Spring 2009

NORTH DAKOTA Ag Mag

North Dakota Agriculture in the Classroom

A Magazine about Agriculture for North Dakota Students

North Dakota's Oilseeds

This issue of the Ag Mag focuses on North Dakota's oilseed crops. The Ag Mag's information and activities are geared primarily toward the state's third, fourth and fifth graders. The Ag Mag is distributed three times per year. Subscriptions are free, but if you're not on the mailing list or if you know someone who wants to be added, contact the North Dakota Department of Agriculture at (800) 242-7535 or ndda@nd.gov.

The magazine also is on the Web at www.ag.ndsu.edu/agmag/agmag.htm or through the North Dakota Agriculture in the Classroom Web site at www.ndaginclassroom.org.

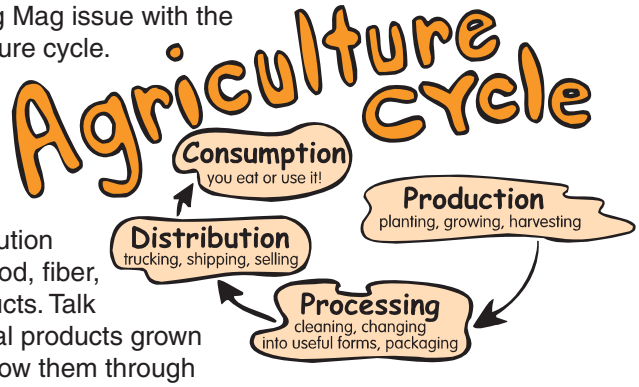
This magazine is one of the N.D. Agriculture in the Classroom Council activities that helps you and other K-12 teachers integrate information and activities about North Dakota agriculture across your curriculum in science, math, language arts, social studies and other classes. It's a supplemental resource rather than a separate program.

N.D. Agriculture in the Classroom Mission

To cultivate an understanding of the interrelationship of agriculture, the environment and people by integrating agriculture into K-12 education

The Agriculture Cycle

Idea: Introduce this Ag Mag issue with the concept of the agriculture cycle. Talk about how agriculture is farming and ranching, the production part of agriculture, but also the processing, distribution and consumption of food, fiber, forestry and fuel products. Talk about some agricultural products grown in your region, and follow them through their cycles.

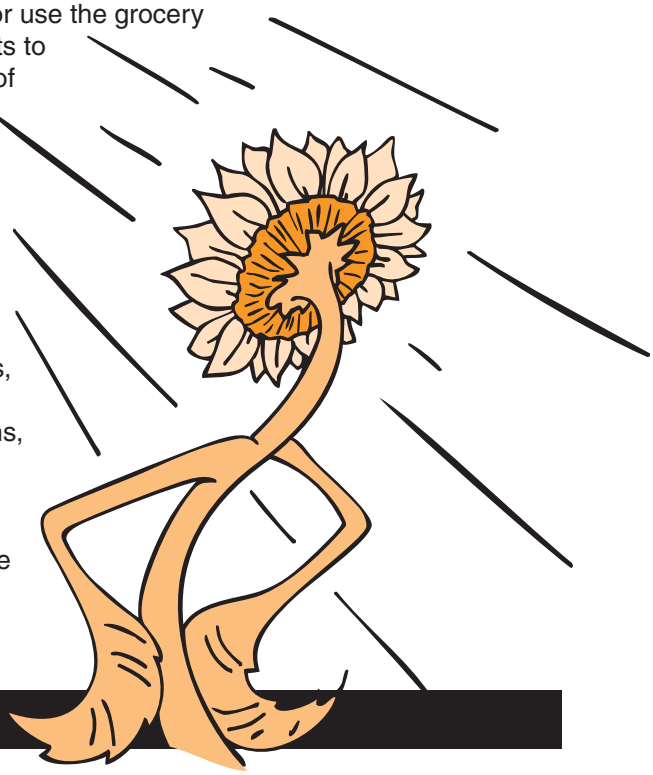


North Dakota's Oilseeds

Idea: Introduce oilseeds by asking students about different kinds of edible and inedible oils. You might take a field trip to a grocery store to see what kinds of oils are on the shelves or ask students to bring examples of or labels from edible oils from home or use the grocery advertising supplements to identify different kinds of edible oils.

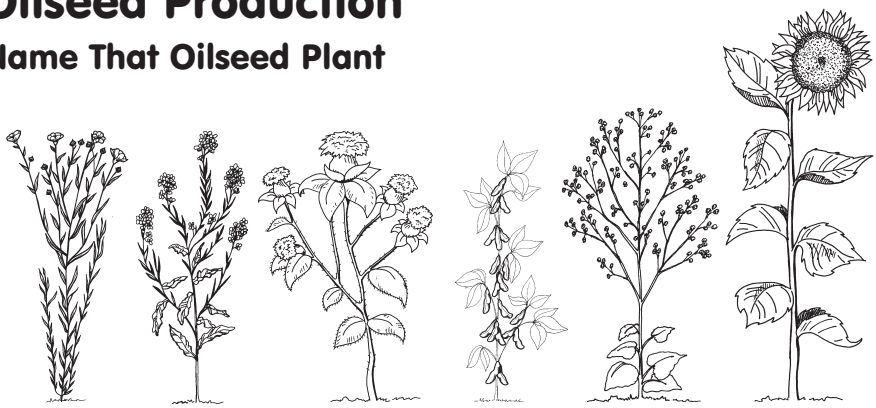
We're #1

North Dakota usually ranks #1 among states in production of spring wheat, durum wheat, oil sunflowers, non-oil sunflowers, barley, oats, all dry edible beans, pinto beans, navy beans, canola, flaxseed, dry edible peas, lentils and honey. Oil sunflowers, canola and flaxseed are oilseeds.



Oilseed Production

Name That Oilseed Plant



flax _____ canola _____ safflower _____ soybean _____ crambe _____ sunflower _____

Idea: Make Beanie Babies to demonstrate seed germination.

Materials: small plastic jewelry bags, one for each student; yarn cut into 24-inch lengths; soybeans or canola, 2 or 3 per student; cotton balls, one for each student; medicine droppers; hole punch

1. Get untreated seeds from a local grain dealer.
2. Have students place a cotton ball and the soybean or canola seeds inside their bags and moisten the cotton ball with a few drops of water using a medicine dropper. Have students punch a hole in their bags with a hole punch, string the yarn through and knot the ends.
3. Talk about the conditions necessary for seeds to germinate (moisture, warmth, darkness). Ask students where they might place the bags to provide the best conditions for germination. Have students hang the bags around their necks and tuck them inside their clothes. Instruct students that they are responsible for providing their beanie babies with the best possible care until the seeds have sprouted.
4. Have students record the progress of their seeds. Each day discuss the changes taking place in their seeds. At the end of three days, chart as a class how many seeds have sprouted.
5. Have students predict what their beanie babies will look like two weeks later. Have some students plant their sprouted seeds in potting medium and others hang their bags in a window, taking care to keep them watered and keeping the tops of the bags open. Record observations and chart them as a class.

Adapted from the Ohio Soybean Council

Idea: Use kernels from oilseeds and other grains to create mosaics.

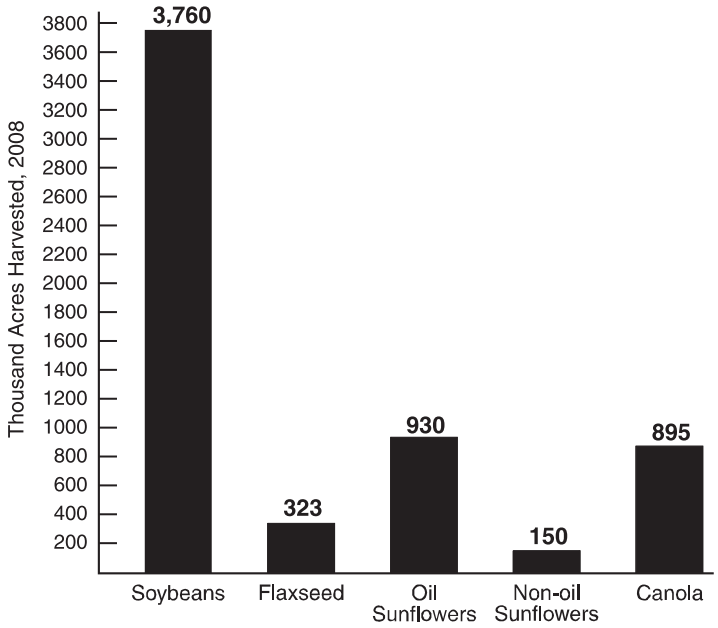
Idea: Compare oil and non-oil sunflower seeds.

Idea: Learn how to grow all kinds of plants at the National Gardening Association's Web site specifically for kids at www.kidsgardening.org. You can subscribe to their e-mail newsletter, order gardening materials, download activities and more.

Acres and Acres of Oilseeds

You might want to print out the N.D. Agricultural Statistics Service Web page at www.nass.usda.gov/nd/cropintro74.pdf for students to graph acres harvested rather than having them find the Web site.

Idea: Production units vary with the crop: tons, bushels, pounds, hundredweights. Discuss with your students what these different measurements are and why they might be used.



Soybean Producers!

Even though Iowa, Illinois, Minnesota and Indiana are the nation's top soybean-producing states, three North Dakota counties produced more soybeans than any other counties in the nation in 2007 (the latest year for which statistics by county are available).

Idea: Have students find Cass, Barnes and Richland counties on a North Dakota map. Why are soybeans grown in that part of the state instead of elsewhere?

Idea: Grow soybeans in milk cartons under different growing conditions: light and dark; fertilized and unfertilized; watered too much, not enough and just the right amount; etc. Chart plant growth and compare plants grown under different conditions. Also, study the root systems to identify nodules that capture nitrogen for the plant.

Who Am I?

George Washington Carver

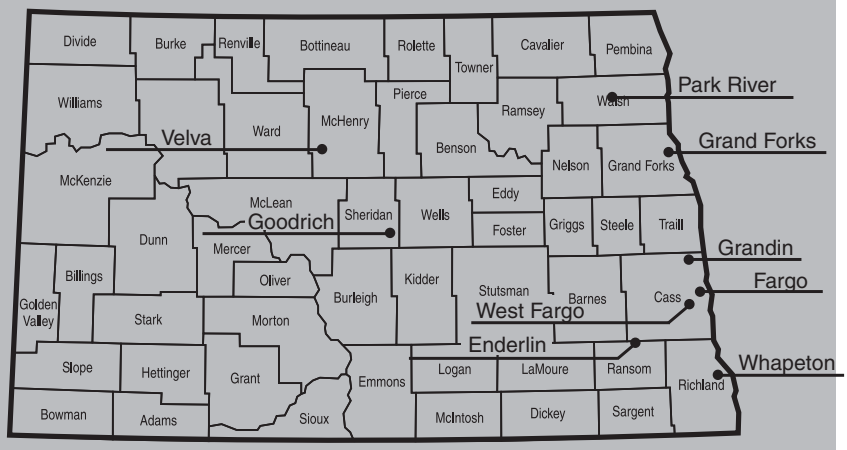
Idea: Have students research George Washington Carver and some of the products he developed.

Oilseed Processing

Idea: Discuss different kinds of oils on grocery store shelves.

Where Does That Oil Come From?

Help students use a North Dakota map to find the cities that have oil processing plants.



Oilseeds Then and Now

Idea: Have students research more about an oilseed: history, production, current uses, etc.

Career Corner

Idea: Ask a farmer or oil processor to come speak to the class about his or her operation.

Oilseed Distribution

Where in the World?

Idea: Have each student research one of the countries from "Where in the World?" Develop booklets or give presentations to have students learn from each other.

Idea: Research what countries import North Dakota's other agricultural products.

Idea: Use the lesson "Step by Step" from Project Food, Land & People to have students study the sequence of production steps to discover the resources required and the variety of careers involved in taking a raw food from the field to the consumer.

Think About It

Idea: Ask students to bring food labels from home. Read the ingredients lists to see what kinds of oils are in different products.

Soy Ink

Soybean oil-based inks are replacing many petroleum inks. Soy inks come from a renewable resource, produce rich colors, and are cleaned off the printing presses safely and inexpensively.

Idea: Ask students to bring samples of other publications printed with soy ink.

Idea: Use the Project Food, Land and People "Don't Use it All Up!" lesson that teaches about renewable and non-renewable resources.

Oilseed Consumption

Idea: Make salad dressing to reinforce the idea that oil and water don't mix and to create a food product using both oil and water. This activity is used with permission from the Soybean Science Kit: Polymers and Oil, copyright 1997, Indiana Soybean Board and Purdue Research Foundation.

Materials

For each student:

- clear or translucent film container
- vegetables for dipping

For each group of 4 to 6 students:

- 2 tablespoons (28 g) sugar
- 1 tablespoon (15 ml) vinegar
- 3 tablespoons (45 ml) soybean oil
- 2 tablespoons (30 ml) water
- 1.5 teaspoons (7.5 ml) ketchup

Vocabulary:

mixture — matter that can be separated into its parts by physical means

solution — a mixture that looks the same throughout

soluble — able to form a solution

Activities:

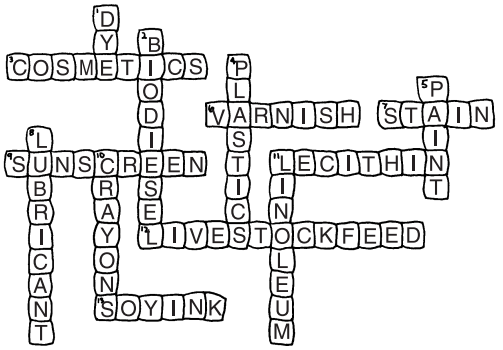
Divide the class into small groups of 4-6 members per group. Discuss the terms *mixture* and *solution*.

Tell the students that they will each be making a small amount of salad dressing that they will use as a dip for vegetables after finishing the experiment. The recipe has many ingredients, including soybean oil and water. Ask the students what they predict will happen when the ingredients are combined or mixed together. Will this mixture be a solution?

Allow the students to begin making the salad dressing according to the recipe given. Each student should add all the ingredients directly to his/her container. After adding each ingredient, the students should observe the mixture, shake 10 times and discuss whether they have made a solution.

The students first add sugar, then vinegar. After shaking, the sugar dissolves in the vinegar, creating a solution. The students then add oil to the container and shake. Is this a solution? (No.) The students should see a line of separation because vinegar and oil are immiscible (will not mix). Oil droplets can also be seen as a sign of insolubility. The students will then add water. They should now be able to see that there are three ingredients that have not mixed. After shaking, the vinegar will mix with the water because vinegar is water-based. The students will then add the ketchup and shake. What happened to the ketchup? It too is water-soluble, so it mixed with the other water-soluble ingredients. If the containers are left to sit a minute or so, the oil will again separate and the students will see the water-soluble ingredients on the bottom of their containers and the soybean oil on the top. The students are now ready to shake up their salad dressing, dip their vegetables and enjoy eating this recipe of immiscible liquids.

Oilseeds are More than Oil



Idea: During harvest, ask a producer to donate a few sunflower heads. During the winter, place them outside your classroom window for a natural bird feeder.

Idea: Make a pine cone bird feeder.

Materials Needed:

Sunflower seeds
Pine cone
2-foot piece of string
1/4 cup peanut butter
1 tablespoon shortening or lard
Pie pan

1. Tie string tightly to top of pine cone.
2. Mix peanut butter and shortening or lard until it's all one color.
3. Spread peanut butter mixture on pine cone.
4. Put sunflower seeds in pie pan. Roll sticky pine cone in seeds.
5. Hang the feeder from a tree where the cats can't get to it but where the birds can enjoy this sunflower seed treat.

From National Sunflower Association

Resources

"Backyard Sunflower" by Elizabeth King

"The Sunflower" by Christel Rosenfeld and Marliese Dieckmann

National Sunflower Association
www.sunflowernsa.com
4023 State Street, Bismarck, ND 58503-0620
701 328-5100 — Fax: 701 328-5101

- "The Story of the Sunflower," an educational coloring book for K-4, can be downloaded from www.sunflowernsa.com/all-about/default.asp
- "Taste of the Sun," eight innovative recipes with sunflower kernels and sunflower oil. Single copy free, additional copies 40 cents each.
- "The Oil Sunflower" video, an eight-minute full-color presentation on sunflower oil from processing plant to end users. Free to use and return.
- "The Confection Sunflower" video, a six-minute video illustrating the basics of the confection sunflower industry from grower to consumer. Free to use and return.

North Dakota Soybean Council
www.ndsoybean.org
1411 32nd Street S, Ste. 3
Fargo, ND 58103
701 239-7194 — Fax: 701 239-7195

- Various worksheets for different grade levels and recipes.

Northern Canola Growers Assn.
www.northerncanola.com
2718 Gateway Ave. #301
Bismarck, ND 58503
701 223-4124 — Fax: 701 223-4130

- "Canola: Sunshine on the Prairie" curriculum on CD, which includes worksheets, teacher background information, recipes (some non-food), posters in two sizes and more.

AmeriFlax
www.ameriflax.com
2718 Gateway Ave. Suite 301
Bismarck, ND 58503
701 663-9799 — Fax: 701 223-4130

MyPyramid.gov
USDA's food guidance system Web site provides information about oils. Students can enter the foods they eat and get a nutrition profile. Ideas for physical activity are included, too.

Tying It All Together

Idea: Have your students check out www.ars.usda.gov/is/kids/teachers/WhizKidAct.htm for the quiz "Using the Old Bean" to learn more about soybeans.

Idea: Check out http://www.canolainfo.org/canola/index.php?page=9 for lesson plans, educational resources and student activities.

North Dakota Agriculture in the Classroom Activities

This **Ag Mag** is just one of the North Dakota Agriculture in the Classroom Council projects. Each issue of the Ag Mag focuses on an agricultural commodity or topic and includes fun activities, bold graphics, interesting information and challenging problems. Send feedback and suggestions for future Ag Mag issues to:

Becky Koch
NDSU Agriculture Communication
(701) 231-7875
Becky.Koch@ndsu.edu

Another council teacher resource is **Project Food, Land & People** (FLP). Using the national FLP curriculum, N.D. Ag in the Classroom provides 600-level credit workshops for teachers to instruct them in integrating hands-on lessons that promote the development of critical thinking skills so students can better understand the interrelationships among the environment, agriculture and people of the world. Teachers are encouraged to adapt their lessons to include North Dakota products and resources.

Project Food, Land & People has 55 lessons, include:

- Amazing Grazing
- Cows or Condos?
- Seed Surprises
- Schoolground Caretakers
- Could It Be Something They Ate?
- What Piece of the Pie?
- and many more.

For information, contact:

Gail Scherweit-Bakko
N.D. Farm Bureau Foundation
(701) 298-2219
gails@ndfb.org

Since teachers must relate work to education standards, the council worked with North Dakota State University to identify which Project Food, Land & People lessons meet North Dakota's **academic standards** for grades K-8. The North Dakota Agriculture in the Classroom Web site at **www.ndaginclassroom.org** includes links to these standards alignments, educational materials, statistics, resources and activities for students and teachers.

For information, contact:

Joanne Beckman
N.D. Department of Agriculture
(800) 242-7535
ndda@nd.gov

Educators may apply for **mini-grants for up to $500** for use in programs that promote agricultural literacy. The Agriculture in the Classroom Council, working with the N.D. FFA Foundation, offers these funds for agriculture-related projects, units and lessons used for school-age children. The mini-grants fund hands-on activities that develop and enrich understanding of agriculture as the source of food and/or fiber in our society. Individuals or groups such as teachers, 4-H leaders, commodity groups and others interested in teaching young people about the importance of North Dakota agriculture are welcome to apply.

Examples of programs that may be funded: farm safety programs, agricultural festivals, an elementary classroom visiting a nearby farm and ag career awareness day. Grant funds can be used for printing, curriculum, guest speakers, materials, food, supplies, etc. More ideas and an application are at www.ndaginclassroom.org.

For information, contact:

Beth Bakke Stenehjem
N.D. FFA Foundation
(701) 224-8390
bethbakke@btinet.net

The N.D. Geographic Alliance conducts a two-day **Agricultural Tour for Teachers**. The tour includes farm and field visits, tours of agricultural processing plants to see what happens to products following the farm production cycle, and discussions with people involved in the global marketing of North Dakota farm products.

For information, contact:

Marilyn Weiser
North Dakota Geographic Alliance
(701) 858-3063
marilyn.weiser@gmail.com

Agricultural Science in the Virtual Classroom is a pilot project in which middle school and high school science classes are paired with North Dakota State University agriculture faculty and North Dakota ag industry leaders. The pairs will use videoconferencing, Web pages and other technologies to share knowledge about biofuels, food safety or similar ag topics.

For information, contact:

Kim Owen
NDSU Information Technology Services
(701) 231-9522
kim.owen@ndsu.edu

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http://www.nass.usda.gov/Statistics_by_State/North_Dakota/Publications/Top_Commodities/pub/rank09.pdf

North Dakota's Top Agricultural Commodities

2008 Rank in the U.S.

#1 Commodity	Percent of Nation's Production
Spring Wheat	45 percent
Durum Wheat	50 percent
Oats	17 percent
Barley	36 percent
Flaxseed	96 percent
Pinto Beans	65 percent
Dry Edible Beans	39 percent
Dry Edible Peas	64 percent
Oil Sunflowers	44 percent
Non-oil Sunflowers	42 percent
Canola	90 percent
Lentils	35 percent
Honey	22 percent
Navy Beans	46 percent

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http://www.nass.usda.gov/Statistics_by_State/North_Dakota/Publications/Crops_and_Stocks/jancrop.pdf

Annual Crop Summary: Area Planted and Harvested

North Dakota, 2007-2008

Crop	2007 Area Planted 1,000 acres	2008 Area Planted 1,000 acres	2007 Area Harvested 1,000 acres	2008 Area Harvested 1,000 acres
Soybeans	3,100	3,800	3,060	3,760
Flaxseed	320	335	317	323
Oil Sunflowers	910	960	895	930
Non-oil Sunflowers	165	155	160	150
Canola	1,080	910	1,070	895