

SASKATCHEWAN FOOD INGREDIENT INDUSTRY

Functional Food Ingredients

Saskatchewan processors and suppliers provide ingredients for a variety of foods such as cereals, beverages, baked products, snacks, and bars. From our varied and bountiful production, our province supplies ingredients to functional food and natural health markets, including:

- Oat constituents
- Beta-glucans from oats and barley
- Pulses
- Roasted flaxseed
- Essential fatty acids
- Fenugreek gum
- Hempseed products
- Peas fractions (starch, fibre, protein)
- Micronized pulses and grains
- Herbal products
- Plant and animal extracts
- Mustard Seed

Saskatchewan is world renowned as a consistent supplier of high-quality, safe agricultural products. Major crops include cereals (spring and durum wheat, oats, barley, and rye), oilseeds (canola and flax), pulses (peas, chickpeas, and lentils), specialty crops (mustard seed, canary seed and wild rice), and fruit crops (Saskatoon berries and prairie cherries). In 2009, Saskatchewan exported over \$100 million worth of agricultural products to 19 individual countries. Saskatchewan often represents Canada to those markets.

Cereals

Pasta is big business for Saskatchewan farmers, who produce more durum wheat than anyone else on earth. Saskatchewan "spaghetti farmers" were the number one Canadian exporter of durum wheat in 2009, with exports of \$ 1.18 billion to twenty-five different countries. Saskatchewan's top export markets for durum were Italy \$237M (20%), Morocco \$200M (17%), United States \$198M (17%) and Algeria \$116M (10%).

Barley is a cereal grain used in stews, soups, breads, health food, animal feed and malting (primarily for beer). Saskatchewan was a major exporter of barley in 2009, exporting over 40% of Canadian barley. Saskatchewan exported \$179 million of barley, with sales of over \$1 million to ten countries. The top export markets for Saskatchewan barley were the United States \$66M (37%), China \$57M (32%), Japan \$23M (13%) and Colombia \$10M (6%).



Oats have many uses in food; most commonly they are rolled into oatmeal, crushed into oat flour or processed into breakfast cereals. Saskatchewan was the number one Canadian exporter of oats in 2009, exporting 59% of Canadian oats (\$220M). The top export market was the United States, who imported \$212M (97%).

Rye is the key ingredient in traditional rye and pumpernickel breads. Saskatchewan was the number one Canadian exporter of rye in 2009, exporting 45% of Canadian rye. The top export markets were the United States (66%), South Korea (21%) and Japan (12%).

Oilseeds

In 2009, 20% of Saskatchewan's exports were oilseeds. Saskatchewan is the number one exporter of oilseeds in Canada, with exports of \$1.6 billion in 2009. Saskatchewan's oilseed crops are exported around the world, and have a reputation as healthy and high quality products.

A strong and innovative research and development sector has contributed to Saskatchewan's role as a leading oilseed producer. Canola was developed in Canada, and its name is a combination of "Canada" and "oil". Despite its brief existence – about 30 years – canola is now the second-largest crop grown in the province. Saskatchewan produced 5.7 million tonnes, or 48% of Canada's production in 2009.

Canola seeds are crushed into two main component parts: oil and meal. The canola crushing capacity in Saskatchewan is expanding to take advantage of increased domestic and international market demand for canola products. Responding to the increased world demand for healthy choices, canola crushing capacity in the province is expanding from 1.1 million tonnes to approximately 3.89 million tonnes annually.

Saskatchewan exported \$1.36 billion of canola seed to China \$553M (41%), Japan \$366M (27%), Mexico \$184M (13%) and the United States \$103M (8%). Saskatchewan is also a major exporter of canola oil, exporting almost \$500 million in 2009, primarily to the United States.

Saskatchewan is also a world leader in the production and export of flax. Saskatchewan produced 700,000 tonnes, representing 70% of Canada's production, and 30% of the world production in 2009. Flaxseed grown in Saskatchewan is destined for the export market as flax oil, flaxseed meal, and flax fibre. In 2009, however, trade barriers caused Saskatchewan's flax exports to drop from a 2008 high of \$379 million to \$228 million. The primary countries for flaxseed exports in 2009 were Belgium \$76M (33%), China \$69M (30%) and the United States \$66M (29%).

Seventy-seven per cent of Canada's mustard production and 25% of the world's mustard production comes from Saskatchewan. We are the leading producer of mustard in Canada, producing 58,742 tonnes in 2009. Our largest markets for mustard seed are the EU with \$34.5M (51%), and the United States with \$26.1M (39%). Saskatchewan mustard adds zest to a myriad of food products. As one of the oldest condiments, mustard's aromatic flavour has made it a favourite of cooks and diners for thousands of years.

Saskatchewan produces three kinds of mustard: yellow, brown and oriental. The familiar yellow mustard is the mildest of the three and has the lowest oil content. Brown mustard is used in Dijon-style mustards and is blended with the yellow variety to make English mustard, while Oriental mustard provides the spicy cooking oils that are favoured in the cuisines of Asia and Japan.

Pulses

Saskatchewan's pulse industry is tremendously important to the province, Canada and the world. Over the past three decades, Canada has developed a \$1.6 billion pulse industry.

Saskatchewan has become a global leader in the production of lentils, peas, and chickpeas. Today, 90% of lentils, 70% of peas, and 40% of chickpeas produced in Canada are grown in Saskatchewan. Pulse crops are now grown on over 2.1 million hectares in the province. More than 100 top quality pulse crop processors are located in Saskatchewan. A smaller number provide value-added processing such as colour sorting, splitting, milling, retail packaging, feed processing and pre-cooking.

Opportunities for pulses include gluten-free pasta made from peas and lentils, ready-to-bake bread dough from pulse flour, breakfast cereals, pretzels, cookies and baking mixes, and freeze-dried/dehydrated products containing pulses. Opportunities also exist in the organic market, including frozen stews and curries, canned curried products, new and novel products (freeze dried soups, snack mixes), snack foods, pet foods, meat substitutes, and pasta. Emerging opportunities also include supplying ingredients to major food processors. Feed peas, with their high energy and protein levels, can be an attractive alternative in livestock rations, particularly hog and poultry feeds.

Fruit

Saskatoon berries are considered a super-fruit, containing high sources of anti-oxidants. Saskatchewan has 28% of Canada's farms reporting Saskatoon berries, and 34% of Canada's total acreage.

Prairie cherries have dark red skin and contain dark red juice. These cherries are an excellent source of vitamins and anti-oxidants. They are very hardy, and can survive temperatures to -40 degrees Celsius.

Saskatchewan has 17% of farms reporting sour cherries, and 5% of Canada's total acreage.

Saskatchewan is home to 35% of Canada's organic production, with more than 1,200 certified producers, over 75 organic processors and more than a dozen certified handlers and traders.

Medicinal herbs, essential oils, spices and dried culinary herbs, and fresh culinary herbs are also processed in the province. These are used to create leading-edge health products that are exported globally.

Saskatchewan is the centre of agricultural biotechnology in Canada. We are home to more than 700 scientists working in 30 private, public and academic facilities.

Research Institutions

Saskatchewan has strong research institutions, which are an asset for industry development. The provinces' R&D infrastructure is especially strong in crop production and processing.

Saskatchewan is highly regarded for its crop research institutions. The depth of agricultural biotechnology research provides strong expertise in commodity crops such as canola and flax. These crops have the potential of being developed for nutraceutical or functional food uses. Nutraceutical opportunities in flax include Omega-3 fatty acids and lignans. Canola with modified oils demonstrates significant potential. Companies such as Dow AgroSciences (www.dowagro.ca) and Monsanto Canada (www.monsanto.ca) have been developing canola varieties with enhanced nutritional characteristics.

Saskatchewan also has strengths in process development and custom processing. Agriculture & Agri-Food Canada with its Value-Added Processing Research Program and POS Pilot Plant specialize in developing new processing technologies for crops. POS Pilot Plant and the Innovation Place Bio-Processing Centre offer custom processing services. The Saskatchewan Food Industry Development Centre and the SRC Fermentation branch offer complementary specialized services. Four of the research institutions as well as a few small private laboratories provide laboratory services.

The University of Saskatchewan is one of two universities in Canada with a metabolic unit that provides a controlled environment (every element of the diet can be controlled) where clinical trials for food products are conducted.

Overall, Saskatchewan has a strong and varied research infrastructure. The research institutions in Saskatoon provide the highest degree of nutraceutical and functional food resources from crop production to processing, and potentially to clinical trials available in one city in Canada.

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