



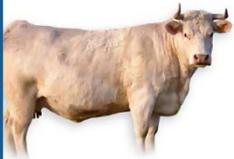
Classroom Bites

Beef

Angus



Charolais



Hereford



Highland



Facts

- Cattle are ruminants, meaning their stomachs have four chambers, which allow them to digest grasses. Typically cattle are raised in pastures until they are at least one year old. Then they are sold and transported for "finishing" which means they are usually fed a grain-based diet to increase weight quickly. Some cattle are raised entirely on pasture or are "finished" on grass and are called grassfed or grass-finished. This method usually produces leaner meat, which means less fat.
- Montana is home to more cattle than people and ranks 6th in the nation for the number of beef cattle.
- The first beef cattle arrived in the United States via Mexico in the 1500s, but more arrived in the early 1600s. In Virginia in 1620 about 500 cows roamed the fields, and less than a decade later the population increased to 30,000 bovines!
- While only about half of each animal is used for beef, the entire animal is important to the cattle industry. The parts of the animal we do not use for beef are called by-products, which are used to make many products including soap, pharmaceuticals, leather, glue, and tires.

Selection

The flavor, tenderness, nutritional value, and fat content of beef depend on many factors including the breed, age of the animal, feed, cut, and cooking techniques. A less expensive cut can be tender and delicious when cooked using proper techniques such as tenderizing, marinating, or cooking slowly for longer amounts of time. To reduce fat content, select lean varieties and cuts.

Storage

Keep beef refrigerated below 40°F or frozen at or below 0°F. Ground beef can be refrigerated for one to two days or frozen for three to four months. Steaks and roasts can be refrigerated for three to five days or frozen for six to twelve months.

Cooking

Generally, cooking time is dependent on type of cut, size of meat, and desired doneness. For a complete guide to cooking beef, see *Confident Cooking with Beef* (www.beefretail.org/CMDocs/BeefRetail/customerhandouts/ConfidentCookingwithBeef.pdf).

Broil. Preheat oven for 10 minutes. Add seasonings, if desired. Place on rack of broiler pan and put in oven 2-4 inches below heat element. Turn once and cook 8-30 minutes. Ideal for kabobs, ground beef patties or steaks.

Chop. Slice or chop steaks or ground beef, cook, and add to salads for added protein.

Cook Safely. Cook to an internal temperature of 145°F for steaks and roasts; 165°F for ground beef. Questions? Visit www.foodsafety.gov and click on Keep Food Safe.

Grill. Add seasonings, if desired. Place on grill over medium heat. Cover and grill for desired tenderness, turning once. Ideal for kabobs, ground beef patties or steaks.

Pan-Broil. Add seasonings, if desired. Heat pan to medium heat, add beef. Do not add oil or water. Do not cover the meat. Turn beef occasionally and cook to desired doneness. Ideal for steaks or ground beef patties.

Pan-Fry/Sauté. Add seasonings, if desired. Use 1/2 inch thick or less beef cuts. Heat pan to medium heat, add oil to coat bottom of pan, add beef. Turn beef occasionally and cook 3-4 minutes or to desired doneness. Ideal for steaks or ground beef patties.

Pot Roast/Braise. Heat pan to medium heat, add oil to coat bottom of pan, add beef, and brown sides. Add seasonings, if desired. Place beef in stock pot and add 1/2 to 2 cups of liquid, such as broth, water or juice. Cover and simmer on low heat on the stovetop or in a 325°F oven. Cook for 1-3 hours. Ideal for large, less tender cuts of beef, such as short ribs, pot roasts, and briskets.

Preserve. For information on preserving beef, look for Extension MontGuides on Home Canning Pressures and Processing Time. Visit www.msueextension.org/nutrition and click on the food preservation link or contact your Extension office.

Roast. Preheat oven to 325°F or 425°F. Place roast fat side up on a rack in a shallow roasting pan. Do not allow the meat to rest in fat. Do not add water or cover the roast. Cook for 20 minutes-3 hours. Let stand for 15-20 minutes. Ideal for roasts or meatloaf.

Season. To enhance flavor, season with rubs, marinades, and spices such as allspice, basil, bay leaves, caraway seed, celery seed, chili powder, cinnamon, cloves, cumin, curry powder, garlic, ginger, marjoram, nutmeg, oregano or thyme.

Stew. Brown all sides of beef over medium heat in pan prior to covering beef with a liquid, such as broth, water or juice. Bring liquid to boil and reduce heat to low to cook for 2-3 hours. Ideal for shanks, briskets or stew meats.

Stir-Fry. Similar to pan-fry method except beef is sliced into thin strips. Heat pan to medium heat, add oil to coat bottom of pan, add beef. Cook in small batches to allow moisture to evaporate. Cook beef by continuously turning for even browning. Ideal for steaks and added to vegetable dishes.

Adapted from Beef Food Fact Sheet developed by Montana State University Extension. For the full fact sheet and other resources, visit: <https://nutrition.msueextension.org/>.

Nutrition Information

Beef is a nutrient powerhouse. While the specific nutritional information depends on many factors as discussed above, beef is an excellent source of vitamin B₁₂ and protein and a good source of iron and vitamin B₆. Protein helps build and repair body tissues including muscles.

Recipes

Sloppy Joe on a Roll

This recipe incorporates three of Montana's top agriculture products—beef, wheat, and lentils! Consider working with a Family and Consumer Science teacher to cook these Montana Sloppy Joes. High school culinary/Family and Consumer Science students make excellent cooking mentors for younger students.

Adapted from: Montana's Healthy School Recipe Roundup, Montana Team Nutrition Program (<https://opi.mt.gov/Portals/182/Page%20Files/School%20Nutrition/Menu%20Planning/Montana%20Round-up%20Cookbook.pdf>)

Servings

6, or cut each sandwich into quarters for 24 samples

Ingredients

1 lb ground beef
1/4 cup onions, raw, chopped
2 Tbsp tomato paste
2 Tbsp catsup
1 cup + 2 Tbsp water
1 Tbsp vinegar, distilled
1/2 tsp mustard powder/dry
1/2 tsp pepper
1 tsp brown sugar
1/2 cup uncooked lentils
2 oz mild green chili peppers, canned, drained
2 tsp garlic, raw, minced
6 whole wheat buns

Directions

1. In a medium pot, add lentils and 1 cup water (do not add salt) in a medium pot. Bring to a boil. Reduce heat, cover, and simmer for about 25-40 minutes (depending on variety). Add additional water if lentils begin to dry out while cooking. Lentils should be tender and cooked completely through. Drain excess water. Puree lentils in a food processor. If using red lentils, cook for less time, between 10-20 minutes. Red lentils do not need to be pureed. Set aside.
2. Brown ground beef, drain.
3. Add onions and minced garlic to cooked ground beef. Cook for 5 minutes.
4. Add pureed lentils to beef mixture. Add tomato paste, catsup, water, vinegar, mustard, pepper, green chilies, and brown sugar. Mix well and simmer for 25-30 minutes, making sure to heat to 165°F or higher.
5. Scoop beef mixture onto buns and serve immediately.

Beef and Broccoli Bowl

This recipe can be made in a classroom by using a hot plate. Younger children can take turns measuring the ingredients and reading the steps.

Adapted from: Cooking Light (www.myrecipes.com/recipe/beef-broccoli-bowl)

Ingredients

Cooked rice, soba noodles, or rice noodles
1/4 cup lower-sodium soy sauce
1 Tbsp cornstarch
1 Tbsp hoisin sauce, or substitute barbeque sauce
1 (12 oz) boneless sirloin steak, cut into thin strips
2 tsp canola oil
2 cups broccoli florets
1 cup vertically sliced red onion
1 cup chopped carrot
1/2 cup water
2 tsp dark sesame oil

1/3 cup sliced green onions

Directions

1. Cook rice or noodles according to the package directions.
2. Combine soy sauce, cornstarch, hoisin sauce, water, and dark sesame oil in a medium bowl to create a marinade. Add beef, toss to coat, and set aside.
3. Heat oil in a large skillet on high heat, swirl to coat.
4. Using a slotted spoon or tongs, move beef to pan, reserving marinade. Cook 2 minutes or until browned, stirring occasionally. Remove beef from pan.
5. Add broccoli, onion, and carrot to pan; cook 4 minutes or until broccoli is crisp-tender, stirring occasionally. Add reserved marinade and bring to a boil. Cook 1 minute.
6. Add beef and cook 1 minute, or until thoroughly heated.
7. Sprinkle with green onions. Serve over rice or noodles.

Activities

Dirt Made Our Lunch

Adapted From: Got Veggies? A Garden-Based Nutrition Education Curriculum, Community GroundWorks and Wisconsin Department of Health Services (www.dhs.wisconsin.gov/physical-activity/foodsystem/gotveggies.htm)

Objectives

This lesson is designed to teach students about the connection between soil and food. The central activity, Deconstructing a Cheeseburger, asks students to help trace ingredients back to the soil, showing how we depend on healthy soil in order to eat. Many of the nutrients in soil come from decomposition of dead plants and other organic matter. Plants absorb these nutrients, and in turn, our bodies absorb them when we eat plants. We refer to this as the nutrient cycle.

The Dirt Made Our Lunch activity helps students understand how food scraps and plant matter break down into rich soil. At the end of the lesson, students will be able to:

- Trace foods from origin to table.
- Describe the connection between healthy soil and healthy food.
- Understand that people need food in order to be healthy, have energy, and grow.
- Determine the difference between plant and animal

food sources.

Supplies

- Photos or drawings that illustrate how common cheeseburger ingredients can be traced back to the soil such as:
 - a. Bun, flour, wheat, soil
 - b. Cheese, milk, cow, grass, soil
 - c. Burger, cattle, grass/grains, soil
 - d. Tomato, tomato plant, soil
- In place of photos or drawings, write the name of each ingredient as it is traced back to the soil.
- Garden journals or paper
 - Pens/pencils
 - Display board
 - 2 quart-sized mason jars or similar sized plastic containers with lids
 - Compost piles or samples of compost in different stages of decomposition

Directions

1. Play and have children sing along to the "Dirt Made My Lunch," song by the Banana Slug String Band. Watch the band perform the song in this video: <http://youtu.be/MwgP2gCz5C4>.
2. Briefly discuss the importance of soil with a series of questions: Could we have plants without dirt? Could we have food without plants? Could we have food without soil? If teaching this lesson in the garden, have students scoop up a handful of dirt and examine it during this discussion. Leave questions open-ended as a set-up for the students to help prove how "dirt made our lunch."
3. Ask students to brainstorm the ingredients of a cheeseburger. Draw columns on a display board for several cheeseburger ingredients and place the appropriate image at the top of the column (bun, burger, cheese, pickle, tomato, and lettuce) or write the name of the ingredient. Then, taking one cheeseburger ingredient at a time, challenge the class to trace each ingredient back to the soil. Hand out images for students to post on the display board as you connect each ingredient to the soil. For example, the cheese pictures would include cheese, milk, cow, grass, and soil. If you are not using pictures, have the students write each word on the board to trace each ingredient to the soil. After tracing each ingredient back to the soil, engage in a discussion about the

significance of soil.

4. Discuss how cattle can be grass-fed and eat grass their entire lives, or they can eat grass for a little over a year and then be switched to eating grain to gain weight faster and add flavor to the meat. How does the chart change? For older students, consider having them research the difference between grass-fed and grain-fed cattle.
5. As an extension activity, look for stages of decomposition in your garden and/ or compost pile. For example, follow the decomposition of overripe fruits and vegetables periodically (e.g., 3 days, 3 weeks, 3 months) throughout the season. Have students

document the stages using photos or garden journals. If you don't have access to a compost pile, bring in some items in various stages of decomposition from your home compost pile, or ask a Master Gardener in your community. Or start a school composting project! You can also compost in the classroom by putting food scraps, dried leaves, small plant parts, etc. in a zip top bag or recycled plastic 1 liter bottle or container. Mist the scraps with water and watch the process of decomposition take place.

6. For a take-home activity, assign the students other

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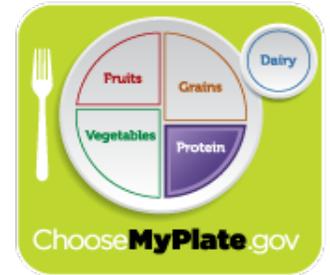
A Cow's Alfalfa-bet, by Woody Jackson

Cows, by Lyn Stone



Dig Deeper

For sources and photo credits along with more recipes, lessons, quick activities, resources, and guides, visit: mtharvestofthemonth.org.



Texas Longhorn

4 Montana Harvest of the Month: Beef



The Montana Harvest of the Month program showcases Montana grown foods in Montana schools and communities. This program is a collaboration between Montana Farm to School, Office of Public Instruction, Montana Team Nutrition Program, National Center for Appropriate Technology, Montana State University Program, Montana State University Extension, Gallatin Valley Farm to School, Montana Department of Agriculture, Montana Organic Association, and FoodCorps Montana. More information and resources are available at: mtharvestofthemonth.org

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