

agMag

September 2007

A Magazine about Agriculture for North Dakota Students

Welcome to the Wheat North Dakota Ag Mag

This issue of the North Dakota Ag Mag focuses on wheat. The information and activities are geared primarily for the state's third, fourth and fifth graders.

North Dakota Ag Mag is distributed three times each year. Subscriptions are free, but if you're not on the mailing list or know someone else who wants to be added, contact the North Dakota Department of Agriculture at 1-800-242-7535 or ndda@nd.gov.

The magazine is also on the Web at www.ag.ndsu.nodak.edu/aginfo/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 K-12 teachers integrate information and activities about North Dakota agriculture across the curriculum in science, math, language arts, social studies and other classes. It's a supplemental resource rather than a separate program. See page 6 for other AITC programs.

The N.D. Agriculture in the Classroom Council is coordinated through the N.D. Department of Agriculture.

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Wheat — The Staff of Life

This Ag Mag focuses on wheat — North Dakota's #1 crop. In 2006, 8.5 million acres of wheat were harvested in the state. That's about 30 percent of the state's total cropland harvested.

The North Dakota Wheat Commission has many educational materials. See www.ndwheat.com and the list on page 5 of this teacher's guide.



The Agriculture Cycle

Idea: Ask students to define agriculture. Most will probably say things related to farming and ranching. Explain that agriculture is production but also processing, distribution and consumption of food, fiber, forestry and fuel products.

Production — Answers may include a variety of crops and livestock: wheat, soybeans, canola, mustard, carrots,

Christmas trees, beef cattle, turkeys, emus, whatever.

Processing — Pasta processing, feed manufacturing, potato chipping, sugar beet processing, bison processing, cheese making and much more.

Distribution — Trucks and trains primarily

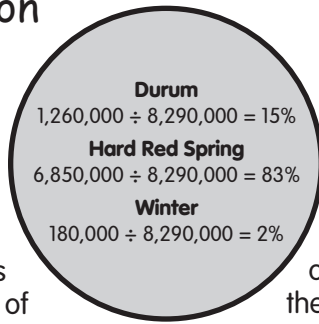
Consumption — Anything goes!

Wheat Production

Classes of Wheat

Help your students draw a pie chart illustrating the percentage each class of wheat makes up of the state's total wheat production. Older students can figure the percentage of each class by dividing the number of acres harvested of that class of wheat by the total number of acres harvested. Younger students can be provided with the percentages.

Rounding can be discussed since all percentages are rounded up to the nearest whole number.



Idea: Ask a wheat grower to come to your class to talk about the kinds of wheat he or she grows and the many steps required to produce wheat.

Idea: Grow wheat plants. Soak kernels of wheat overnight in three times their volume of water until they are saturated. Drain off water that hasn't been absorbed. Lightly pack soil into Styrofoam cups or small milk cartons ahead of time, and have students press

the soaked kernels into the soil. Space seeds evenly, covering lightly with about 1/2 inch of soil. Place in a sunny location. Keep soil moist (not wet), and give extra water on Fridays. Seeds sprout in 6 to 8 days. Students might also chart daily growth, document how much water is used and identify the plant's parts. (Source: Amazing Wheat Teacher's Guide)

Idea: Find the daily cash price of wheat in the newspaper, and graph how the price changes.

Where the Wheat Grows

To find wheat production by county, go to www.nass.usda.gov/nd -- North Dakota's office of USDA's National Agricultural Statistics Service. Under Quick Stats, in the right box, select County - Crops and click Go. Then:

- Step 1 — Wheat All
- Step 2 — All Practices
- Step 3 — 2006 - 2006 to get 2006 data
- Step 4 — highlight All Counties then click Add
- Step 5 — click on Get Data

Click on the Production column to get the bushels produced by county in order. Be sure to skip the "combined counties" statistics.

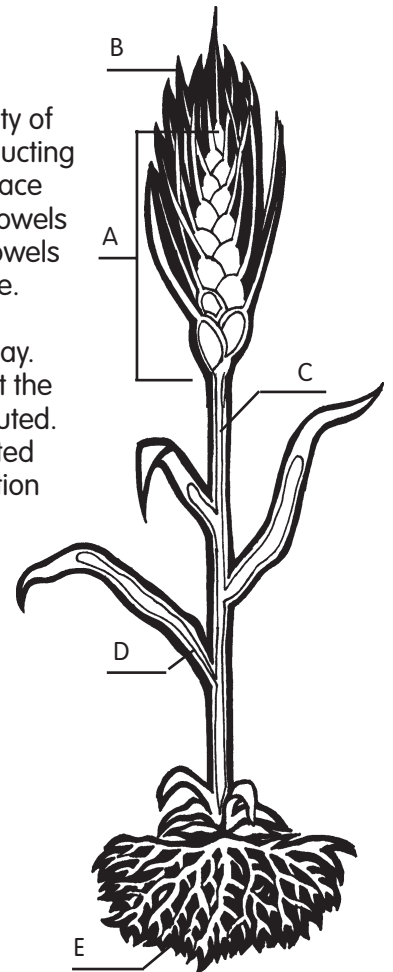
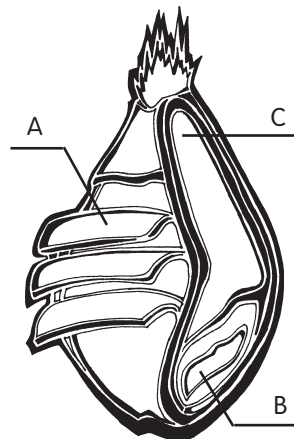
You might print this page to have your students complete the Where the Wheat Grows activity.

To make it easier for you, here are the top 10 North Dakota counties for 2006 bushels produced of all wheat:

| | Bushels |
|-----------|------------|
| Cavalier | 14,665,000 |
| Ward | 13,584,000 |
| McLean | 10,967,000 |
| Bottineau | 10,121,000 |
| Towner | 7,137,000 |
| Hettinger | 6,812,000 |
| Wells | 6,749,000 |
| Divide | 6,440,000 |
| Renville | 6,406,000 |
| Stark | 5,631,000 |

The Wheat Kernel and Wheat Plant

Idea: Check the quality of wheat seeds by conducting a germination test. Place 100 seeds on paper towels in a tray, and place towels on top, sandwich style. Keep towels moist by adding water every day. After one week, count the seeds that have sprouted. The number of sprouted seeds is the germination percentage.



Source: Amazing Wheat Teacher's Guide

Wheat Processing

Idea: Ask students to bring labels of wheat foods from home. Remember that the bran and germ are in food products too. Make a bulletin board. You might even categorize the labels by the class of wheat from which the product is made.

Idea: Place different shapes of pasta in different sizes and shapes of jars. Have students estimate how many pieces of pasta are in each jar. You might have students bring a few pieces of pasta they have at home to show the variety.

Idea: Have students brainstorm other wheat-related careers. Older students might select and research one career area.

North Dakota Mill and Elevator, Grand Forks spring wheat and durum mill
 Dakota Growers Pasta Company, Carrington durum mill and pasta plant
 Noodles by Leonardo, Cando durum mill and pasta plant
 Noodles by Leonardo, Devils Lake pasta plant
 Conte Luna Foods, Grand Forks pasta plant
 Golden Plains Frozen Foods, Leeds pasta plant
 Minot Milling, Minot spring wheat and durum mill
 Horizon Milling, Fairmount spring wheat mill
 La Rinascente Pasta, Hope pasta plant

Wheat Distribution

The Journey of Wheat

- 3 Elevator sells wheat to mill or to a foreign country
- 1 Farmer produces wheat
- 5 Bakery or pasta manufacturer packages products to sell at grocery store
- 2 Farmer delivers wheat to elevator
- 6 You buy wheat foods at the grocery store
- 4 Mill bags flour to sell at grocery store or sells flour or semolina to bakery or pasta manufacturer

Idea: Use a world map to find the locations mentioned in Around the World.

Idea: Conduct research to learn more about each kind of wheat food in Around the World or others.

Idea: Complete the Breads Around the World lesson from the Project Food, Land and People resource book. Project Food, Land and People is a program supported by the N.D. Agriculture in the Classroom Council.

Around the World

- | | |
|------------------------|----------------------|
| <u>H</u> Matzo | A. Mexican |
| <u>E</u> Pita | B. Irish |
| <u>C</u> Hamburger Bun | C. American |
| <u>A</u> Tortilla | D. Norwegian |
| <u>F</u> Scone | E. Greek |
| <u>G</u> Wonton | F. Scottish, English |
| <u>J</u> Croissant | G. Chinese |
| <u>L</u> Spaghetti | H. Hebrew |
| <u>B</u> Soda Bread | I. Italian |
| <u>D</u> Lefse | J. French |
| <u>K</u> Couscous | K. Moroccan |
| <u>L</u> Nan Bread | L. Native American |

Source: AgVenture: Exploring Ohio Agriculture, Ohio Agricultural Council and Ohio State University Extension

Wheat Consumption

Bread in a Bag

Bread in a Bag is a simple way to make 2 large loaves or 4 small loaves of bread with students. Ask a few adult volunteers for help with measuring and mixing and the school cafeteria staff for help with baking. Before beginning, have students wash their hands and cover a few desks with paper for quick cleanup of the work area. Fill large pitchers with warm water and warm milk (105-115F) for students to measure out the amount needed.

Combine in 1-gallon heavy-duty resealable freezer bag:

- 1 cup bread flour
- 2 packages yeast
- 1 cup warm water
- 2 tablespoons sugar

Squeeze upper part of bag to force out air. Close top of bag tightly and mix well by working bag with fingers until ingredients are completely blended.

Allow mixture to rest 15 minutes.

Add:

- 1 1/4 cups warm milk
- 1 tablespoon salt
- 2 tablespoons shortening, softened

Mix well by working bag with fingers.

Gradually add:

- 5-6 cups flour, half bread flour and half whole wheat flour

Add enough flour to make a stiff dough or until dough pulls away from bag. Turn dough onto floured surface. Divide dough in half. Knead each half 5 minutes or until dough is smooth and elastic. Add more flour if dough is too sticky.

Cover with plastic bag and let rise for 10 minutes.

Flatten dough into a 12x7-inch rectangle. Starting from a narrow end, roll dough toward you. Pinch edges to seal. Tuck ends under. Press each end to seal.

Place seam side down in greased 9x5x3-inch pan. Repeat for other loaf. Cover loosely with plastic bag and let rise in warm place until doubled (about 45-60 minutes). Uncover. Bake in 400 degree F oven 35-45 minutes. Remove from pans. Cool on wire racks.

If preferred, this amount of dough can be flattened into four 7 1/2 x 5-inch rectangles and placed in four 5 3/4 x 3 1/4 x 2-inch mini loaf pans. Baking time will be slightly shorter.

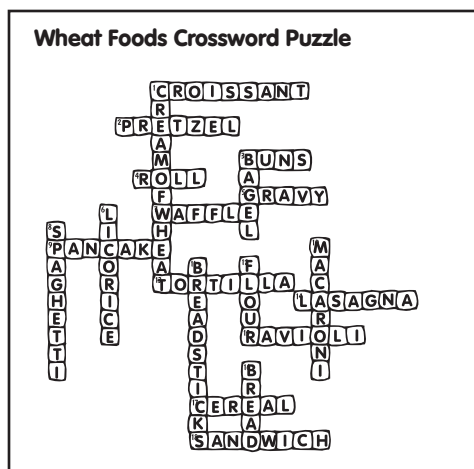
Source: North Dakota Farm Bureau

MyPyramid

Idea: Have students brainstorm foods that fit in the Grains group. Which foods are made from wheat?

Idea: Have students keep a food diary, listing all the foods they eat for one day, a few days or a week. In which segment of MyPyramid does each food fit?

Idea: Have students go to www.MyPyramid.gov to play MyPyramid Blast Off, track their food intake and physical activity, and more. Classroom materials, worksheets, coloring pages and other teacher resources are under MyPyramid for Kids.



Tying It All Together

Idea: Have students write descriptive paragraphs about:

- the aroma of bread baking at a bakery or in someone's home
- the sound, smell and feel of wheat harvest on a hot summer day
- why one kind of cereal is their favorite
- the steps wheat goes through from production to consumption

Idea: Check out the following Web sites.

North Dakota Wheat Commission
www.ndwheat.com

Wheat Foods Council
www.wheatfoods.org

North Dakota Agricultural Statistics
www.nass.usda.gov/nd/

National Pasta Association
www.ilovepasta.org

Home Baking Association
www.homebaking.org

The North Dakota Wheat Commission offers a variety of educational materials. Those best-suited for elementary students are listed below.

Web

Click on Kids and Teachers at www.ndwheat.com for many activities, materials and links.

Information/Activities

“The Story of Wheat” (2006): 20-page booklet for grades 4-6; explains the production, marketing and nutritional value of wheat raised in North Dakota; includes activities.

Free quantities for classroom use. Indicate number of students.

“Summer Vacation with Sammy Spaghetti and Becky Bread” (2006): 16-page booklet for grades K-2 that explains the production and nutritional value of wheat raised in North Dakota; activities included.

Free quantities for classroom use. Indicate number of students.

“Grains of Truth” fact sheets (2006): Booklet with information and statistics about wheat in North Dakota, hard red spring wheat and durum.

Downloadable PDF or free quantities for classroom use.

Kernel of Wheat: 8 ½ X 11-inch colored diagram showing the three main parts of a wheat kernel; includes nutritional information and a diagram of the flour milling process. Grade 4 and older.

Free quantities for classroom use. Indicate number of students.

Samples

Sample of hard red spring wheat: small bag of spring wheat kernels with information card.

25 cents each

Sample of durum wheat: small bag of durum wheat kernels with information card.

25 cents each

Farm-to-Fork Pasta Samples: durum wheat, semolina and pasta with information card.

75 cents each

Posters

The Great Grain Caper: includes worksheets that reinforce making half your grains whole.

Available by request. Downloadable PDF activity sheets on the Web.

N.D. Wheat Commission
4023 State Street
Bismarck, ND 58503-0690
(701) 328-5111
ndwheat@ndwheat.com

Include name, school/organization, shipping address, city, state, zip and telephone. Make checks payable to N.D. Wheat Commission.

North Dakota Agriculture in the Classroom Council

Roger Johnson – N.D. Agriculture Commissioner
Wayne Sanstead – N.D. Superintendent of Public Instruction
Doug Vannurden – N.D. Dept. of Career and Technical Education
Judge Barth – Dakota Pride Cooperative, Jamestown
Kim Alberty – Agassiz Seed and Supply, West Fargo
Ted Johnson – Kindred High School, Kindred
Mary Lou Klemisch – Prairie View Elementary School, New Salem
Ginger Deitz – Bennett Elementary School, Fargo
Steven Edwardson – North Dakota Barley Council
Shannon Berndt – Northern Pulse Growers Association
Gary Hoffman – North Dakota Dairy Coalition
Aggie Jennings – North Dakota Farmers Union, Washburn
Jill Vigesaa – Project Food, Land & People, Fargo
Mitchell Becker – N.D. FFA President
Kathy Holle – North Dakota Youth Correctional Center
Ward Eichhorst – North Dakota Farm Bureau, Coleharbor
Gail Scherweit – North Dakota Farm Bureau, Fargo
Kim Owen – EduTech, Valley City
Becky Koch – NDSU Ag Communication, Fargo
Beth Bakke Stenehjem – N.D. FFA Foundation, Bismarck
Marilyn Weiser – North Dakota Geographic Alliance, Minot

North Dakota Agriculture in the Classroom

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:

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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.

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, including:

- 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:

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gails@ndfb.org

Agricultural Science in the Virtual Classroom is a 2007-08 pilot project in which middle school and high school science classes will be 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:

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kim.owen@sendit.nodak.edu

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
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(800) 242-7535
ndda@nd.gov

The Ag in the Classroom Council, working with the N.D. FFA Foundation, offers **minigrants** of up to \$500 for use in programs that promote agricultural literacy. These minigrants will fund hands-on activities that develop and enrich understanding of agriculture and ag-related industries and the important role they play in North Dakota and society. Educators can let their imaginations be their guides as they design projects to enhance ag education in or outside the classroom.

For information, contact:

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