

# agMag

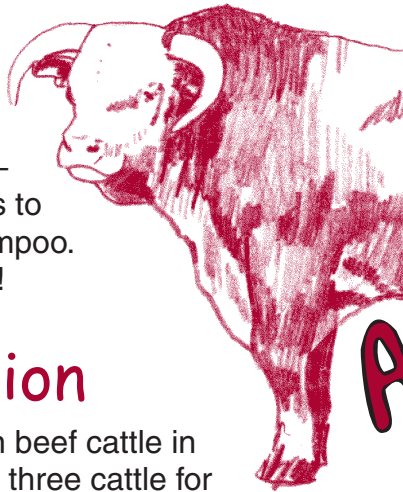
North Dakota  
Agriculture  
in the  
Classroom



A Magazine about Agriculture for North Dakota Students

# Beef!

Cattle give us many things – everything from hamburgers to medicine, and steak to shampoo. Let's learn more about beef!



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

## Agriculture Cycle



## Beef Production

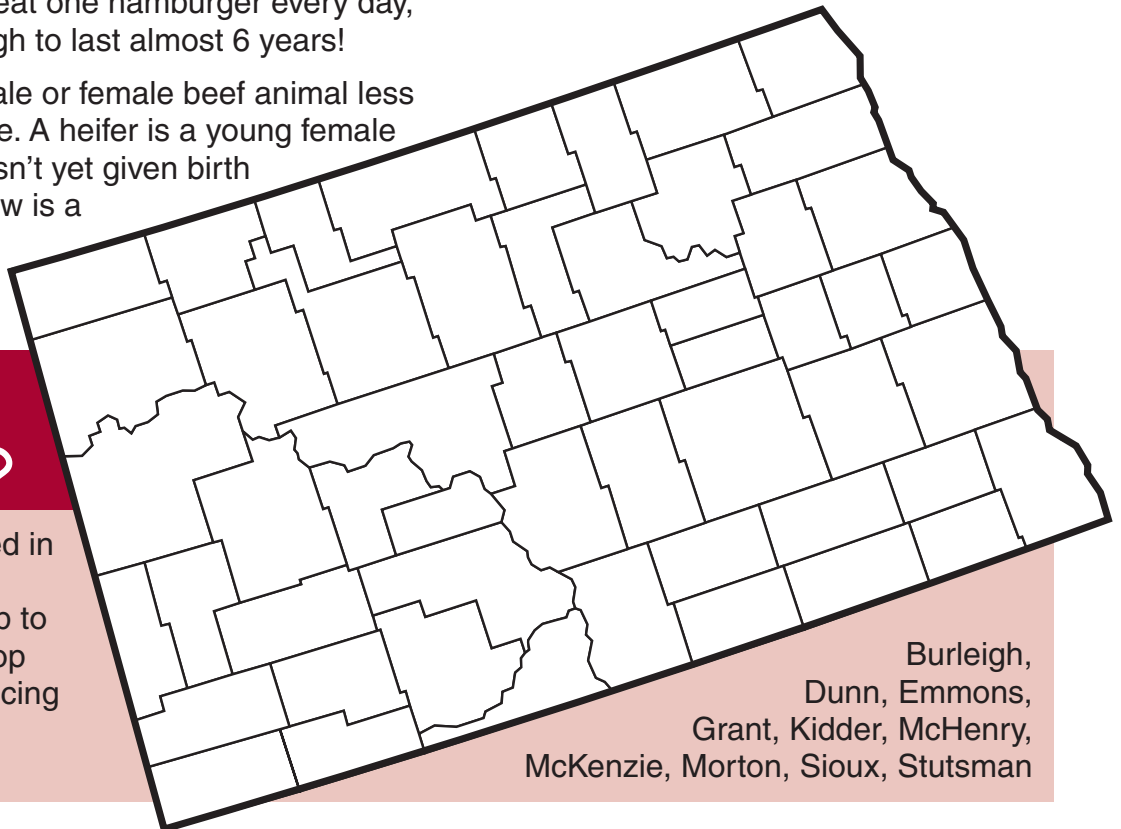
There are about 1.75 million beef cattle in North Dakota. That's almost three cattle for every person in the state.

One 1,200-pound beef animal produces enough meat to make about 2,100 quarter-pound hamburgers. If you eat one hamburger every day, that would be enough to last almost 6 years!

A calf is a young male or female beef animal less than one year of age. A heifer is a young female beef animal that hasn't yet given birth to her first calf. A cow is a beef "mother" and bull a beef "father."

## Where's the Beef?

Beef cattle are raised in every North Dakota county. Use this map to identify the state's top 10 beef cattle producing counties.



Burleigh,  
Dunn, Emmons,  
Grant, Kidder, McHenry,  
McKenzie, Morton, Sioux, Stutsman

# Beef in North Dakota: Then and Now

## Then...

In April 1883, the Marquis de Mores, a 24-year-old French nobleman, founded the town of Medora, Dakota Territory. He built a beef packing plant, a brick plant, a hotel, stores and a large home (the Chateau de Mores) overlooking his new town.

The Marquis was probably ahead of his time. His dream was to ship meat to large cities in refrigerated train cars instead of herding live animals in cattle drives. But the effort wasn't profitable, and the beef packing plant closed a few years later.

Today, the cowboy traditions started by the

Marquis are enjoyed by tourists in Medora.

## Now...

Technology has changed how ranches operate.

Ranchers use computers to record information about their cattle. The Internet can provide information to improve their cattle's health and genetics.

Cattle can be identified electronically. Some ranchers insert small computer chips into cattle's

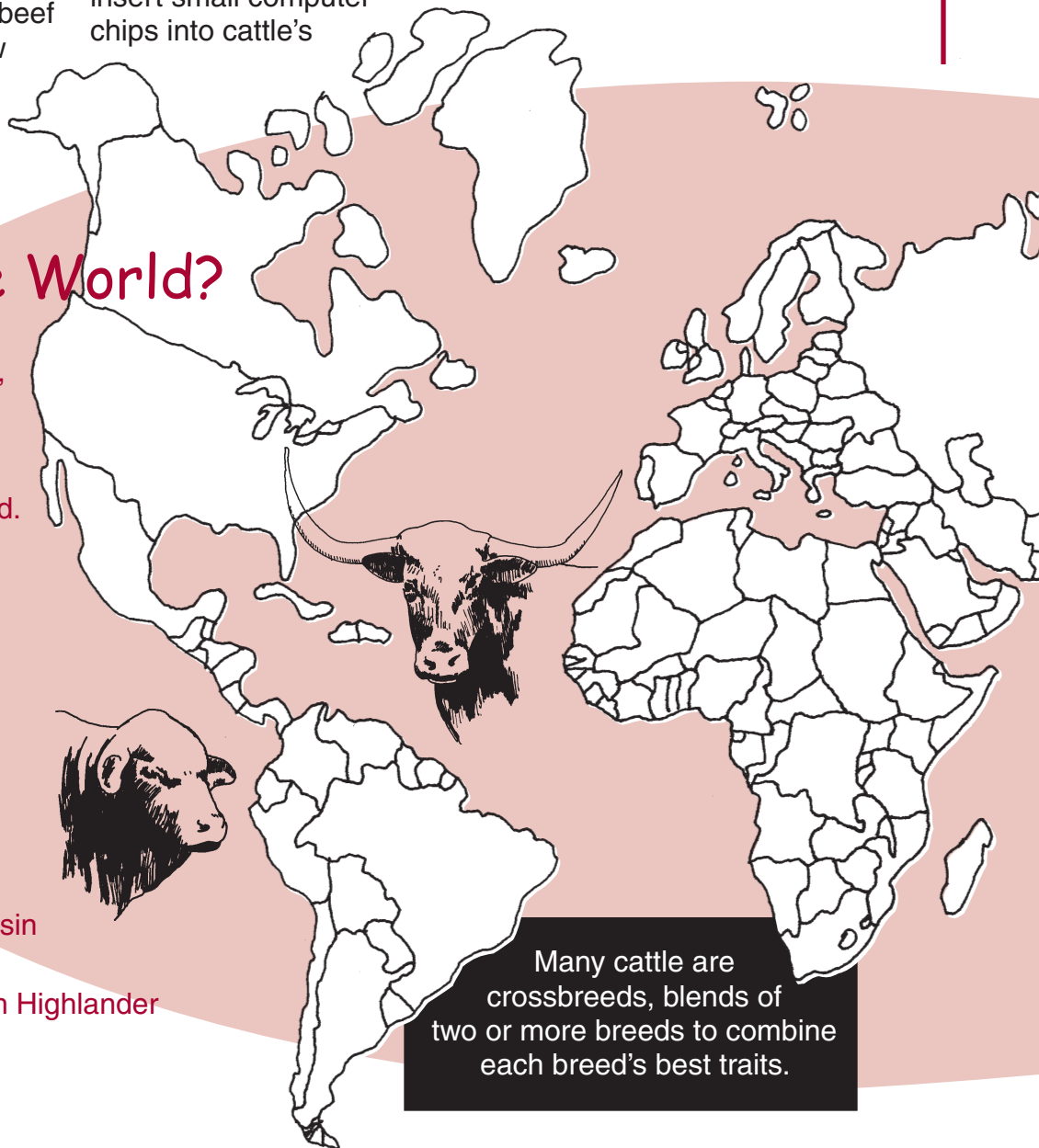
ears that record each animal's life history. Small computers read the chips.

Ranchers also are selling their cattle in new ways. Live auctions may be viewed via satellite or on the Web, so buyers can purchase the cattle without being at the sale. Producers can now more easily market and sell their cattle around the world.

## Where in the World?

Just like poodles and beagles are breeds of dogs, there are many breeds of cattle. On the map, identify the countries where these beef cattle breeds originated.

- India - Zebu, Brahman
- Japan - Wagyu
- Italy - Chianina
- Austria - Gelbvieh
- England - Hereford
- Australia - Murray Grey
- Germany - Pinzgauer
- Belgium - Belgian Blue
- Switzerland - Simmental
- France - Charolais, Limousin
- U.S. - Brangus, Buelingo
- Scotland - Angus, Scottish Highlander



Many cattle are crossbreeds, blends of two or more breeds to combine each breed's best traits.

# Cattle as Conservationists

Cattle benefit the land by:

- Aerating the soil with their hooves. They loosen the soil when they walk on it. This allows more oxygen to enter the soil, helping grass and plants grow better.
- Pressing grass seed into the soil. This helps plants start growing.
- Providing natural fertilizer in the form of manure for the soil, its plants and grass.
- Serving as a firefighter. When cattle graze, they reduce the length of the grass. This reduces the spread of wildfires since there is less material on the ground to burn.



## Yield of a 1,150-Pound Steer

	Pounds	Percentage (Pounds/Total Pounds x 100)
Saleable carcass	714	_____
Hide	87	_____
Blood	87	_____
Bone	55	_____
Edible by-products	33	4.8%
Other non-edible by-products	_____	_____
<b>Total</b>	174	_____
<b>Total</b>	1,150	100%

Dressing percent =

$$\frac{\text{saleable carcass wt.}}{\text{live wt.}} \times 100 = \underline{\hspace{2cm}}$$

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

Hint: Carcass price =  $\frac{\text{live price} \times 100}{\text{dressing \%}} = \$ \underline{\hspace{2cm}}$

## Carcass Calculations

How much meat is available to eat from a 1,150-pound steer, and how much is hide, bone and other nonedible by-products? Use your calculator to figure the percentage of each product from these two animals.

## 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	_____
Rump roasts	8	34.0%
Ground beef and beef stew	_____	_____
Loin steaks	44	_____
Sirloin steaks	15	_____
Tenderloin steaks	7	4.5%
Rib roasts and steaks	_____	1.3%
Short ribs	_____	13.3%
Chuck roasts and steaks	95	_____
F flank steaks	4	_____
Brisket	16	_____
Miscellaneous cuts	12	_____
Fat and bone	146	_____
<b>Total</b>	714	100%

### Total

If "fat and bone" equal the cutting loss from the 714-pound carcass, how much meat is actually sold from a 1,150 pound steer?

Retail meat = \_\_\_\_\_ lbs.

Adapted with permission of the 4-H Cooperative Curriculum System from the 4HCCS "Skills for Life" Beef Series

## Career Corner

### Meat Scientists Eric Berg, Kasey Carlin and Rob Maddock

*North Dakota State University  
Department of Animal and Range Sciences*

Mmmm! Think about when you've eaten a beef steak or roast that was really tender and tasted great. Meat scientists study all the different factors that make meat taste good and be good for you, too. Eric, Kasey and Rob are meat scientists with the NDSU Beef Systems Center of Excellence in the Department of Animal Science and Range Sciences.

Eric says, "Since beef is muscle from cattle, the feed the animal eats, the breed of animal, the environment it lives in, the climate, the animal's health and even if it's a male or female all have an influence on the steak that ends up on your dinner plate."

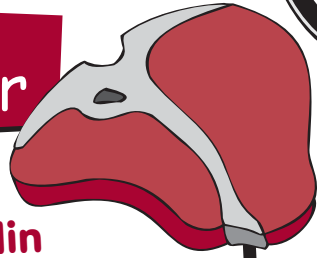
The meat scientists say beef should be a bright cherry-red color and have marbling (small flecks of fat inside the muscle) for flavor and juiciness. Beef should also be kept very cold in a refrigerator so it stays fresh and germs don't have a chance to grow. It should be taken right from the refrigerator to the stove or grill to be cooked.

Rob says where the cut of beef comes from on the animal and how it's prepared make a big difference. "A cut that isn't very tender, like round steak, will almost

always be tough if you cook it on a grill, but if it is cooked all day in a slow cooker, it will be very tender."

If you study meat science, there are many careers you could choose. You could develop new meat products or work as a business or production manager at a processing plant. You might work for the North Dakota or U.S. Department of Agriculture as a meat inspector, grading the meat (judging its quality) and making sure it is safe to eat. You might market and sell meat, be a veterinarian or even work with human health and wellness since human muscle is similar to animal muscle. You might choose to become a university professor like Eric, Kasey and Rob and conduct research and teach others about meat science.

"Meat scientists connect livestock producers with consumers who buy meat at stores and restaurants. We are involved along the entire food chain to make sure meat is high quality, safe and nutritious," Kasey said.



# Cattleville

Can you find the items in the Cattleville cartoon made from cattle products? Use the checklist of 32 items, and color the cattle in Cattleville when you finish.

Check the items off as you go.

## Hides and Hair

- Paint Brush
- Furniture Glue
- Wallpaper
- Building Insulation
- Leather Suitcase
- Leather Jacket
- Leather Chair or Stool
- Soccer Ball
- Baseball
- Baseball Glove (Mitt)

## From Pancreas

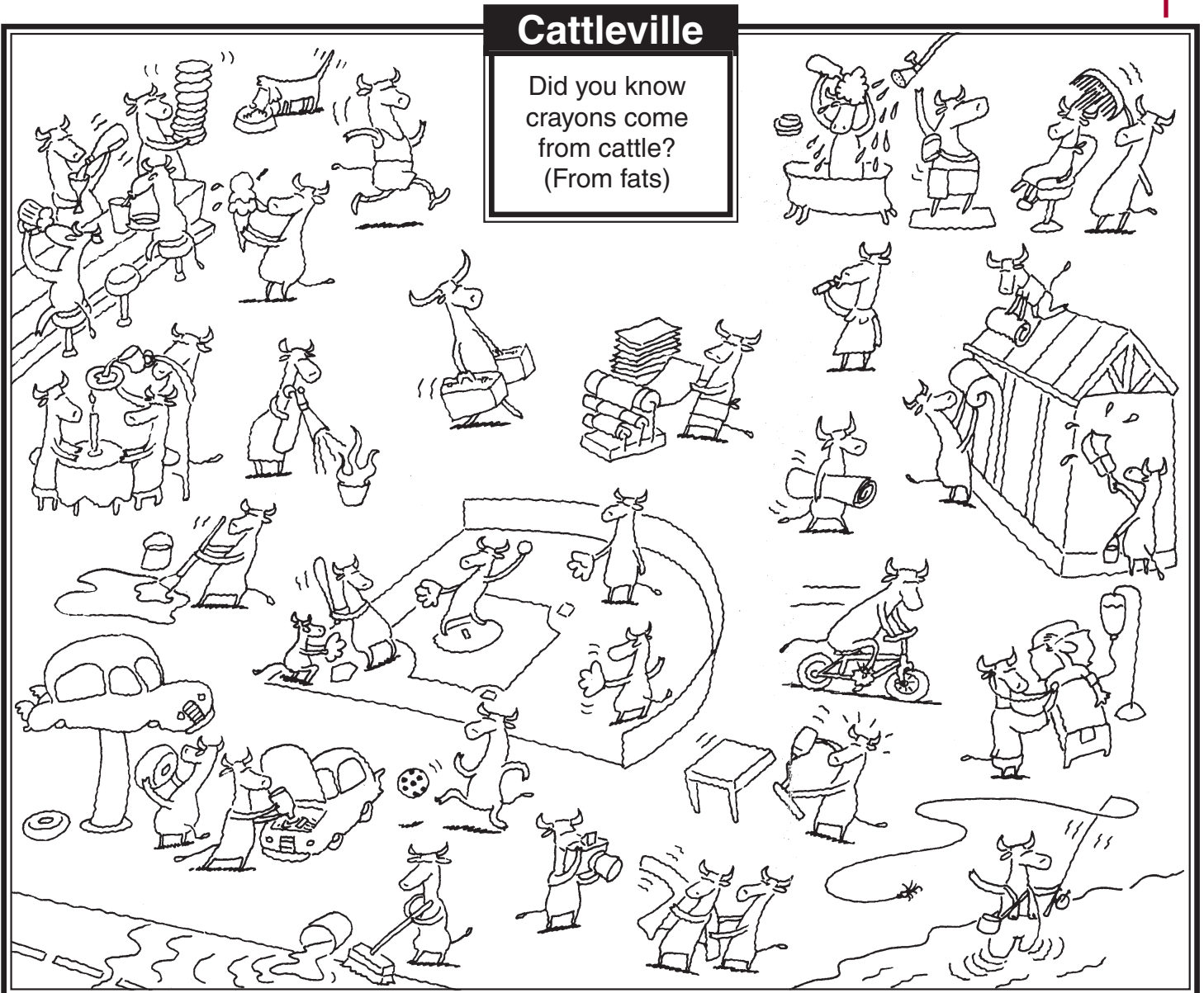
- Medicine

## Bones, Horns, Hooves, Blood and Gelatin

- Beer
- China Dishes
- Ice Cream or Milk Shake
- Fire Extinguishing Foam
- Camera Light Filter
- Camera Film
- Dog Food
- Printing Press
- Comb

## Fats/Fatty Acids

- Asphalt
- Candle
- Lipstick
- Deodorant
- Shampoo
- Bar Soap
- Floor Wax
- Tires
- Hydraulic Brake Fluid
- Rubber Fishing Waders
- Running Shoes



Adapted with permission from the California Beef Council

# Beef Distribution

## The Journey of Beef

Beef travels through many steps from the farm to your table.

Think about beef production, processing, distribution and consumption to number these steps in the order in which they happen.



\_\_\_\_\_ 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.

\_\_\_\_\_ Finished cattle are trucked to a packing plant where they are converted to beef to eat and by-products.



\_\_\_\_\_ Calves are born on farms and ranches, weighing about 80 pounds at birth.

\_\_\_\_\_ 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.



\_\_\_\_\_ 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.

## Hamburger History

The 14th century people of the Tartar region in Russia liked their beef raw, chopped finely with salt and pepper. When their ships reached the German port of Hamburg, "tartar steak" found its way to Germany. Soon a German chef cooked the tartar steak to make Hamburg steak. Many years later in America, the chopped meat cooked Hamburg style became known as the "hamburger."

In 1904, the first hamburger sandwich was served to the public at the St. Louis World's Fair. That means the hamburger was 100 years old in 2004.

Today the average American eats 114 hamburgers a year, and one poll found that the hamburger is the favorite food of Americans.

# Beef Consumption

## The Clean Scene Rap

When cooking and eating, it's important to be clean.

Make some bubbles now to be in the clean scene.

Once you handle meat and before you eat,

Get rid of those bad germs. Clean can't be beat.

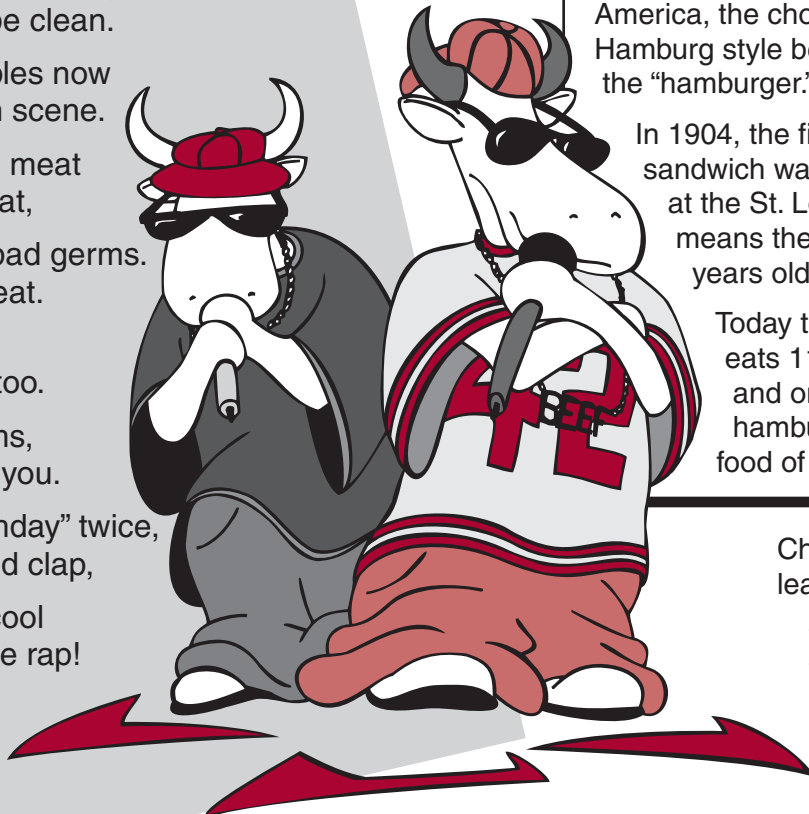
Keepin' it clean means surfaces too.

Utensils get germs, just the same as you.

Sing "Happy Birthday" twice, make bubbles and clap,

'Cause clean is cool in the clean scene rap!

Adapted from Pennsylvania Beef Council



Check these Web sites to learn more about beef!

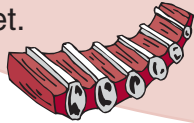
[www.agclassroom.org](http://www.agclassroom.org)  
[www.zip4tweens.com](http://www.zip4tweens.com)

# ZIP with Beef

Beef is packed full of power nutrients, including ZIP – zinc, iron and protein.

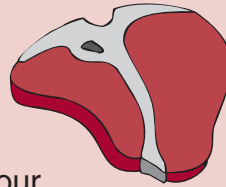
**Zinc** is needed for a healthy immune system and to control your appetite. Beef is the #1 source of zinc in the American diet.

**Iron** helps carry oxygen to your



body's cells and tissues. It also helps your brain develop.

**Protein** helps keep your body energized. You need to eat enough protein every day to support growth and maintenance of muscle and other tissues, and to replace proteins that are



broken down by the body.

Beef also is an excellent source of B vitamins that promote growth and maintain health.

One serving of cooked beef is three ounces. This is about the size of a deck of cards.



## Crossword Puzzle

### Across

3 To have good nutrition, you need a \_\_\_\_ of foods.

4 One serving of cooked beef is \_\_\_\_ ounces.

6 When working with food, keep your working area, dishes and hands \_\_\_\_.

7 A popular name for ground beef.

11 Leather is made from the \_\_\_\_ of cattle.

13 A location where many cattle are fed to market weight.

### Down

1 A young female beef animal that hasn't had a calf yet.

2 A three-ounce serving of beef is about the same size as a \_\_\_\_.

3 A nutrient in beef that promotes growth and maintains health.

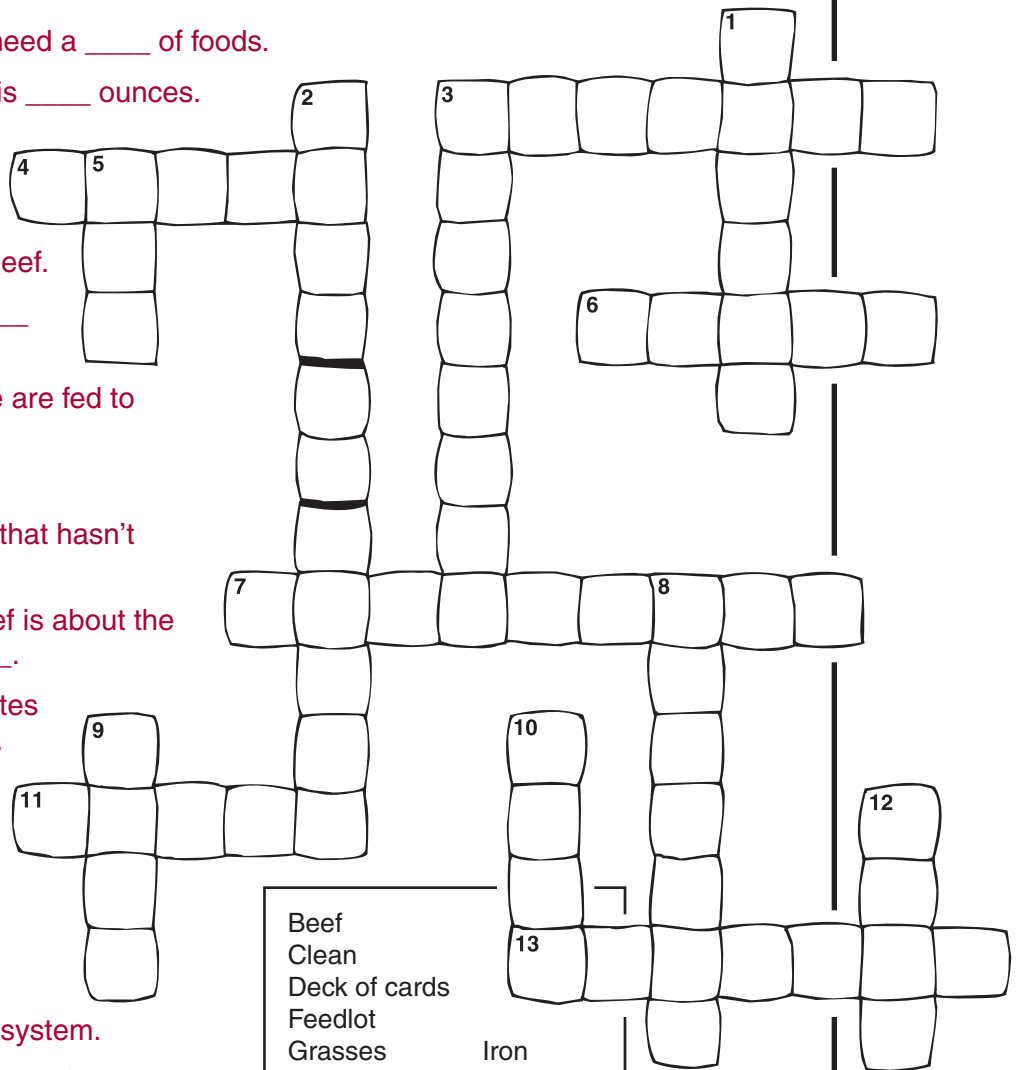
5 Stored grasses (often in bales) that cattle eat is called \_\_\_\_.

8 Cattle eat lots of \_\_\_\_ in the summertime.

9 A nutrient in beef that helps maintain the body's immune system.

10 The name given to meat from cattle.

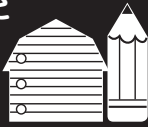
12 A nutrient in beef that carries oxygen to body cells and tissues.



- Beef
- Clean
- Deck of cards
- Feedlot
- Grasses
- Hamburger
- Hay
- Heifer
- Hides

- Iron
- Three
- Variety
- Vitamin B
- Zinc

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

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