DOW AGROSCIENCES OMEGA-9 CANOLA OIL

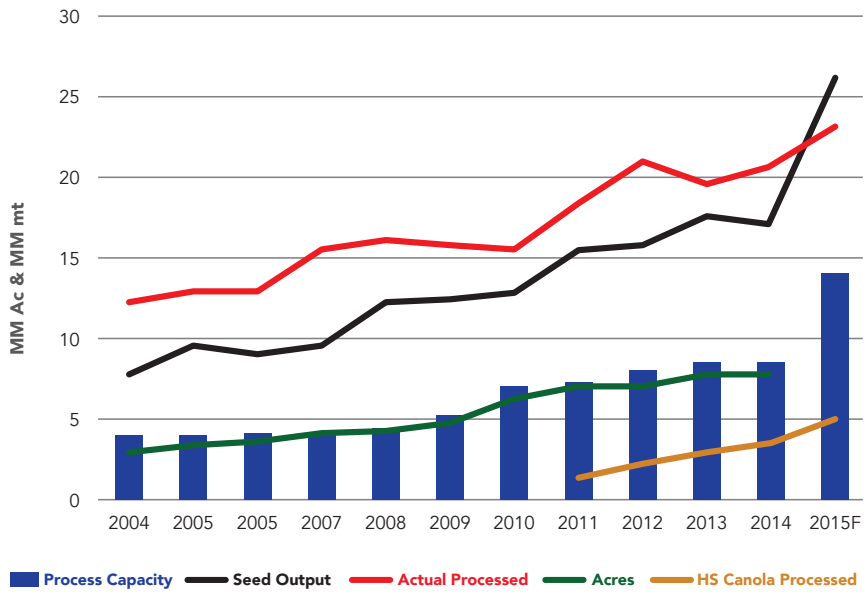
The position of canola is changing within the North American food industry. Expansion of canola production and processing capacity are providing for greatly increased output and reliable supply. Innovations in plant breeding have created a new omega-9 (high oleic) canola oil with greater functionality and health benefits.

Omega-9 Oils
Healthier Oils. Healthier Business.™

CANOLA IS THE GROWTH OIL IN THE NORTH AMERICAN OILSEEDS COMPLEX

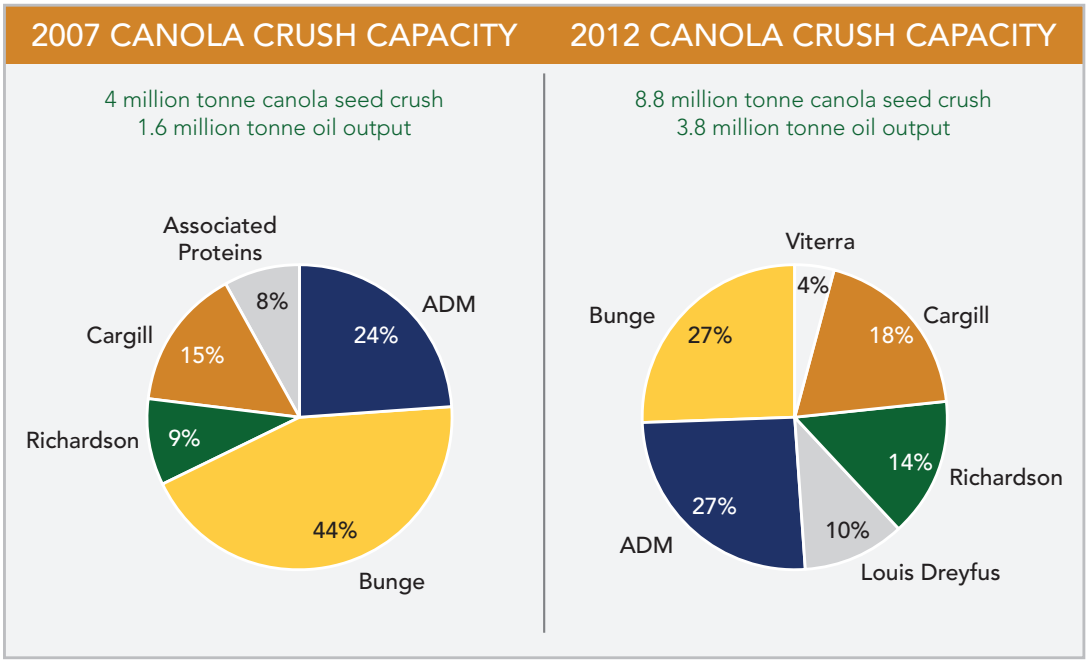
Canola is widely adapted across the upper great plains of the U.S. and Western Canada with access to 100 million acres of cropland. Canola is typically grown in a 1 in 3 year crop rotation with wheat and provides a higher return per acre to producers.

Canola is a high oil crop with 45 percent oil content (soy is 18 percent). With the domestic North American market oil deficit, this has encouraged the expansion of canola production as per the following table. Canola production is forecast to reach 26 metric tons and 52 bu/acre by 2025.



CANOLA PROCESSING DOUBLES NORTH AMERICAN CAPACITY

The increase in canola acres, coupled with the domestic demand for new, healthier and more functional oils as replacements for hydrogenated oil, is driving an expansion of canola processing for the North American market. Existing companies are expanding canola crush capacity, and new entrants are building capacity.



All new plant capacity is being targeted to the food industry in North America and Asian markets.

DOW AGROSCIENCES OMEGA-9 CANOLA PROGRAM

In 1996, Dow AgroSciences (DAS) started the omega-9 (high oleic) canola breeding program. The program is solely focused on developing high-yielding canola varieties that consistently produce a unique "high oleic and low linolenic" fatty acid profile. The business first commercialized varieties in the late 1990s with a program to Japan. The program was launched into the North American market in 2004 as trans fat labeling began. In the 2015 crop year, the DAS Omega-9 network will produce over 1.2 billion pounds of Omega-9 Canola Oil. Dow AgroSciences operates one of the largest canola breeding programs globally.

Comparative fatty acid and stability profiles

Oil	OSI(110°C) Stability Index	Oleic C18:1	Linoleic C18:2	Linolenic C18:3	Total Sats
Omega-9 Canola	18	74	15	2	7
Commodity Canola	7	61	21	9	7
Mid-Oleic Sunflower	10	60	28	0	11
Palm Olein	17	47	13	2	36
High Oleic Soybean	22	77	8	3	12

Nexera™ seed fatty acid profile percent		
Year	C18:1	C18:3
2009	74.8	1.9
2010	75.9	1.97
2011	75.7	1.9
2012	74.7	1.9
2013	74.7	1.9
2014	74.7	1.9

Dow AgroSciences omega-9 canola fatty acid profile is unique, with a high oleic, low linolenic and low saturated fat profile. This allows for both a "low saturated fat" and "trans-fat free" label claim in the U.S. and Canada. Omega-9 canola produces a fatty acid profile that remains consistent regardless of the year-to-year change in the environment.

DAS has operational production programs with three major grain handling companies (Richardson, Louis Dreyfus and Viterra), which collectively elevate/handle 80 percent of the total canola production. DAS has processing/oil marketing agreements with five canola processors (Louis Dreyfus, Richardson, ADM, Viterra and Bunge). This allows for multiple and redundant supply chains. All companies have significant logistics capabilities to supply oil on a North American basis.

Omega-9 Canola Oil from DAS has replaced more than 1.5 billion pounds of trans and saturated fat from the North American food supply since 2005.

CANOLA AND CONSUMERS

Joint guidelines from the American Dietetic Association and Dietitians of Canada recommend total fat intakes between 25 to 35 percent of energy with an emphasis on unsaturated fat, primarily MUFA intakes up to 25 percent of energy and PUFA intakes up to 10 percent of energy. The 2010 Dietary Guidelines for Americans recommends consuming less than 10 percent of energy from saturated fatty acids (SFA) and to keep trans fatty acids (TFA) as low as possible. To achieve this goal, the guidelines also recommend replacing solid fats containing partially hydrogenated oils with vegetable oils high in unsaturated fats. The American Heart Association recommends limiting the amount of saturated fat to less than 5-6 percent of total daily calories.

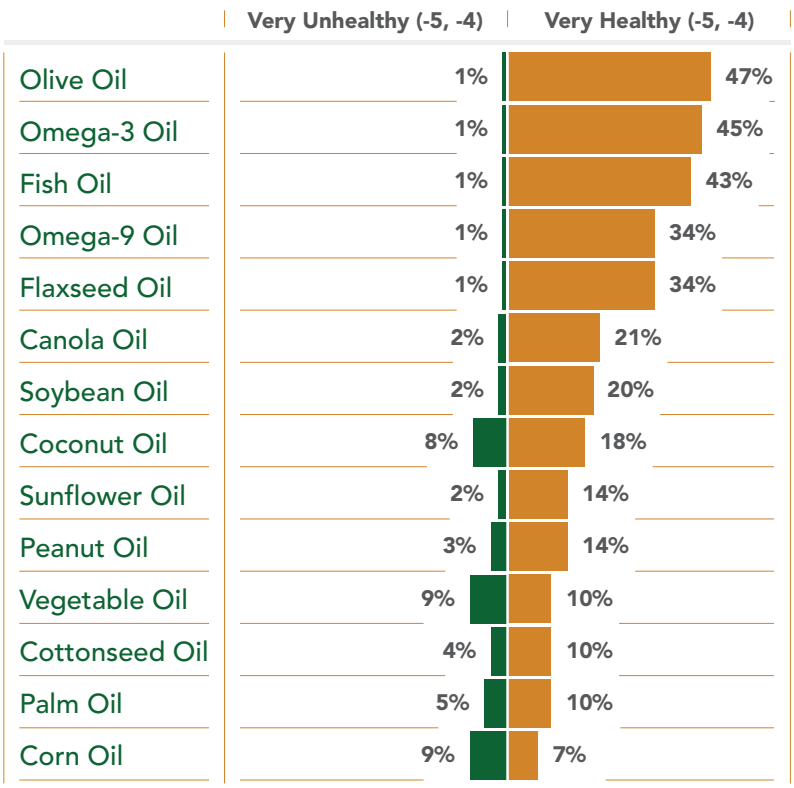
Canola is perceived by consumers as one of the healthiest oils available and has earned an FDA-approved Qualified Health Claim on its ability to reduce the risk of coronary heart disease (CHD) due to its unsaturated fat content. Nutritionists from Cooking Light magazine made canola oil their recommended oil for consumers due to its healthful fatty acid profile and light, clean taste.

Substituting canola oil for other common fats in Americans' diets would improve compliance with recommended intakes of healthy fats, according to a modeling study published in the October 2007 issue of the Journal of the American Dietetic Association. The study looked at the effect of substituting canola oil for selected vegetable oils and canola oil-based margarine for other margarines and butter in the diets of 9,000 people.

	Total Fat in Diet	TFA	SFA	PUFA	MUFA
Recommended	20-35%	<1%	<10%	5-10%	15-25%
Omega-9 Canola Oil	33%	<1%	2.3%	5.6%	23.8%

Omega-9 Canola Oil meets the recommended guidelines from the 2010 Dietary Guidelines since it is high in heart-healthy monounsaturated fatty acids, low in saturated fat and trans free.

Perceived healthfulness of vegetable oils (U.S. consumers)



Multi-sponsor Surveys, Inc. The 2012 Gallup Study of Healthy Fats & Oils

Vegetable oils high in monounsaturated fatty acids (MUFA) also know as omega-9 fatty acids, offer a functionally stable alternative to oils high in trans or saturated fats and provide valuable health benefits protecting against metabolic syndrome and cardiovascular disease. MUFA-rich oils are cost-effective, reliable source solutions with the improved functionality, stability and health profiles, and clean flavor.

NORTH AMERICAN OILSEEDS SITUATION

The North American oilseeds complex is undergoing a significant transformation, driven by changing needs of the food industry and the adoption of renewable fuel mandates in the U.S.

DRIVER	IMPACT	OUTCOMES
Healthier Eating	• Replace hydrogenated oils • Reduce saturated fats	• Eliminate trans fats • Lower saturate oils intake
Hydrogenated (PHO) Gras Status	• Natural ingredients	• Naturally stable oils demand
Biofuel Mandates	• Remove PHO oils • More biodiesel • More ethanol	• Soy oil use as biodiesel feedstock • Increased corn acres

The result is a significant shift in oilseed cropping patterns and vegetable oil production.

U.S. vegetable oil use (billion pounds) food only

	02/03	04/05	06/07	08/09	10/11	12/13	14/15
Soybean	17.00	16.90	15.90	14.30	14.10	13.90	13.80
Canola	1.34	1.68	1.86	2.50	3.02	3.05	4.28
Corn	1.62	1.65	1.83	1.57	1.67	1.55	1.57
Sunflower	0.26	0.22	0.60	0.45	0.55	0.43	0.41
Cotton	0.64	0.93	0.71	0.50	0.63	0.62	0.49
Palm	0.38	0.71	1.46	2.12	2.11	2.75	2.48

Source: Informa 1/2015

Soybeans are a protein-driven crop, and production and utilization are driven by the protein meal market. The U.S. Renewable Fuel 2 Mandate took effect in early 2013 and will require at least 1.0 billion gallons of biodiesel production each year requiring more than 4 billion pounds of soybean oil.

FDA has issued a Federal Register Notice with its preliminary determination that partially hydrogenated oils are no longer generally recognized as safe (GRAS). As a result of the renewable fuels mandate and GRAS status of partially hydrogenated oils, soybean oil use in food is declining.

SUMMARY

- The transformation occurring in the North American oilseeds complex is driven by the demand for healthier food oils and the adoption of renewable fuels.
- Canola is now the second largest oil used in the U.S. food industry, and its use in the food industry has doubled since 2002. It is the growth oil in the North American oilseeds complex.
- The North American canola processing capacity has been doubled. Existing companies are expanding and new companies are investing in facilities. This will offer food companies new options, supply chain redundancy and flexibility in supply.
- Omega-9 canola production is supported by DAS who has a global leadership position in plant breeding for modified oils. DAS has an operational supply chain with leading canola processing companies and over ten years of production history.
- Consumers perceive canola oil to be one of the healthiest oils available and are seeking to consume more. Omega-9 Canola Oil is a highly functional oil, uniquely containing the lowest level of saturated fat and a high level of heart-healthy mono-unsaturated fats.

DOW® Dow AgroSciences

Omega-9 Oils™ Healthier Oils. Healthier Business.™