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Third Crop Options

Flax

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Background:

1.65 million acres of flax were harvested in Minnesota in 1949. In 1950, flax was planted on 60,000 acres in Cottonwood County and Windom, the county seat, called itself the “Flax Capital of the World”. In contrast, 8,000 acres of flax were planted in Minnesota in 2003. Commercial production dwindled when other materials replaced flax in the production of paper products and textiles, and linseed oil (the oil extracted from flax using solvents and heat) was replaced by synthetics in the manufacture of paints, varnishes, lacquer, and printing ink.

Flax is experiencing resurgence in popularity due to its healthful characteristics for humans as well as animals. Flax is:

- **One of the richest plant sources of Omega-3 Fatty Acids.** *Benefits: Lowers risk of cardiovascular disease, heart attack and stroke. Helps reduce inflammation and is beneficial for arthritis, eczema, and brain development.*
- **High in dietary fiber.** *Benefits: Aids in digestion, can help lower cholesterol and regulate blood sugar levels.*
- **The richest plant source of lignans.** *Benefits: May lower heart disease risk and risk of breast, endometrium, and prostate cancer.*

Eggs with enriched levels of Omega-3 fatty acids are produced from poultry fed flaxseed. Omega-3 levels can also be increased in the meat of poultry fed flaxseed. Benefits have been found in feeding flaxseed to cattle (reduces shipping stress), pets (improves general health), and horses (increases coat sheen). Active research continues with animals, including with swine and dairy.

Nutrient Composition of Flax (% of Total Weight)

Fat		41%
Omega 3 Polyunsaturated	57%	
Omega 6 Polyunsaturated	16%	
Monounsaturated	18%	
Saturated	9%	
Total dietary fiber		28%
Protein		20%
Moisture/Ash		11%

Canada, the world’s top producer of flaxseed, produces about 35% of the world’s supply. U.S. production (583,000 acres were planted in 2003) is roughly half that of Canada’s. Minnesota is among the top four flaxseed producing states, along with North Dakota (by far the largest U.S. producer), Montana, and South Dakota.

Uses:

- **Ground Flaxseed:** *Bread, muffins, waffles, pancakes, cereals, crackers, salad toppings, breakfast drinks, fiber bars, cakes, cookies, bagels, soup extenders, etc.*
- **Flaxseed Oil (Cold-Pressed):** *As a supplement in oil or capsule form, salad dressing, low temperature stir-fry oil, etc.*
- **Flaxseed Meal:** *Poultry and livestock feed, pet and specialty animal food.*
- **Linseed Oil:** *Paints, coatings, etc.*
- **Straw/Fiber:** *Fine paper products, interior panels in cars, erosion control mats, etc.*

Production and Management Considerations:

Early planting is key in producing quality flax in Southern Minnesota. Too much heat or inadequate moisture during the growing season can reduce flaxseed yield and oil content.

Weed control is a challenge in flax production, particularly organic production, since flax is not very competitive with weeds. Producers in Minnesota recommend organic growers plant no more than 20 acres of flax a year for this reason. Selecting clean fields for flax production will help aid in weed control.

Timely harvest is important to prevent losses in oil quality and quantity. Harvesting, processing, and storage equipment must be sealed tightly since flaxseed can readily flow through very small openings.

The “Resources and References” section below contains sources of more detailed production and management information.

Profit Potential:

Although yellow (“Omega” variety) and brown flaxseed are nutritionally and chemically equivalent, yellow flaxseed is preferred over brown flaxseed for human consumption and commands a premium price. In a small survey conducted by BERBI, retail prices for organic golden flaxseed averaged \$5.93/lb while brown organic flaxseed averaged \$1.74/lb. Flaxseed color should be irrelevant, however, in livestock feed.

Organic producers of golden flax in Minnesota report receiving a typical price of \$1/lb. At an average (cleaned) yield of 13 bu/acre (56lb/bu), this equals an estimated gross profit of \$728/acre. Screenings (for livestock feed) and straw (for fiber uses) could also be potentially sold, increasing net profit/acre.

Direct sales to consumers offer the greatest profit potential. Selling to retailers or food and feed processors will also offer greater profit potential than commodity market sales (average U.S. commodity price of flax in 2002 was \$5.80/bu).

Market Opportunities, Development, and Challenges:

Potential market opportunities include:

- Direct Sales (i.e. via farmer’s markets, mail order, the internet)
- Food Co-ops & Health Food Stores
- Grocery Stores and Supermarkets
- Livestock and Poultry Producers/Feed Suppliers
- Pet Food and Horse Feed Processors
- Bakeries

- Paper Processors
- Cloth and Linen Manufacturers
- Supplement Manufacturers

Functional foods (flaxseed is considered one), are foods that provide medical or health benefits beyond basic nutrition, including the prevention and treatment of disease. Research conducted by the Food Processing Center at the University of Nebraska-Lincoln predicts functional food sales will increase 88% from 2001 to 2010. Of foods categorized as “functional”, breads and grains are predicted to increase 47% while snack foods and packaged or prepared foods are expected to increase 200%. Opportunity clearly exists in the marketing of value-added flaxseed products.

Demand for organic flax food and non-food products is growing. The supplement market (which includes flaxseed oil and flaxseed oil capsules), is also growing (4% in 2002: National Nutritional Foods Association).

Flax is an excellent source of omega-3 fatty acids, without the mercury concerns of fish (currently the main source of omega-3 in the diet). The market for omega-3 enriched meat, poultry, and livestock products is growing and expected to increase, especially as consumers become more educated about the value of omega-3 fatty acids in the diet. Omega-3 enriched eggs sell for about \$0.50 more a dozen to nearly double the price of conventional eggs. It is estimated that if 5% of laying hens in the U.S. were fed a ration containing 10% flaxseed, flaxseed production would need to increase by more than 148,000 acres (Flax: New Uses and Demands, Berglund).

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