

WILL WINTER CANOLA BE A CASH CROP IN THE UNITED STATES?

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INTRODUCTION

The development of winter canola as a major cash crop in the United States is dependent upon a diverse and highly dynamic set of factors: canola agronomy, production economics, strength and proximity of markets and the political environment.

This paper will discuss some conclusions of industrial market research carried out by the authors and in addition, some scenario modelling which may help those organisations attempting to quantify the potential canola market size. Specifically, Canola will probably become a major cash crop within targeted areas of the U.S.

CANOLA AGRONOMY

Areas of the U.S. where canola can be produced have been determined by defining the agronomic, climatic and physical parameters required for the canola growth cycle. Spring type canola can be produced as a summer crop in a temperate climate like the Northern Plain, or as a winter crop in mild climates like the Southern Coastal Plain. Winter types can be grown where winters are sufficiently cold to induce vernalization and hence the reproductive phase.

Established crops with environmental requirements similar to canola can be used as indicator crops to determine potential growing areas for canola. Spring and winter wheat can be used as indicator crops for spring and winter canola respectively. However, spring canola is not as drought and heat resistant as spring wheat and winter canola is not as winter hardy as winter wheat. Although, early planting and snow cover will improve winter canola survivability relative to winter wheat. In addition, both spring and winter canola require 40cm of rain or good soil moisture reserves.

Other canola agronomy factors like, soil pH and historical means and extremes of climatic conditions have also been researched and considered to more accurately determine suitable canola acres in the U.S.

Canola Agronomy Conclusion

The authors of this paper conclude that there are 11,455,000 acres suitable to canola production on an annual basis in the U.S.

PRODUCTION ECONOMICS

In the U.S., the decision to plant canola versus a traditional crop is based on the economic return that a piece of land will realize. To maximize return, growers will allocate land to a crop with the highest expected profit. To determine which growers will allocate land to canola; production costs, expected yields and expected market prices must be considered, within those regions which have agronomically suitable canola producing acres.

The difference in production costs between canola and wheat result from variable inputs only. Only variable costs are considered in this analysis. Items included are seed, fertilizer, lime and gypsum, chemicals, custom application, fuel and oil, electricity, repairs, hired labour and technical services.

Information from the U.S., collected on a regional basis in 1989 Magee, Sippell (1989) suggests that costs of producing canola range 12 to 15% higher than wheat costs. The higher cost of canola production stems mainly from additional fertilizer, lime and gypsum, and chemical use. This cost difference may increase to 20% by the year 2000 when disease and pests will result in higher usage of pesticides and herbicides. However, with increased production experience and disease and insect resistance in hybrids, production costs will probably remain constant overall.

In the short term, an enticement will be required to overcome market unknowns. Therefore, a 5% increase in production costs was added as a market unknown and as the incentive that will be required to entice farmers to try the crop. A cost of production difference of 20% in the short term and 15% in the long term was used in our analysis.

WEFA Inc. estimates were used to forecast the expected average farm gate price for all types of wheat grown in the U.S. Ramsey (1991). Long term price projections for canola are not available. However, since canola price, follows soybean price, WEFA estimates on average farm gate soybean prices were used to estimate average canola prices.

Expected wheat yields are based on the current 5-7 year average yield by region. Alex, Gonzales, Schwartz and Young (1990). Projected yields were extrapolated from expected annual increases based on previous gain, 1% per year. Canola yields were projected to increase 20% in the next five years with the introduction of hybrids and to increase 1% per year after that.

Expected net return on both wheat and canola were computed and the difference between net return on wheat and on canola was calculated.

Production Economics Conclusion

Based on estimated net returns alone, the southeast, north central, mid-south and southern plain regions of the U.S. appear to be profitable canola producing regions.

STRENGTH/PROXIMITY OF MARKETS

In order to quantify the strength and potential of the canola market in the U.S. both the meal and oil component markets must be analyzed.

Canola Meal

Soy meal is used primarily as a protein supplement in both the ruminant and monogastric U.S. livestock industry. Canola meal must compete against soy meal on both price and nutrient composition to gain meal market share.

If canola meal is to replace soy meal, the combined cost of canola meal and the additional additives such as lysine and methionine required to complete a feed, need to be less than or equal to the cost of soy meal. Canola meal is economically used in feed formulation when it is priced at about 79% of soy meal.

Realistically, canola meal can be expected to increase in market share at a rate of about .1% per year. In 15 years, canola meal will probably account for about 2.5% of the U.S. protein meal market, .5 million tonnes. In a seed equivalent this would be some 1.5 million acres of canola production.

Canola Oil

U.S. consumption of oils and fats in 1977-88 was 6.4 million tonnes. The three main markets for vegetable oils are:

	Million tonnes
Baking and frying	2.46
Salad or cooking	2.96
Margarine	.87

Soybean oil had the largest market share in 1987-88 at about 75% with palm oil and coconut oil for baking and frying decreasing 1.5% and 3.8% respectively.

Since GRAS status for canola oil was gained in 1985 the market for canola oil has grown dramatically, largely supplied by imports from 2,000 tonnes in 1984 to 175,000 tonnes in 1990/91. This equates to 437,000 acres of canola production at 40 bu./acre. for 1990/91.

The main factors driving the demand have been:

- 1) canola's low price
- 2) canola's quality, specifically its low level of saturated fat.
 - American health foundation, 1988 Puritan canola oil, food product of the year.
 - Surgeon General's report on U.S. diet, recommending a reduction of dietary fat intake.
 - American College of Nutrition, Puritan canola oil, product acceptance award.

Since both price and quality factors are dynamically effecting canola's market share growth. It becomes very difficult to predict market saturation. However, three possible scenarios can be considered.

Scenario #1

A .1% canola market share increase per year of the U.S. vegetable oil market, to meal market saturation. This would equate to a maximum market saturation date of the year 2005. Which would mean that canola domestic production would have to be 1.5 million acres to supply this market in the year 2005.

Scenario #2

A .5% canola market share increase per year of the U.S. vegetable oil market based on a moderate continued health oil trend. This would equate to canola domestic production of 3 million acres by the year 2005. The U.S. salad and cooking oils market is projected to be 5.724 million tonnes in 2005. If all the canola oil produced would be used as salad and cooking oil, 22% of this market segment would be made up of canola oil. In 1987, 80.9% of this market was soybean oil, 9.3% cotton oil, 8.9% corn oil and .9% sunflower oil. By the year 2005, considerable change will have to occur in this balance.

Scenario #3

A 1.0% canola market share increase per year of the U.S. vegetable oil market. This would equate to 5.5 million acres of domestic production by the year 2005.

Based on all of this canola production filling a void in the frying and baking oil market caused by tallow and lard losing food product favour, canola would have to capture 44% of this market by 2005 to meet this scenario of market share growth. In 1987 soybean accounted for 66% of the frying and baking oil market, tallow and lard 20% and other oils 14%. This market is projected to be 4.99 million tonnes of oil by the year 2005.

Obviously, canola will be used to some degree in all market segments, however in using scenario modelling of each market segment that canola may best compete in, one can determine a likely market share growth. With further modelling, it was determined that the range of likely market share growth of canola in the U.S. oilseed market would be .1% to .5% per year, or the range from Scenario #1 to Scenario #2.

Proximity of Markets

As mentioned in the previous section, there is now a domestic consumption of some 437,000 acres of imported canola oil. Canola is the first oilseed crop to be introduced into the U.S. with demand four times larger than domestic production. This market pull for domestic production of canola has provided great interest for growers, processors and elevators alike.

In the three major canola growing regions, the north central, mid-south, and southeast, there were 60,000 acres of canola produced this year of the some 90,000 acres of total U.S. production. There are 107 elevators scattered across these three regions receiving the crop and 3 crushers processing canola.

Strength and Proximity of Markets Conclusion

The proximity of markets and the domestic demand for the short term, 2 to 5 years, is very healthy for those growers considering to produce canola which farm in the north central, mid-south or southeast regions of the U.S.

However, the long term, 5 to 15 years out, is obviously much more difficult to quantify and predict. Nevertheless, in using scenario modelling, as in this paper, one can be assured that canola will capture a portion of the meal market, the salad and cooking oil market and the frying and baking oil markets. The aggregate of market shares in these segments would most likely range from 1.5 million acres to 3 million acres of canola production by the year 2005.

POLITICAL ENVIRONMENT

In any country the ever changing political environment can greatly effect the introduction of a new crop. For the purpose of this paper, only the U.S. Farm bill will be briefly discussed.

Up to the introduction of the new 1990, U.S. farm bill canola was not able to compete with wheat, for the farm program provided for deficiency payments on wheat and not on canola.

With the new 0/92 provision, feed grain and wheat producers in the program will not lose their base payment acres and can receive a deficiency payment on 92% of their permitted acres when they grow a minor oilseed crop like canola on their wheat or feed grain base acres.

For example, on a 100 acre wheat or feed grain base a grower in the program must fallow 15% (15 acres) into the ARP (acreage reduction program) and 15% (15 acres) into the triple base. The producer may grow canola on the triple base acres, however, these acres do not receive deficiency payment. 92% of the remaining 70 acres are eligible for deficiency payment.

The 0/92 provision of the new 1990 Farm Bill now places canola and wheat with equal opportunity to gain a deficiency payment. Which means that a grower may now choose, truly, the most profitable crop given the soil and climatic conditions under which he is farming, his management ability and the true local market for each crop.

FINAL CONCLUSIONS

At best, canola introduction into the U.S. as a viable crop can only be estimated on a regional basis.

The probability of canola becoming a major cash crop is quite high for the southeast, mid-south and north central markets, however, it is critical to note that this relies on a large number of industry players from the grower to the extension agronomist through to the refined oil buyer employed by the food products company. Anyone of these players may or may not see the canola advantage in their organisation so the U.S. canola market development is hence very volatile. It is, therefore, the recommendation of this paper that continued risk management on a regional and market segment basis be undertaken by those organisations who wish to be players in this highly volatile market.

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