

Canola Facts

Canola was developed in the early 1970s using traditional plant breeding techniques by Canadian plant breeders to remove the anti-nutritional components (erucic acid and glucosinolates) from rapeseed to assure its safety for human and animal consumption. The canola plant also produced seeds with a very low level of saturated fat, seven percent or below.

Christened “Canola” from “Can” (for Canada) and “ola” (for oil low acid), canola is not, strictly speaking, rapeseed. There is an internationally regulated definition of canola that differentiates it from rapeseed, based upon its having less than two percent erucic acid and less than 30 umoles glucosinolates. Oilseed products that do not meet this standard cannot use the trademarked term "Canola."



Seed Types/Common Varieties

Innovations in canola, through the introduction of herbicide tolerance, has reduced farmers' costs and the use of natural resources in its production. In Canada there are three main groups of herbicide-resistant canola: Roundup Ready and Liberty Link varieties that were produced using genetic modification, and Clearfield varieties that were developed using a traditional plant breeding technique called mutagenesis.

The transgenic gene inserted into the canola plant to produce Roundup Ready and Liberty Link InVigor herbicide resistance is a protein. All protein is removed from canola oil during processing, so canola oil contains no GM material and is identical to canola oil from a non-GM canola plant.

Another innovation is the development of hybrid canola varieties. Hybrids can increase yields and are increasing in acreage. New Roundup Ready, InVigor and Clearfield hybrids have been introduced and hybrids are expected to be sown on 80 percent of canola acreage in 2007.



Industry Overview

Canada's canola industry adds over \$11 billion in economic activity to the Canadian economy. In the five crop years starting in 2000-2001, Canada produced an average of 6.2 million tons of canola seed per year. In the same period, Canada annually exported 3.4 million tons of canola seed, 706,000 tons of canola oil and 1.15 million tons of canola meal.

The total value of canola seed, oil and meal exports is about \$2 billion. Depending on the year, canola is either Canada's first or second most valuable field crop (the other is wheat).

The U.S. is Canada's largest canola buyer. The U.S. imported an average of 510,000 tons of canola oil per year from 2000-2001 to 2004-2005, valued at \$345 million/year. From 2000 to 2005, the U.S. has purchased an average of 255,000 tons of seed per year valued at roughly \$85 million. In the same period, the U.S. purchased approximately 1.1 million tons of canola meal per year from Canada (about 60 percent of total meal production) valued at \$235 million. Canada's principal seed buyers are Japan and Mexico. China and Pakistan are emerging as major seed buyers.

Where Canola is Grown

More than 52,000 Canadian farmers grow canola, generating economic activity of \$1.4 billion in Ontario and Quebec (primarily in the processing sector), and \$7.5 billion in western Canada. Canola is also grown in the north central and southeastern United States. In Canada, the ten-year average is 11.3 million acres harvested. Canada is the biggest single producer of canola. However, the EU member countries combined grow more canola, and China's rapeseed acreage exceeds Canada's canola production.

The canola plant produces yellow flowers that, in turn, produce seed-filled pods. The seeds that are crushed to obtain canola oil. Seeds contain 40-43 percent oil. The remainder of the seed is processed into meal, a high protein livestock feed.

Canada produces 20 percent of the world's canola/rapeseed and is by far the largest exporter, accounting for 74 percent of export trade. Canada produces GM, spring canola while winter canola predominates other geographic areas where canola is grown including the E.U. and China.



Major Products

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.

In October 2006, its high amount of unsaturated fat earned it authorization from the U.S. Food and Drug Administration (FDA) for a qualified health claim. The claim is: "Limited and not conclusive scientific evidence suggests that eating about 1 tablespoons (19 grams) of canola oil daily may reduce the risk of coronary heart disease due to the unsaturated fat content in canola oil. To achieve this possible benefit, canola oil is to replace a similar amount of saturated fat and not increase the total number of calories you eat in a day. One serving of this product contains [x] grams of canola oil."

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. Recently, KFC in Canada, Taco Bell throughout North America and McDonald's in the U.S. have switched to using canola oil or a canola oil blend in their food service operations.

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.

The canola industry is setting goals for 2015 that call for at least 15 million acres of production, average yields of 40 bushels per acres and production of 14 million tons. Of that production, 6.5 million tons is for export, and 7.5 to be crushed - 5 million tons going to food and 2 million for biodiesel.



Processes Used

Canola seeds are crushed into two component parts, oil and meal, which are then further manufactured into a wide variety of products. The Canadian oilseed processing (crushing) industry consists of 13 crushing and refining/packaging plants, owned by five companies. Crush capacity in 2006 was 3.7 million tons. It is expected to increase to 5.7 by the end of 2007 and to 7 million tons within two years as several major new plants come on stream.

Further manufacturing, called refining, improves the color, flavour and shelf life of canola oil. Total refining capacity of canola oil in Canada is over one million tons annually and essentially parallels canola crude oil production. It is spread across the country in close proximity to both canola oil production and the Canadian population. Virtually all the seed processors now integrate oil refining into their operations as well.

Canola Oil Extraction

- 1.The first stage in processing canola is to roll or flake the seed. This ruptures cells and makes the oil easier to extract.
- 2.Next the flaked or rolled seeds are cooked and subjected to a mild pressing process which removes some of the oil and compresses the seeds into large chunks called “cake fragments.”
- 3.The cake fragments undergo further processing to remove most of the remaining oil. The oil extracted during each step is combined. The oil is then subjected to processing according to the end product requirements. Different treatments are used to process salad oils, margarines, and shortenings.