

NORTH DAKOTA

Ag Mag

A Magazine about Agriculture for North Dakota Students

Spring 2009



North Dakota's Oilseeds

What do you think of when you hear the word *oil*? Maybe a fluid in your car? Or a liquid in a can that stops squeaks? What about an ingredient in cakes or in the skillet to make stir-fry?

Many oils come from crops grown in North Dakota. Some are edible oils (oils that people and animals can eat), and some are inedible oils (used for lubrication). These crops are called *oilseeds* because their major purpose is to produce oil.

What different kinds of vegetable oils have you seen on grocery store shelves?

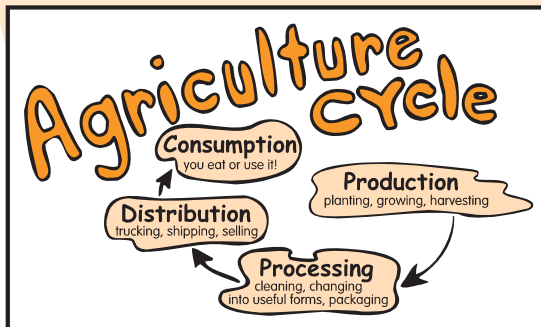
We're #1

North Dakota usually ranks first in the nation in the production of 14 agricultural products. Go to the National Agricultural Statistics Service Web site at www.nass.usda.gov/Statistics_by_State/North_Dakota/Publications/Top_Commodities/pub/rank09.pdf and list these products.

Which three are oilseeds?

For more ag facts and fun, check out the NASS Kids Web site at www.nass.usda.gov/Education_and_Outreach/NASS_Kids.

Agriculture!



It's farming and ranching and much, much more. It's the production, processing, distribution and consumption of food, fiber, forestry and fuel products.

Oilseed Production

Soybeans, sunflowers, canola, flax, crambe and safflower are the major oilseed crops grown in North Dakota.

Soybeans grow in pods on the plants. Each plant may have 60 to 80 pods, and two to four pea-sized beans grow in each pod. The plant's stems, leaves and pods are covered with short, fine hairs. The soybean plant is called a legume because its roots have nodules (small rounded bumps) that give nutrients back to the soil by collecting nitrogen from the air and releasing it back into the soil.

Sunflowers come in two types: striped (non-oil) seeds and black (oil) seeds. Each head has about 1,000 sunflower seeds surrounded by big, bright yellow flower petals. Near harvest time, the heavy heads droop toward the ground. Sunflowers grow very tall, up to 10 feet high. The roots may grow 6 feet into the ground.

Canola grows 3 to 6 feet tall and blooms with a cluster of bright yellow flowers at the top of each stem in early summer. The flowers produce seed pods about 3 inches long. Each pod turns brown as it ripens and contains 20 or more tiny round black or brownish-yellow seeds.

Flax also comes in two types: seed flax for the oil in its seed and fiber flax for the fiber in its stem. Today most Midwestern producers grow seed flax. Its stems each have a single pretty purplish-blue flower at the top when it blooms. The plant may grow up to 3 feet high. The tap root may extend 3 feet into the ground. The tiny seeds are in a boll or capsule containing 6, 8 or 10 brown or yellow seeds.

Crambe has large, dark green leaves on the lower stem that are heart-shaped and crinkled. The plant has many tiny white, four-petaled flowers when it blooms. Each round seed is enclosed in a pod. Crambe grows 2 to 4 feet tall.

Safflower is a thistlelike plant with a strong central stem. Each branch usually has one to five yellow or orange flowers, and each flower produces 15 to 20 seeds. The plants grow 15 to 30 inches tall, and the tap roots can penetrate 5 to 8 feet into the soil.

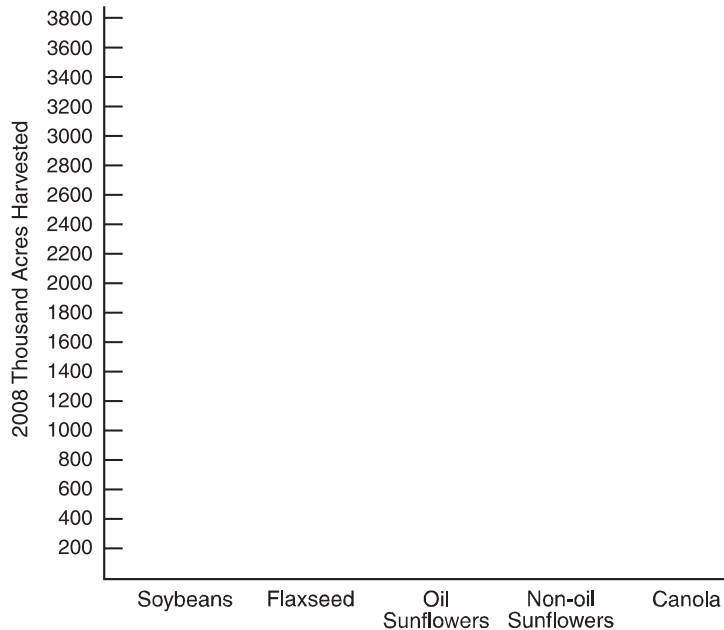
Name That Oilseed Plant

From the descriptions above, identify the different North Dakota oilseed plants.



Acres and Acres of Oilseeds

An acre is an area of land about the size of a football field. Thousands of acres of oilseed crops are planted and harvested in North Dakota each year. Use the chart from the North Dakota Agricultural Statistics Service at www.nass.usda.gov/Statistics_by_State/North_Dakota/Publications/Crops_and_Stocks/jancrop.pdf to fill in the bar chart to show how many acres of soybeans, flaxseed, non-oil sunflowers, oil sunflowers and canola were harvested in North Dakota in 2008.



Soybean Producers!

In 2007, three North Dakota counties were the top soybean producers in the entire U.S.!

- # 1 Cass County
- # 2 Barnes County
- # 3 Richland County

Who Am I?

While at Tuskegee Institute in Alabama, I taught farmers to plant soybeans to replenish the soil with nitrogen and developed hundreds of products from soybeans, such as paints, stains, soap, dye and glue. Who am I?

Oilseed Processing

Where Does That Oil Come From?

They may not feel oily, but oilseeds may be up to 50 percent oil. Oil sunflower seeds are about 44 percent oil, canola 42 percent and soybeans 20 percent.

The oil usually is removed by pressing – literally squeezing the oil out. Sometimes chemicals also are used to extract the oil. The product that's left after pressing is called meal, and it's an excellent protein source for livestock. Look at a bag of dog food and you'll probably see soybean meal as an ingredient.

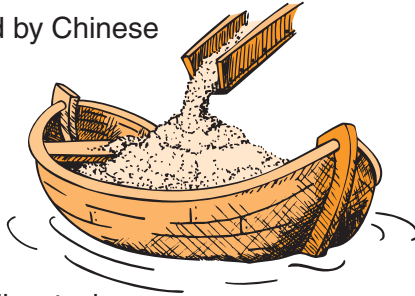
Many oilseeds are processed in North Dakota. Identify on the state map where these processors are located.

- ADM Northern Sun, Enderlin** – oil sunflowers, crambe, canola
- Cargill, West Fargo** – oil sunflowers, flax, canola
- CHS, Grandin** – non-oil sunflowers
- Minn-Dak Growers Assn., Grand Forks** – non-oil sunflowers, safflower
- Red River Commodities, Fargo** – non-oil sunflowers, flax, soybeans
- SunOpta, Wahpeton** – non-oil sunflowers
- ADM, Velva** – canola
- Dahlgren, Fargo** – non-oil sunflowers
- Golden Valley Flax, Park River** – flax
- Flax USA, Goodrich** – flax

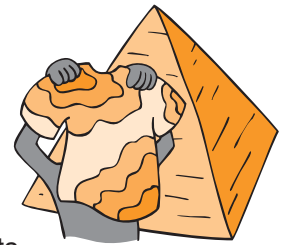


Oilseeds Then and Now

Soybeans — Domesticated by Chinese farmers between 1700 and 1100 B.C., soybeans were first planted in what is now the U.S. in 1765 and used to produce soy sauce and soy noodles. Around World War II, the soybean plant was grown as hay for livestock rather than for its beans. But soon scientists learned about the bean's nutritional and industrial properties. In the early 1900s, George Washington Carver developed hundreds of products from soybeans. Henry Ford even created plastic car parts from soybeans in the 1930s. Biodiesel also was developed in the 1930s.



Safflower — The safflower is native to Persia and northwest India. By 1600 B.C., ancient Egyptians made fabric dyes from its dried flowers. Safflower is a relatively new crop in North Dakota, grown commercially since 1957, primarily in the drier western part of the state. Safflower provides oil for cooking and deep-frying, inedible oil that helps paints and varnishes dry and not turn yellow, meal for livestock feed and seed for birdseed.

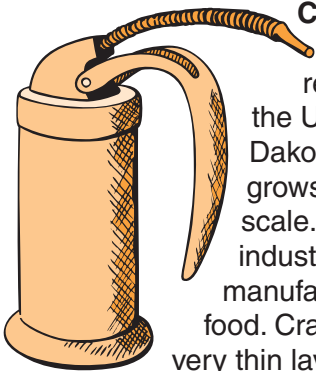


Sunflowers — It's believed sunflowers were cultivated by Native Americans in present-day Arizona and New Mexico about 3000 B.C. The name "sunflower" was given because the heads of the plants turned during the day to follow the sun to get more energy. Each morning the plants turned their heads toward the east, and by evening they were facing west. But that turning weakened the stems that hold the heads heavy with sunflower seeds, so plant breeders developed plants that no longer turn but stay strong and upright.



Sunflowers come in two types. Striped seeds from non-oil sunflowers are eaten after being roasted in the shell or as kernels without the shell. Birds also love sunflower seeds. Black sunflower seeds are processed into oil for cooking and salads. North Dakota produces about half of all the sunflowers grown in the U.S.

Crambe — Crambe is native to the Mediterranean region and was introduced to the U.S. in the 1940s. North Dakota is the only state that grows crambe on a commercial scale. Crambe provides an industrial oil for lubricating and manufacturing, and is not used as food. Crambe oil's primary use is as a very thin layer that prevents plastic bags from sticking together. Crambe meal is a good protein source for cattle.



Flax — Flax was cultivated in Babylon in 3000 B.C. Ancient Egyptians made fine linens from flax fiber. About 400 B.C., Hippocrates, the father of medicine, used flax to relieve abdominal pains. With World War II, demand for flax increased as more oil was needed in homes and factories. Today some people eat flaxseed by itself and in baked goods for its nutrition and fiber. Some eggs are more nutritious since the hens were fed a flaxseed diet. Linseed oil from flax is replacing some petroleum-based chemicals in paints, stains, flooring materials and other products.



Canola — The oil from rapeseed, canola's "parent," was used in lamps in ancient Asia and Europe. During the steam power era, the oil clung to metal surfaces washed with water or steam better than other lubricants. Today's canola is a relatively new plant, developed by Canadian plant breeders in 1974 for its nutritional qualities. The word comes from "Canada oil." In 1985, the U.S. Food and Drug Administration approved canola as a safe oil for human food. North Dakota produces more canola than any other state in the U.S.



Career Corner

Sheri Coleman

Executive Director, Ameriflax
Associate Director, Northern Canola Growers Association

Sheri Coleman loves the variety her two jobs provide. As both associate director for the Northern Canola Growers Association

“My primary duties are to manage the marketing, promotion and health aspects of canola and flax.”

and executive director for Ameriflax, Sheri promotes healthful foods grown in North Dakota.

Based out of Bismarck, Sheri says, “My primary duties are to manage the marketing, promotion and health aspects of canola and flax. I am the direct link to the everyday consumer as well as the culinary professionals and the health-care professionals. I direct meetings, and coordinate programs and media materials. I write stories for several magazines and newsletters and do public speaking, put on conferences, develop marketing materials and get to meet amazing people.”

Sheri grew up on a farm near Mott, N.D., and then studied nursing in college.

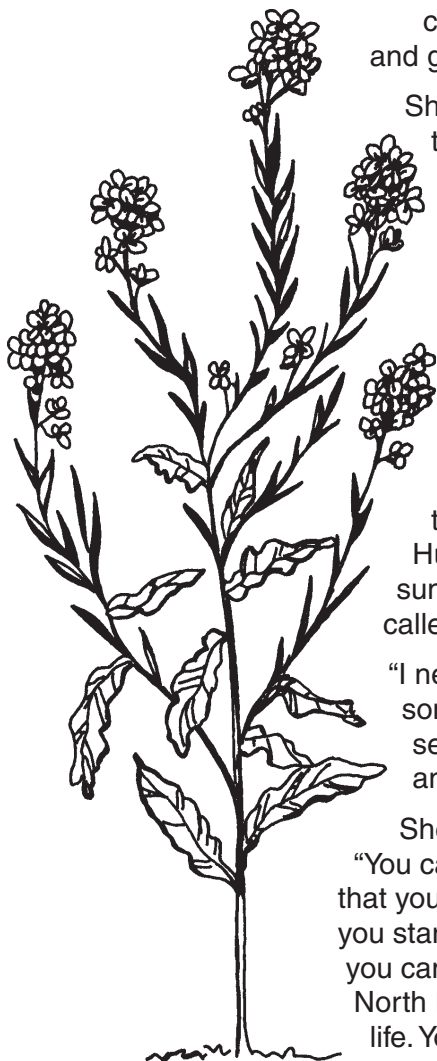
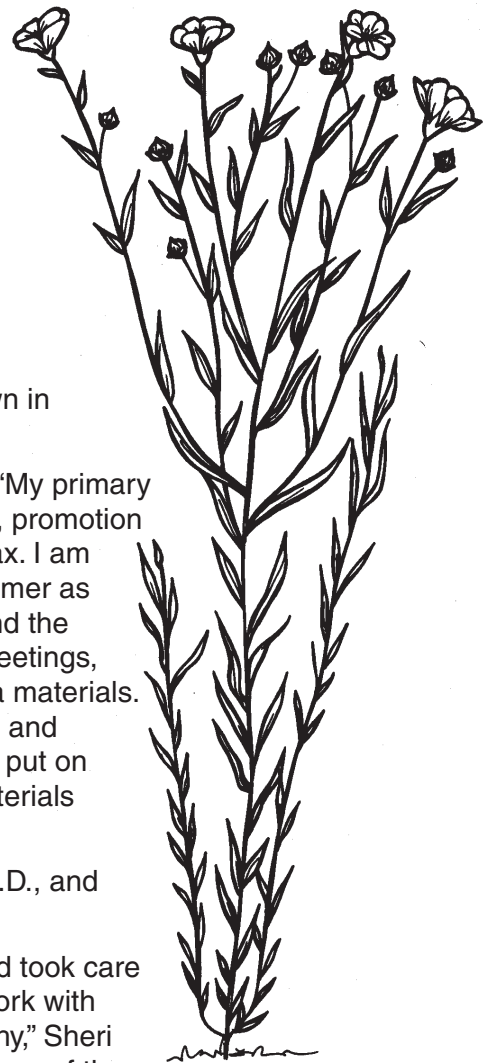
“I used to work in the hospitals and took care of some very sick people; now I work with healthy people to keep them healthy,” Sheri said. “I enjoy my work mostly because of the difference I make in this world in making people healthier.

It is very rewarding to see farmers growing healthy crops in North Dakota!”

Sheri had the opportunity to work with two super chefs, just like the ones we see on TV. She was nervous cooking with them in the kitchen, but her Sheri’s Hungarian Stew won as best dish. Last summer, Sheri co-authored a cookbook called “Canola Gourmet.”

“I never thought I could ever accomplish something like that,” she said. “Now it’s selling around the world in bookstores and on Web sites like amazon.com!”

Sheri encourages others to set goals. “You can do anything and be anything that you put your mind to, and just because you start out as one thing does not mean that you cannot grow into another. Coming from North Dakota already gives you a leg up in life. You have so many ingredients that end up on your healthy plate right in front of you in the fields that grow all around!”



“You can do anything and be anything that you put your mind to, and just because you start out as one thing does not mean that you cannot grow into another.”

Oilseed Distribution



Where in the World?

To export means to sell to another country, and to import means to bring into a country.

North Dakota oilseed crops are exported to many countries around the world. On the world map, color in the countries that are major importers of U.S. oilseeds.

Sunflower

oil - Canada, Japan, Singapore, Mexico
kernels - Germany, United Kingdom
in-shell - Spain, Turkey

Soybeans

whole beans - China, Mexico, Japan
oil - China, Mexico
meal - Mexico, Canada, Venezuela

Canola

seed - Mexico, Canada

Crambe

oil - United Kingdom

Flax

seed - Belgium
oil - Netherlands, Canada, Mexico, Taiwan, Australia

Safflower

oil and seeds - Japan

Think About It

Are olive oil, sesame oil and peanut oil on your grocery store shelf? Why aren't olives, sesame plants and peanuts grown in North Dakota? Where are they grown?

Corn oil also is at your store. Corn isn't considered an oilseed since only the germ of the plant (the tiny part of the kernel that sprouts and grows into a new plant) is crushed for its oil. Most of the corn kernel is used for livestock feed, starch, sweeteners, corn flakes and other products.

Find the "Printed with Soy Ink" logo on this Ag Mag. What other publications can you find printed with soy ink?

Oilseed Consumption

In addition to providing vegetable oils, North Dakota's oilseed plants provide other foods. Sunflower kernels are used in salads and baked goods. Flax seeds are in some multigrain breads and cereals. Sunflower and flax seeds can be used instead of nuts in most recipes and sprinkled on salads, soups and vegetables.

Soybeans can be made into soy sauce, soy nuts, sprouts, soy milk, tofu (a cheeselike food made from curdled soy milk), meat substitutes and many other products.

Like all foods that come from plants, North Dakota's vegetable oils have no cholesterol. They're liquid at room temperature rather than solid, which means they're healthier oils than solid fats.

Oils provide vitamin E and other nutrients for your body. They also provide energy as calories. Physical activity allows you to balance the calories you eat with the calories you use. So you need to run and play to use up this energy and stay healthy.

MyPyramid

Oils are important for a healthy diet but should be used sparingly. Oils can be from fish, nuts or vegetable sources. Visit www.mypyramid.gov to learn more.



MyPyramid.gov
STEPS TO A HEALTHIER YOU

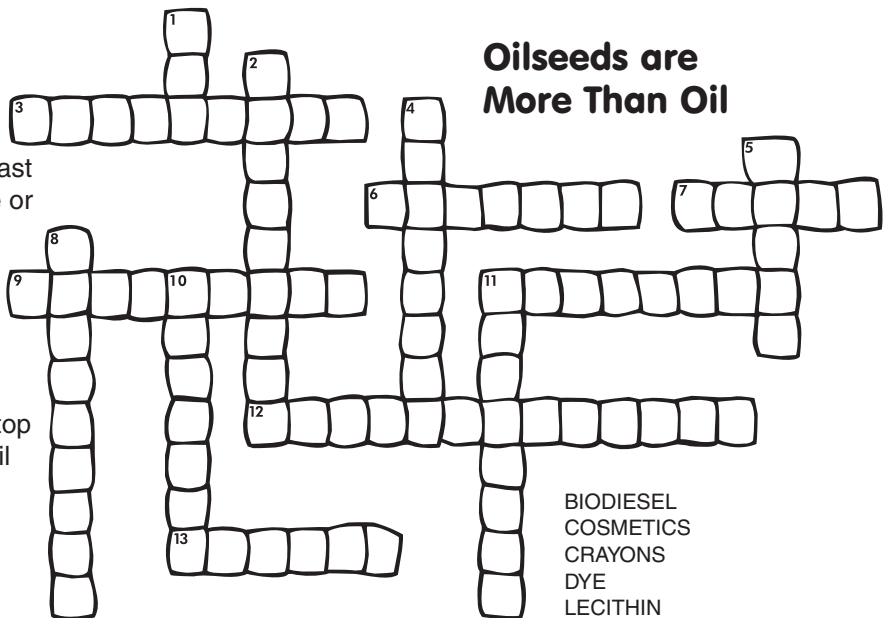
What types of oils did you have yesterday?

Down

1. A substance that colors materials
2. Biodegradable engine fuel made primarily from soybeans
4. Compounds that can be molded or cast
5. A liquid mixture used as a decorative or protective coating
8. Liquid or solid that reduces friction, heat and wear when applied as a surface coating to moving parts
10. Sticks of colored waxy material used for drawing
11. A durable, washable floor or countertop covering made by pressing linseed oil with other materials

Across

3. Lipstick, mascara, powder and other makeup
6. Coats surfaces with a hard, glossy, thin film
7. Liquid that adds color to wood's surface
9. A lotion or cream formulated to prevent sunburn, skin cancers and other conditions caused by excessive exposure to the sun
11. A soybean product that helps keep ingredients mixed
12. Meal from oilseeds usually is used for this
13. What this Ag Mag is printed with



Oilseeds are More Than Oil

- BIODIESEL
- COSMETICS
- CRAYONS
- DYE
- LECITHIN
- LINOLEUM
- LIVESTOCK FEED
- LUBRICANT
- PAINT
- PLASTICS
- SOY INK
- STAIN
- SUNSCREEN
- VARNISH

Take this issue of North Dakota Ag Mag home to share what you've learned about North Dakota's oilseed crops.

Want to learn more? Check out:

Science for Kids at
www.ars.usda.gov/is/kids/

Agriculture in the Classroom Kid's
Corner at www.agclassroom.org/kids/

North Dakota
Agriculture
in the
Classroom



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