usually passes to elevator upon delivery
- Possible advance payment
- Convenient contract quantities

Disadvantages

- Interest cost and storage fees
- Unsecured creditor in bankruptcy
- Risk of adverse price or basis change until grain is priced
- Potential repayment of part of the advance if price drops

When to use

- When storage is tight
- When unsatisfied

4. FORWARD CONTRACT

Grower agrees to deliver a specified quantity and quality of grain to the buyer, at a designated place and date, and at a pre-determined price. Futures contracts are sometimes confused with *forward contracts*. While similar, they are not at all the same A forward contract is an agreement between two parties (such as a wheat farmer and a cereal manufacturer) in which the seller (the farmer) agrees to deliver to the buyer (cereal manufacturer) a specified quantity and quality of wheat at a specified future date at an agreed-upon price. It is a privately negotiated contract that is not conducted in an organized marketplace or exchange.

Both parties to a forward contract expect to make or receive delivery of the commodity on the agreed-upon date. It is difficult to get out of a forward contract unless the other party agrees.

All forward contracts specify quantity, quality and delivery periods. If any of these conditions are not met, the farmer will usually have to financially compensate the buyer. It is essential you understand your legal obligations before entering into a forward contract in case you cannot meet the conditions of the contract.

Advantages

- Contract quantity can be small allowing for ‘spreading’ sales throughout the season.
- Easy to initiate and little or no costs to sign a contract
- Eliminates risk of adverse price or basis change
- Extends pricing decision window

Disadvantages

- Guarantees a fixed price, no gain if price raises or basis strengthens
- Increases production risk as delivery is an obligation
- Reduces flexibility when market conditions change

When to use

- To schedule deliveries that better fit with labor, grain quality and logistics
- When crops are large or storage is tight
- When the market price reaches the objective in the marketing plan
- If Price and Basis are both considered acceptable

5. HEDGING WITH FUTURES

This is comprised of using a futures contract as a temporary substitute for an intended transaction in the cash market that will occur at a later date. Futures markets are price discovery and risk management institutions. In futures markets, the competing expectations of traders interact to "discover" prices. In so doing, they reflect a broad range of information that exists on upcoming market conditions. Futures markets are actually designed as vehicles for establishing future prices and managing risk so you can avoid gambling if you want.

For example, a wheat producer who plants a crop is, in effect, betting that the price of wheat won't drop so low that he would have been better not to have planted the crop at all. This bet is inherent to the farming business, but the farmer may prefer not to make it. The farmer can hedge this bet by selling a wheat *futures contract*.

Advantages

- Extends pricing decision window
- Risk of adverse price change is eliminated
- Easy to reverse position
- Basis is more predictable than price

Disadvantages

- Risk of adverse basis change
- Margin requirements increase interest costs and may cause cash flow problems
- Contracts only offered in fixed increments
- Requires knowledge of futures and basis
- Eliminates gain from rising cash price

When to use

- To protect the value of grain in inventory or the value of expected production
- To help reduce downside price risk
- When price is acceptable and basis is unacceptable? And hope basis improves

6. BASIS CONTRACT

Grain is delivered to a commercial elevator and sold prior to a designated date at a specified amount above or below a futures price (or basis). "Basis" is the difference between local cash price and a nearby futures price, quoted in common currency. For example, if the nearby futures price is $4.75, and cash is $4.55, then basis is $0.20 under (-$0.20). If the futures price is $4.75 and cash is $4.95, basis is $0.20 over (+$0.20).

Basis is typically measured against the nearest futures month after a cash transaction. For example, a cash corn transaction occurring in March will be measured against the May futures price; a forward price for November will be matched to the December futures, etc.

The basis measures local supply-and-demand conditions relative to the futures delivery region. The basis in regions with surplus production will have a more negative basis (or less positive); in deficit production regions, the basis will be more positive (or less negative). Many factors can influence basis, notably changes in local supply-and-demand balance and transportation costs. Basis also represents the portion of price risk that cannot be mitigated by hedging.

Advantages

- Extends pricing decision window
- May reduce commercial storage costs
- No risk of adverse basis change
- Convenient contract quantities
- Possible advance partial payment

Disadvantages

- Unsecured creditor in bankruptcy
- Risk of adverse price change until grain is priced
- Potential repayment of advance
- Basis knowledge is required

When to use

- When basis is strong (cash prices are high relative to futures) and there is some potential for an increase in futures prices
- When basis offer is acceptable but price is unacceptable

7. HEDGING WITH OPTIONS

A put option purchase sets a floor on the crop price throughout the life of the contract. The option premium is the price that the option trades for. This is determined through competitive bids and offers, but two key considerations guide this process.

The first is intrinsic value, which refers to how profitable an option would be if it were executed. The option profitability is measured by comparing the strike price to the current price of the underlying futures contract.

The second is time value. As the perceived price volatility increases and/or if the time to expire is longer, the value of an option increases. It is a combination of these two factors that determines the premium on the option.

Hedging with options is similar to hedging with futures. The main difference is that options are purchased and resold, with the gain in the option value used to offset negative price risk. When futures are used to hedge, it is the change in the value of futures prices directly that generates gains or losses that mitigates price risk.

Advantages

- Extends pricing decision window
- Risk of adverse price change is eliminated
- Partial gain from rising cash price
- Eliminates margin requirements
- Easy to reverse position (liquidity)

Disadvantages

- Risk of adverse basis change
- Cost may be greater than value of price protection
- Contracts in fixed quantities only
- Requires significant knowledge and substantial data

When to use

- When you need to eliminate downside price risk but want to maintain ability to capture possible upside price gains. A put option that allows the holder to take a futures position is purchased for the actual or expected cash position.
- Options can be exercised, sold, or allowed to expire

- Net price received is a combination of the cash market and options market transactions

Futures Markets

Futures Contracts

Futures contracts, while similar to forward contracts, have certain features that make them more useful for risk management. These include being able to extinguish contract obligations through *offsetting*, rather than actual delivery of the commodity. In fact, very few futures contracts are ever delivered upon.

Futures contracts are traded on organized exchanges in a variety of commodities (including grains, livestock, bonds and currencies). They are traded by open outcry where traders and brokers shout bids and offers from a trading pit at designated times and places. This allows producers, users and processors to establish prices before commodities are traded. Futures prices are forecasts that can and do change according to a variety of reasons, such as crop or weather reports.

Traders

There are basically two types of traders: hedgers and speculators.

Hedgers are people who produce, process or use commodities and want to reduce their price risk or establish prices for commodities they will trade in the future.

Speculators are people who attempt to profit through buying and selling, based on price changes, and have no economic interest in the underlying commodity.

Futures contracts have standardized terms established by the exchange. These include the volume of the commodity, delivery months, delivery location and accepted qualities and grades. The contract specifications differ, depending on the commodity in question.

This standardization makes it possible for large numbers of participants to trade the same commodity, which also makes the contract more useful for hedging.

Trading Gains and Losses

It helps to study speculation first - trading futures without an interest in the underlying commodity - in order to understand hedging.

Example

September corn is trading at $3.50/bu, but you believe the price will be lower than this in September. You might take a "short position" (sell futures), and if the price falls, profit from offsetting with a "long position" (buying back futures):

Date

May 7

Position

Short (sell) Sept corn @$3.50/Bu

Date

May 27

Position

Long (buy) Sept corn @$3.25/Bu

Profit $0.25/Bu

However, if prices rise, you would lose when you offset the position:

Date

May 7

Position

Short September corn @ $3.50/Bu

Date

May 27

Position

Long September corn @$3.60/Bu

Loss $(0.10)/Bu

Speculating is gambling; trading action either generates an absolute loss or an absolute gain. Hedging, in contrast, creates price stability.

Trading on Margin

To trade futures positions, financial capital must be in place with the exchange and with a broker. However, only a small portion of the value of the position being traded is required. For example, if soybeans are trading at $7.00/Bu, the total value of a 5,000-bushel contract is $35,000, but only a small portion of this value must be in place to begin trading (typically between 2% and 10% of the total value of the contract). Futures trading is conducted using a margin account.

An important implication of trading on margin is that losses against trading positions must be covered on a dollar-for-dollar basis by the trader.

A futures trader entering into a futures position is required to post an initial margin amount specified by the exchange. Thereafter, the position is "marked to the market" daily - that is to say, if the futures position loses value, the amount in the margin account will decline accordingly.

If the amount of money in the margin account falls below the specified maintenance margin (which is set at a level less than or equal to the initial margin), the futures trader will be required to post additional variation margin to bring the account up to the initial margin level.

On the other hand, if the margin position is positive, this amount will be added to the margin account. It is important to understand the impact that these margin calls can have on cash flow as they are assessed daily. If the margin level falls below the maintenance margin, the trader must top up the account immediately to avoid losing the futures position. It is important that lenders and financial managers are aware of the potential cash flow commitments that can result. Even futures' trading that eventually generates a profit can accrue significant cash obligations for margin servicing over the life of the position.

Hedging

To hedge is to take a futures position that is *equal* and *opposite* to a position held in the cash market. The objective is to mitigate the risk of an adverse move in prices.

Hedging works in mitigating price risk because futures prices and cash prices are highly correlated. For example, a producer of soybeans has the risk that the cash price will decrease before the beans are harvested and can be sold. Selling soybean futures mitigates this risk. If the cash soybean price in fact declines, the futures price will have decreased as well. Then, the producer can buy back (or offset) the futures contract for less than he sold it for, generating a profit. This profit can be applied to the revenue he gets from selling the soybeans on the cash market, thereby mitigating the cash price decrease.

Hedging using futures very seldom results in delivery against the futures contract; contracts are liquidated via offset and do not result in delivery. The purpose of the delivery provision is to ensure convergence between futures price and the cash market price. It is the threat of delivery that causes cash and futures to come together.

Short Hedging

A person who already owns or is in the process of producing a commodity has the risk that the price will fall. This risk can be mitigated by selling futures (short hedge), protecting the hedger from a decline in the price of the commodity/product owned or being produced.

Examples of short hedgers:

- A farmer with livestock on feed or a crop in the field.
- An elevator with grain inventory in the elevator.
- An elevator that has contracted to accept delivery of grain in the future at a fixed price.
- A meat packer who has contracted to accept animal delivery in the future.

The risk here is that prices may fall before delivery.

Short Hedge Example

As an example, suppose it is May and a corn producer is considering pricing his corn crop. Based on history, the producer expects the basis at harvest to be $0.10 over December futures, which are currently trading at $3.50. The elevator is currently offering a forward price that is $0.05 over December. The producer's risk is that corn prices will fall, so to hedge with futures, the producer takes a short futures position. As the corn is being harvested in November, the futures price has fallen to $3.00, and the local basis is still $0.05 over December. The producer buys back the short position, resulting in a $0.50 profit, which he combines with the $3.05 cash price to obtain a net price of $3.55, thereby mitigating the effect of the price decrease.

Conversely, if the futures price had increased by $0.50, a loss on futures would result, and the net price would remain $3.55.

May	$3.55	Short @ $3.50
November	$3.05	Long @ $3.00
Profit		$.50
Net Price	$3.55	

Long Hedging

A person who does not now own the cash commodity but will require it in the future has the risk that the price will increase. *Buying* futures (long hedge) can mitigate this risk. A long hedge protects the hedger from a rise in price.

Examples of long hedgers:

- A food manufacturer, who will need product in the future, doesn't own it now but wants to price it now.
- A processor who has offered to price product forward based on current ingredients prices but doesn't own it now.

The risk here is that the price will rise before delivery.

Long Hedge Example

Alternatively, a flour miller is concerned about the risk of wheat price increases for wheat to be purchased in November. Wheat futures for December delivery are currently trading at $4.20/Bu, and the typical basis at the miller's location is $0.15 over futures. The miller hedges this risk by taking a long position (buying) the December wheat future at $4.20. In November, the futures price has increased to $4.40, and wheat is selling locally for $4.55. The miller lifts the hedge by selling back the futures position at $4.40, resulting in a profit of $0.20/Bu This profit is then applied to the cash purchase cost of $4.55/Bu, resulting in a net cost of $4.35, which is the price expected when the hedge was placed.

Date	Cash	Futures
August		Long @ $4.20
November	$4.55	Short @ $4.40
Profit		$.20
Net Price	$4.35	

In both of these examples, the basis component of pricing did not change. In practice, basis can be variable, but this variation is small, relative to that in the futures price. The basis risk cannot be protected through hedging.

What makes hedging work is the fact that cash and futures prices converge at the delivery point - when one goes up, the other goes up as well.

The hedger takes an *equal but opposite position* in the futures market to the one held in the cash market to avoid the risk of an adverse price move. However, by doing this, the hedger forfeits any advantage of a cash price improvement.

Options

Options are like insurance - you can cash them in when bad things happen (such as a drop in futures price) but you don't collect when good things happen (such as a rise in futures price). You are paying someone to take on your futures risk.

There are two types of options: **put** and **call**.

The **put** option sets a minimum price for the contracted amount of grain or livestock. This gives the buyer the right but not the obligation to take a short position in the underlying futures at a specific price (called the strike price) within a specified time period.

When a farmer buys a **put** option, for a premium, there is the option to sell or go short on a specific futures market contract if the price of that contract falls below the strike price. The strike price level, less the premium for the **put** option, establishes the minimum price the farmer will receive for the contracted commodity.

The **call** option sets a maximum price for the contracted amount of grain or livestock. This gives the buyer the right but not the obligation to take a long position in the underlying futures at the strike price within a specified time period.

When the farmer buys a **call** option, for a premium, there is the option to buy or go long on a specific futures market contract if the price of that contract rises above the strike price. The strike price level, less the premium for the call option, establishes the maximum price the buyer will pay for the contracted commodity.

Once an option has been purchased, the buyer (holder) has three alternatives. First, the option can be allowed to expire. Second, the option can be sold to someone else or offset; the original buyer, by selling to a third party, has transferred his rights to that party. Third, the option can be exercised, essentially demanding that the seller provide the underlying futures position.

Options are not purchased on margin; one advantage is not having to make margin calls when the market moves. For example, with a **put** option, you are protected against the downside but get the benefit of the upside in prices. The perceived benefit of this is dependent on the premium paid.

Appendix I - Canadian Grain Commission- Analytical Tests

Analytical tests can be done for a fee through the Canadian Grain Commission. The tests are used for certificates of quality, for contract specification and to meet their producer protection mandate.[48]

Fee Code	Name	Price	Unit
1700	Ochratoxin testing - HPLC Method	195.00	analysis
1701	Ochratoxin testing - HPLC Method (expedited service)	395.00	analysis
4204	Cadmium (GS-51C)	128.00	test (standard)
4301	Alveograph	145.00	analysis
4302	Amylograph	57.00	analysis
4317	Falling Number Check Sample Service	50.00	each
4321	Farinograph	64.00	analysis
4332	Germination Energy	27.50	analysis
4339	Milling, Flour (Allis Chalmers)	300.00	analysis
4349	Protein (Combustion)	24.00	analysis
4380	Wet Gluten Content	19.00	analysis
4400	Chlorophyll Index - International Organization for Standardization method - expedited service	100.00	export contract certificate
4401	Chlorophyll Content - International Organization for Standardization method - regular service	25.00	letter of analysis
4402	Fatty Acid Composition - International Organization for Standardization method	300.00	export contract certificate
4408	Nitrogen /Protein Content - American Oil Chemists Society method	100.00	export contract certificate
4410	Oil Content - International Organization for Standardization Nuclear Magnetic Resonance method - expedited service. Applicable only to canola, rapeseed, flax, mustard and soybean.	100.00	export contract certificate
4411	Oil Content - International Organization for Standardization Nuclear Magnetic Resonance method - regular service. Applicable only to canola, rapeseed, flax, mustard and soybean.	25.00	letter of analysis
4412	Free Fatty Acids, International Organization for	100.00	letter of analysis

[48] http://www.grainscanada.gc.ca/services-services/fees-droits/at-ea-eng.htm

Fee Code	Name	Price	Unit
	Standardization 729 (cargo certification) - expedited service		
4413	Free Fatty Acids, International Organization for Standardization 729 (letter of analysis) - regular service	25.00	letter of analysis
4416	NIR Whole-seed analysis (cargo certification) - expedited service. Applicable only to canola, rapeseed, flax, mustard and soybean.	50.00	letter of analysis
4417	NIR Whole-seed analysis (letter of analysis or spreadsheet summary) - regular service. Applicable only to canola, rapeseed, flax, mustard and soybean.	16.50	letter of analysis

Appendix J – Canada: Outlook for Principal Field Crops