

North Dakota

agMag

January 2008

North Dakota
Agriculture
in the
Classroom



A Magazine about Agriculture for North Dakota Students

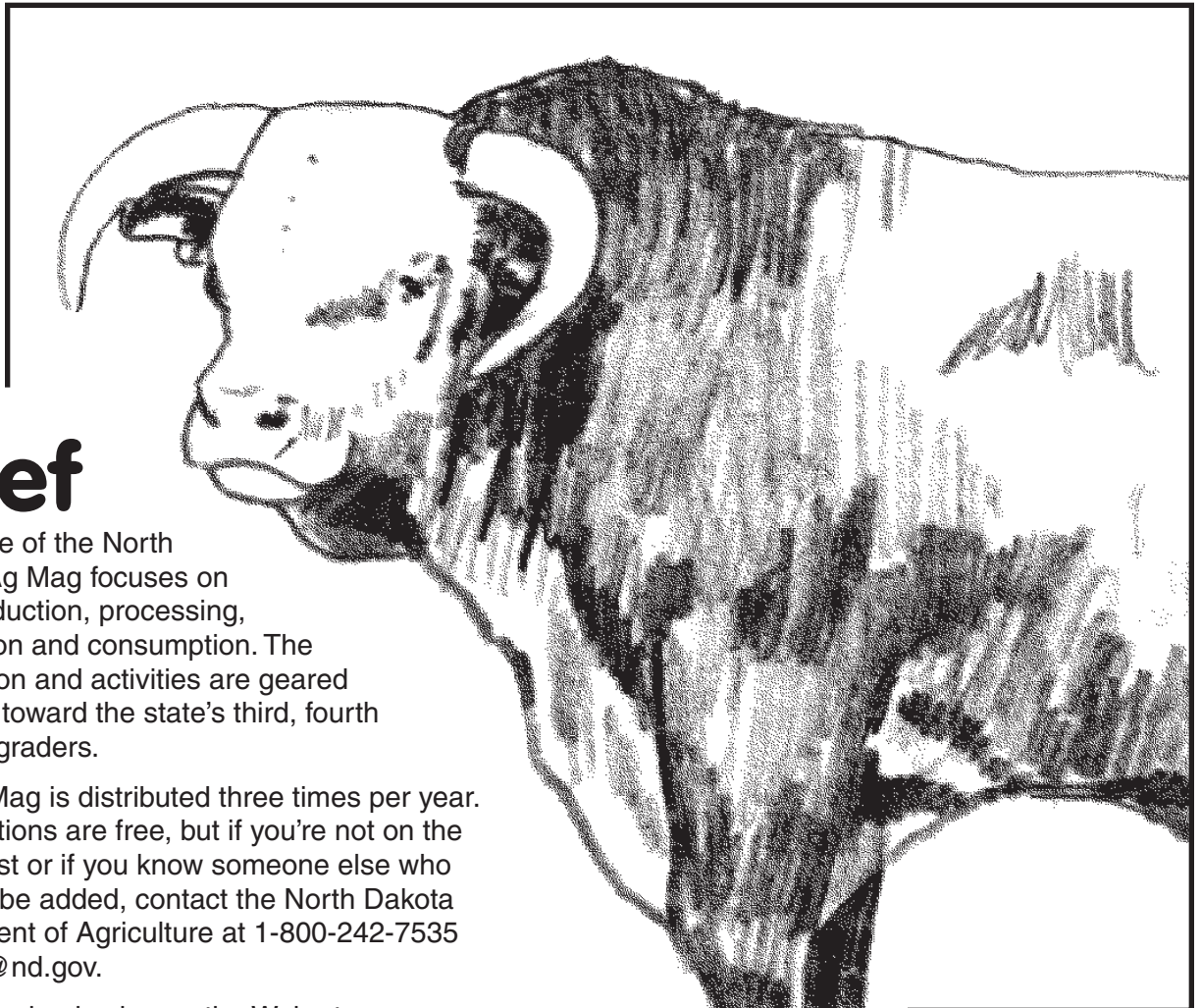
Beef

This issue of the North Dakota Ag Mag focuses on beef production, processing, distribution and consumption. The 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 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.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.



Teacher's Guide

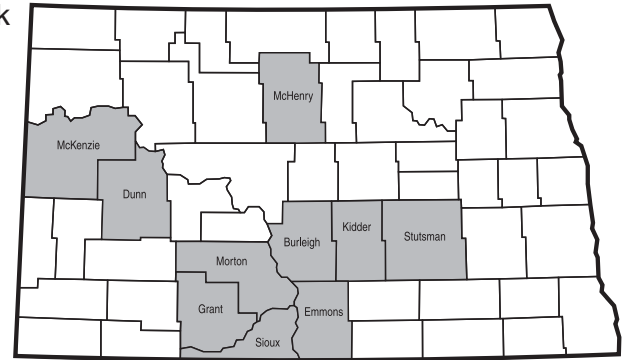
Beef Production

Idea: There are about 250 different breeds of cattle around the world. Talk with your students about what a “breed” is and what breeds of cattle are in your area. Ask individuals or teams of students to research and write brief reports about a breed of beef cattle, including physical traits and history. Breeds might include Hereford, Angus, Charolais, Galloway, Brahman, Longhorn and BueLingo that was developed in North Dakota. On page 2, Zebu is listed as a breed of cattle that originated in India, but technically Zebu isn’t a breed but rather an entire class of hump-backed cattle. What other breeds fit in this class? See www.cattle-today.com for more breed information.

Idea: Have students research America’s cattle trails of the 1800s and draw maps of the most important trails. Why were these trails first used, and why were they abandoned?

Answers to Where’s the Beef?

Idea: Have students look on the North Dakota Agricultural Statistics Service Web site at www.nass.usda.gov/nd/ to find the ranking of the top 10 beef-producing counties.



Background Information

Caring for Beef Cattle

For beef cattle to grow and reproduce, they need proper attention and care. Cattle depend on ranchers for shelter, feed, water and measures for disease prevention. The rancher’s job is to provide for the animals’ needs and observe them for potential problems. Cattle that fail to grow or reproduce properly when given insufficient or improper care do

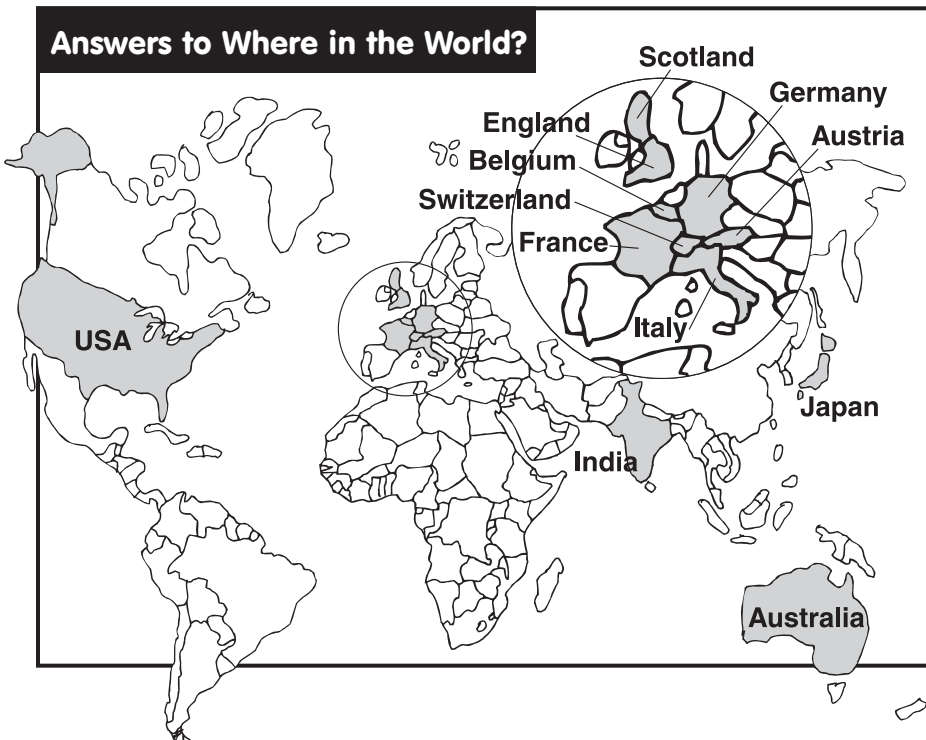
not produce meat economically. If this happens, the rancher has fewer animals or less product to sell, and the cost of producing animal products increases. This means less income for the rancher to pay for feed, bedding, veterinary services and other costs. So the rancher’s income depends on providing good animal care.

Grazing to Reduce Waste

Cattle graze on land that can’t be used for anything else because the terrain is too steep or hilly for building houses, or too rocky or dry for growing food crops. About half the area of the U.S. (excluding Alaska and Hawaii) falls into this category. At least 90 percent of this land is covered with grass that contains cellulose, which is indigestible by humans. However, cattle can digest this grass, converting it into beef and dairy products. This land would go to waste if it wasn’t used for grazing cattle.

Adapted from “Wow that Cow!” by the American National CattleWomen, Inc.

Answers to Where in the World?



Dirt Baby

This activity addresses the importance of cattle and grazing. It concentrates on what makes cattle special so they can eat grass, how cattle are able to help us take good care of our range and grazing lands, and why cattle are important in providing good nutrition for us.

Supplies:

- Knee-high hose
- Grass seed
- Soil
- Tall (junior size) baby food jar

Steps:

Place a pinch or two of grass seed, like Annual Ryegrass, in the hose toe, which will be the head or top of the dirt baby.

Pack a handful of soil in the end of the hose on top of the seed. Tie a knot in the hose under the ball of soil. Place the top of the hose (which is the bottom of the dirt baby) in a tall baby food jar filled with water. The soil will absorb the water through the hose and saturate the head of the dirt baby that is above the mouth of the jar. In 10-15 days the seed should germinate through the hose. You may have to cut a few small holes to aid in this step.

To decorate, cut a round piece of fabric to fit over the mouth of the jar and add lace, ribbon or other decoration. Glue jiggle eyes on the face, and cut out a heart-shaped piece of felt to glue in place for the mouth.

Water as needed. Cut and style the "hair."

Dirt Baby Script

Do you know how to make a baby? A dirt baby, I mean. It takes just a few supplies: a knee-high hose, a cup of potting soil, a baby food jar, grass seed, water, pieces of felt, scraps of fabric, and jiggle eyes.

Within a few weeks this dirt baby will have a beautiful head of green hair that will grow and grow.

Why does this have anything to do with cattle? Because cattle love grass! Cattle are special because they can eat and utilize grass to get the nutrients they need.

They are able to do this because they are ruminant animals with four compartments to their stomachs. Cattle chew grass and swallow it. Later, they start the rumination process by "burping" the grass mass back from the first compartment known as the *rumen*. The cattle re chew their "cud" (which looks a lot like when you have a mouth full of bubble gum). The food is then swallowed again where it undergoes further chemical breakdown as it passes through the remaining stomach compartments known as the *reticulum*, *omasum* and *abomasum*.

You and I do not have this ability so we rely on cattle to get the nutrients from grass and change it into nutritious, delicious beef that we can eat to get the zinc, iron and protein we need each day.

It is important that we have cattle that have this ability because 64 percent of the continental U.S. is agricultural land and 2/3 of that land is grazing land. That adds up to about 1.1 billion acres of grazing land in the United States. Grazing means cattle walk across the land and eat the vegetation they find. This grazing promotes new grass growth — just like when you mow your lawn at home.

The cattle's hoof prints help aerate the soil and leave places that will hold water when it rains to prevent runoff. Cattle also provide natural fertilizer as they walk across the land. They can even spread seed across the prairie so the range land has many different types of grasses in different places. Grazing actually maintains, restores and encourages variety among plant life and helps prevent forest and prairie fires.

Idea: Ask a beef producer to share samples of what is fed to cattle.

Grass

I'll tell you 'bout a family, a most important bunch
They aren't your friends or neighbors, but I still have a hunch
You know this family pretty well, you see them every day.
But if you think they're people, then think another way.

This family's a converter of light that's from the sun.
In other words of energy, right into food for one
To benefit our wildlife, assist our livestock too
A family most remarkable but understood by few.

Grass roots are fine and fibrous, and they enrich the soil,
And keep it firm and stabilized, and so it helps to foil
Erosion's cruel forces, by water and by wind,
Make sure soil productivity will never, ever end.

It feeds a world of people, it feeds both man and beast,
And most folks don't appreciate or understand the least
Just how this good Grass family keeps all the Earth alive,
Because without grass, mankind could not survive.

Source: Stan Tixier, Society for Range Management

Beef Processing

Answers to Carcass Calculations

Yield of a 1,150-Pound Steer

	Pounds	Percentage (pounds/total pounds x 100)
Saleable carcass	714	62.1%
Hide	87	7.6%
Blood	87	7.6%
Bone	55	4.8%
Edible by-products	33	2.9%
Other non-edible by-products	174	15.1%
Total	1,150	100.1%

Dressing percent =

$$\frac{\text{saleable carcass wt.}}{\text{live wt.}} \times 100 = \mathbf{62.1\%}$$

If the live value is \$.95 per pound, what is the per pound value of the carcass? **\$1.53**

$$\text{Carcass value} = \frac{.95}{62.1\%} \times 100 = \mathbf{\$1.53}$$

Carcass composition of 1,150-Pound Steer

Cut	Pounds in 714 lb. Carcass	% in Carcass
Round roasts and steaks	66	9.2%
Tip roasts and steaks	17	2.4%
Rump roasts	8	1.1%
Ground beef and beef stew	243	34.0%
Loin steaks	44	6.2%
Sirloin steaks	15	2.1%
Tenderloin steaks	7	1.0%
Rib roasts and steaks	32	4.5%
Short ribs	9	1.3%
Chuck roasts and steaks	95	13.3%
Flank steaks	4	0.6%
Brisket	16	2.2%
Miscellaneous cuts	12	1.7%
Fat and bone	146	20.4%

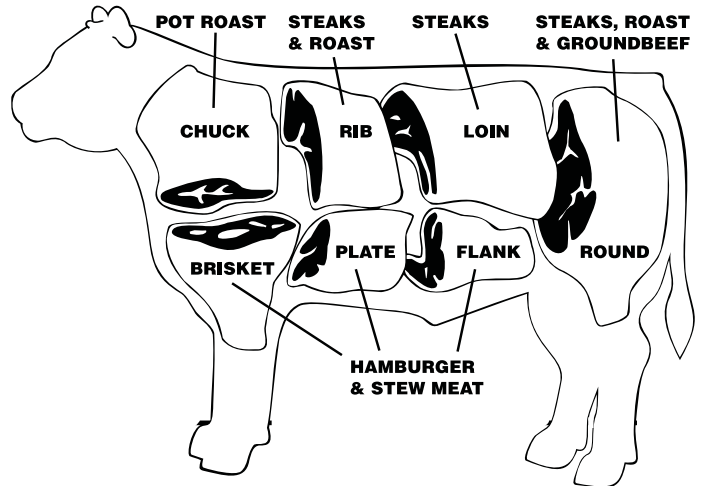
Total 714 100%

714 lb. carcass
– 146 lbs. fat and bone

568 lbs. retail meat

Idea: Have students bring cattle by-products. Discuss and make a display.

Idea: Enlarge this “Where Does Beef Come From?” graphic to project or copy. Talk about what part of the beef animal the different cuts of meat students see at the grocery store come from.



Beef Distribution

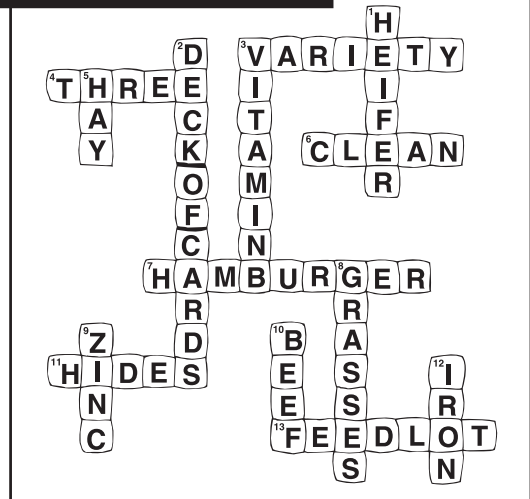
Answers to The Journey of Beef

1. Calves are born on farms and ranches, weighing about 80 pounds at birth.
2. When 1-year-old calves weigh about 800 pounds, they are usually sold at an auction or livestock market to a feedlot where they eat grain along with hay or silage until they weigh about 1,200 pounds.
3. When cattle are ready for market at about 1,200 pounds (14-20 months of age), they may be sold to a packer or processor.
4. Finished cattle are trucked to a packing plant where they are converted to beef to eat and by-products.
5. From the packing plant, beef is shipped to the supermarket where it is purchased to be eaten at home or to schools, restaurants and hospitals.

Idea: Visit a butcher shop or supermarket to learn about how beef arrives and is marketed.

Beef Consumption

Answers to Crossword Puzzle



The Clean Scene Rap

All of us should wash our hands with soap and water for at least 20 seconds before and after handling food, and after going to the bathroom. An easy way for kids to measure this time is to have them sing "Happy Birthday" twice as they scrub.

The Meat and Beans Group

MyPyramid.gov includes the Meat and Beans group as part of a healthy lifestyle. All foods made from meat, poultry, fish, dry beans, peas, eggs, nuts and seeds are part of this group. The amount of food from the Meat and Beans Group you need to eat depends on your age, sex and level of physical activity. Most Americans eat enough food from this group, but need to make leaner and more varied selections of these foods.

In general, 1 ounce of meat, poultry or fish, ¼ cup cooked dry beans, 1 egg, 1 tablespoon of peanut butter or ½ ounce of nuts or seeds is considered as 1 ounce equivalent from the Meat and Beans group. Boys and girls ages 9 to 13 who get less than 30 minutes per day of moderate physical activity usually need about a 5 ounce equivalent from the Meat and Beans group every day. A 3-ounce serving of meat is about the size of a deck of playing cards.

Idea: Have students go to www.MyPyramid.gov to develop their personalized eating plans, learn about MyPyramid for Kids, play the Blast Off game, and print a worksheet to track their food intake and physical activity.

Idea: Talk about the different ingredients that can make up a hamburger sandwich and which segment of the pyramid each fits in. Examples: bun - grain, beef - meat, cheese - dairy, tomato - fruit, onion - vegetable.

Idea: Have students develop a print or radio advertisement for beef.

Idea: Have students use grocery ads to develop or complete math problems related to different prices of various cuts of beef. Include processed and prepared meats.

Resources

North Dakota Beef Commission
4023 State Street
Bismarck, ND 58503
701-328-5120, ndbeef@btinet.net

The National Cattlemen's Beef Association offers preschool through 12th grade educators high-quality supplemental classroom kits for free or at very reasonable prices. From www.teachfree.com, order:

- Choose Well Math/Nutrition Kit
- Caretakers All
- Celebrate America Video Kit
- and more.

More Web Sites:

www.agclassroom.org
www.kidsfarm.com

www.cattle-today.com
www.zip4twens.com

N.D. 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, 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:

Gail Scherweit
N.D. Farm Bureau Foundation
(701) 298-2219
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:

Kim Owen
EduTech
(701) 845-7562
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
N.D. Department of Agriculture
(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:

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



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