



School Foodservice

BEEF RESOURCE GUIDE





The School Foodservice Beef Resource Guide aids school foodservice professionals in understanding the significance of incorporating beef in menus and utilizing locally sourced options. It covers a range of topics including information on:

- Beef cuts for school lunches
- The importance of beef nutrition for adolescents
- Storage and preparation tips for frozen and thawed beef
- Using the Meat/Meat Alternatives (M/MA) crediting guide with local products
- An assortment of credited, large quantity beef recipes

This guide was developed under the guidance of the Wisconsin Beef Council with the assistance of the National Cattlemen's Beef Association, a contractor to the Beef Checkoff.

Beef Brings More Value to Every Bite

Flavor • Menu Versatility • Nutrition



Funded by Beef Farmers and Ranchers

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If you are looking for more information and resources for your specific state visit BeefBoard.org/qualified-state-beef-councils or scan the QR code.



Beef Breakdown

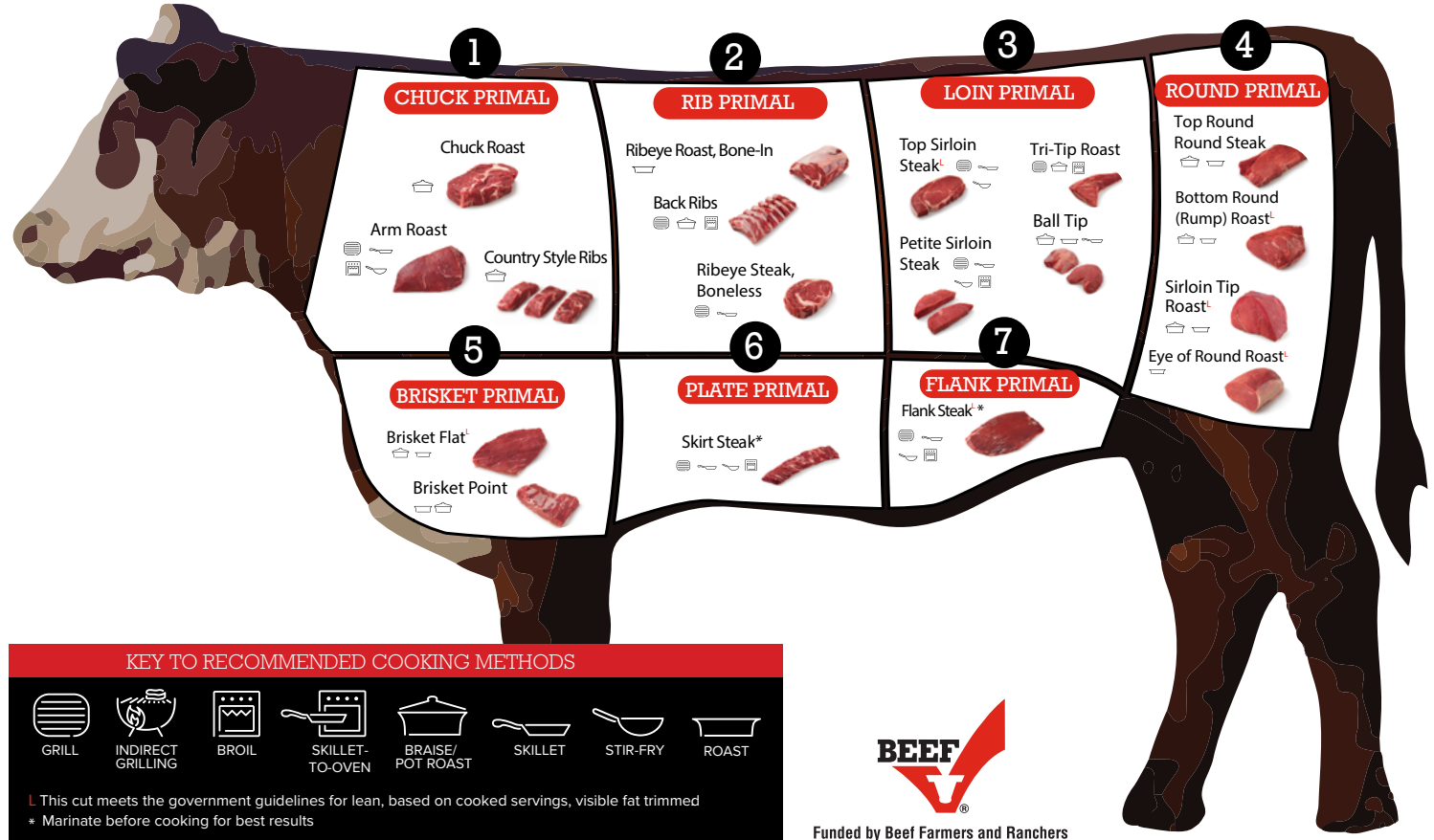


WHAT ARE PRIMALS?

The location a cut of beef comes from impacts the eating characteristics and ultimately how that cut should be utilized. The carcass can be split into seven major portions called primal. These seven primals, Chuck, Rib, Loin, Round, Brisket, Plate and Flank, subdivide a carcass into sections.

The primals are then broken down into a variety of cuts, including roasts, steaks and other value-added cuts, for purchase. Each primal offers versatility and value in different ways; and depending on the recipe most can be prepared various ways offering more options when choosing recipe ingredients. Some of the cuts that may be more applicable in school foodservice kitchens are shown below, as well as some of the more common cuts you may recognize from the grocery store or personal kitchen. There are many other cuts available; for a full breakdown go to www.BeefItsWhatsForDinner.com/cuts for a cut description, how to utilize the cut, and recommended cooking methods.

An important fact to remember is that all steaks and roasts are not created equal; each primal possesses unique eating characteristics because they are made up of different muscles with different tenderness levels, different fat contents and varying flavor profiles. These variables also impact how a cut should be cooked; see the key for recommended cooking methods for each cut.



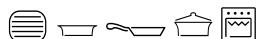
INGREDIENT CUTS



CUBED STEAK



GROUND BEEF



STEW MEAT



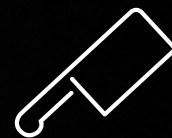
KABOBS



BEEF STRIPS



Cuts to Consider



STEW MEAT



CUT FROM:



Chuck Roast



Brisket



Top Sirloin Steak

SHREDDED BEEF



CUT FROM:



Chuck Roast



Arm Roast



Brisket



Bottom Round
(Rump) Roast

SLICED SANDWICH BEEF



CUT FROM:



Sirloin Tip Roast



Eye of Round Roast



Ball Tip



Bottom Round
(Rump) Roast

BEEF STRIPS



CUT FROM:



Skirt Steak



Flank Steak



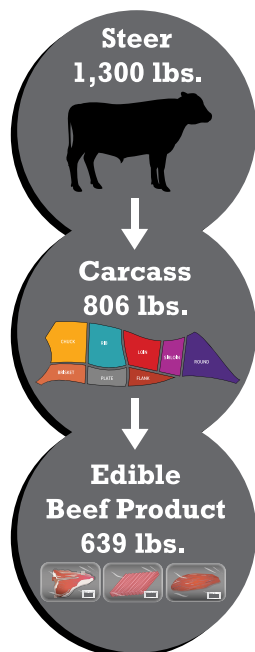
Top Round Steak



Top Sirloin Steak

BUYING BEEF IN BULK

If you do choose to purchase a whole, half or quarter beef for your school kitchen, keep in mind the loss that occurs when harvesting and fabricating the carcass. Be sure to account for the loss when considering the cost of purchase too. On average, only 62 percent of the animal's original weight remains after removing hide, head, and internal organs. The beef carcass, which now only contains fat, bone, connective tissue, and meat, is then chilled, and hung for approximately 14 to 21 days, which helps convert muscle to meat. After the carcass is properly aged, it is ready to be broken down into individual cuts. On average, 21 percent of each carcass is inedible bone, fat, and connective tissue. Approximately 38 percent of the chilled carcass can be converted into ground beef depending on how you choose to utilize the rest of the carcass.



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DEFROSTING AND CLEANING

To ensure food safety and product quality, defrost beef in the refrigerator, never at room temperature. Place the frozen package on a plate or tray to catch any juices, and place in the refrigerator for the length of time according to the chart below.

Beef Cut	Package Thickness	Approximate Refrigeration Time to Thaw (35°F to 40°F)
Steaks, Ground Beef	½ to ¾ inch	12 hours
Stew Meat, Kabobs, Strips	1 to 1-½ inches	24 hours
Small Roasts	Varies	3 to 5 hours per pound
Large Roasts	Varies	4 to 7 hours per pound

KEEPING IT CLEAN

To avoid cross-contamination and prevent foodborne illnesses, follow these easy steps:

- Wash hands well in hot, soapy water before and after handling raw meat and other fresh foods.
- Keep raw meat and meat juices away from other foods, both in the refrigerator and during preparation.
- Wash all utensils, cutting surfaces and counters with hot, soapy water after contact with raw meat.
- Keep carving boards used for raw meats separate from other food preparation areas and serving platters.

HANDLE IT RIGHT

- Use a gentle touch with Ground Beef. Over-mixing will result in burgers, meatballs or meatloaves with a firm, compact texture.
- Before cooking, pat steaks and roasts dry with paper towels for better browning.
- Before slicing whole beef cuts, freeze the piece for 30 minutes prior to cutting for easier slicing.
- When roasting or broiling, place steaks or roasts on a rack in a roasting or broiler pan to allow fat to drip away during cooking.
- Even with frozen beef products, it is important to handle it similar to raw products. Wash your hands after handling and use a food thermometer to make sure it reaches a safe internal temperature.

REFRIGERATOR AND FREEZER STORAGE GUIDELINES

Beef Cut	Refrigerator 35°F to 40°F	Freezer 0°F or below
Fresh Beef	From Purchase Date	
Steaks, Roasts	3 to 4 days	6 to 12 months
Stew Meat, Kabobs or Strips	2 to 3 days	6 to 12 months
Ground Beef	1 to 2 days	3 to 4 months
Leftover Cooked Beef		
All	3 to 4 days	2 to 3 months
Cured/Smoked/Ready-to-Eat Beef		
Corned Beef, ready-to-cook	1 week	2 weeks
Frankfurters, Deli Meats	3 to 5 days	1 to 2 months



STORAGE TIP

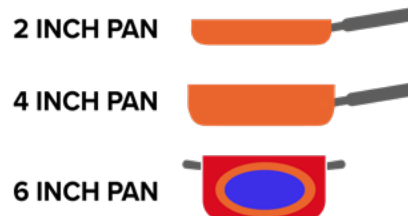
Ground beef is more perishable than roasts or steaks. Plan to use refrigerated ground beef within 1 to 2 days of purchase.

Preparation, Storage and Food Safety Tips

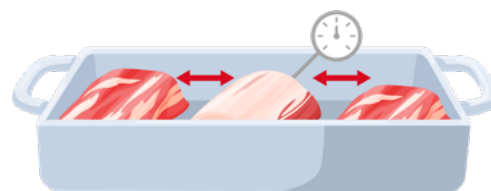


PAN SELECTION MATTERS

- ✓ 4 inch or 2 inch hotel pan depth will cook your product more evenly.
- ✓ Toppings are more evenly dispersed amongst all the servings, and the product can be seen from the serving line.
- ✓ When using a 6 inch hotel pan the heat does not penetrate the interior product without having to stir during cook time.
- ✓ Opening the oven door to stir products extends the cooking time and adds an extra labor step. Over stirring can also change the texture of foods, which will decrease the quality of the product.
- ✓ When roasting larger cuts of beef, space out the roasts within the pan for a more even cook, allowing air circulation between each piece.



ORANGE - EVEN COOK ON THE ENTIRE PAN
RED = OVERCOOKED
BLUE = UNDERCOOKED

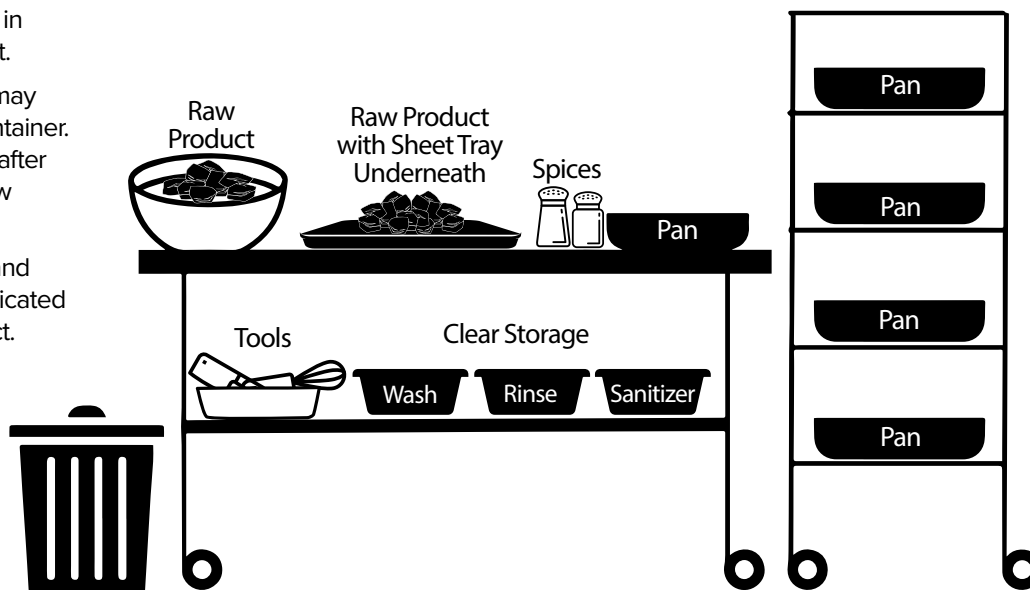


For Pulled/Shredded Meats:

- Low and Slow – setting your oven to roast at 200 degrees F is best.
- Use a probe in the center of the pan to get the most accurate reading.
- Turn the oven fan on low and cover the pan when using a convection setting.
- Reserve the juices from cooking to keep the meat moist.
- Use a large mixer and paddle attachment to pull large batches of beef to save on labor.
- Use your freezer as a pantry to save on labor and prepare when time allows. For example, use in-service days or other opportunities to prepare shredded meats for menus later in the cycle.

MISE EN PLACE RAW MEAT PRODUCTION (EVERYTHING IN PLACE)

1. Assemble your pans and cook bags in preparation for handling raw product.
2. Measure and place any spices you may need in a washable (not original) container. Spices will not go back into storage after they have been contaminated by raw material.
3. Gather and place your wash, rinse, and sanitizer buckets. These will be dedicated only to production of the raw product.
4. Ensure a garbage can is close by. This will help reduce spillage of liquids from the packaging.
5. Place a drip catch pan beneath your cutting board.
6. Place your selected knives, scissors, and other tools near the workstation.
7. Make sure to set up your station and process all raw meat away from all ready to eat foods or tools that will be used on ready to eat product.



*Limit the amount of time raw products spend outside of cold storage.

*When processing raw products plan ahead and use a designated space when the kitchen is least busy.

Preparation, Storage and Food Safety Tips Continued



Temperatures Through Food Production		
Important Temperatures	Why It's Important	Best Practices
Purchasing		
<ul style="list-style-type: none"> • Cold food: 40 °F and below. • Hot food: 140 °F and above. 	Buy from vendors that have good food safety practices in place to ensure the food you purchase has not been temperature abused.	<ul style="list-style-type: none"> • Buy from reputable vendors. • Include food safety standards in purchasing agreements.
Receiving		
<ul style="list-style-type: none"> • Refrigerated food: 40 °F and below. • Frozen food: at or below 32 °F. • Hot food: held at or above 140 °F. 	Cold foods must be received at 40 °F or below so that it is not in the temperature danger zone. Frozen food must be frozen and contain no ice crystals. Ice crystals are a sign that the food has been thawed and refrozen.	<ul style="list-style-type: none"> • Keep receiving area clean. • Inspect the delivery truck. Make sure it is clean and free of odors. • Check food temperatures, paying particular attention to frozen and refrigerated products. • Look for signs of contamination and container damage. Reject damaged packages; their contents may also be contaminated or damaged. • Check for separation of raw and ready-to-eat or prepared foods during transport. • Store foods immediately.
Storing		
<ul style="list-style-type: none"> • Dry storage areas: between 50 °F and 70 °F. • Refrigerated storage areas: at or below 40 °F. • Deep chilling storage areas: between 26 °F and 32 °F. • Freezer storage areas: between -10 °F and 0 °F. 	Storing food out of the temperature danger zone assists in preserving food quality and decreases the likelihood of bacterial growth. However, dry storage items are shelf stable in the temperature danger zone because bacteria present in the sealed container is eliminated during processing.	<ul style="list-style-type: none"> • Use the First-In First-Out (FIFO) principle. Use older products first. • Store products in original packaging. Label foods with delivery date. • Keep raw foods separate from cooked or ready-to-eat products. • Store foods at least 6 inches off the floor and 6 inches away from the wall. • Keep storage areas clean, dry, and pest-free. • Store chemicals away from foods and food-related supplies. • Maintain, monitor, and record refrigerator, freezer, and dry storage room temperatures.
Preparing		
<ul style="list-style-type: none"> • Pre-chill ingredients for cold foods to 40 °F or below before combining with other ingredients. • Limit the preparation time of any ingredients to no more than 30 minutes at room temperature before cooking, serving, or returning to the refrigerator. 	These methods prevent food from being in the temperature danger zone too long.	<ul style="list-style-type: none"> • Wash hands frequently, properly, and at appropriate times. • Avoid cross-contamination. • Keep foods out of the temperature danger zone. • Use batch cooking to limit the time between preparation and service. • Thaw foods properly. • Chill all cold foods as quickly as possible. • Prepare foods as close to serving time as the menu will allow.
Cooking		
<ul style="list-style-type: none"> • 165 °F – poultry, stuffing, stuffed meats, stuffed pasta, casseroles, leftovers. • 160 °F – ground meats, such as hamburger, ground pork, sausage, eggs for hot holding. • 145 °F – beef roasts, pork roasts, beef steaks, ham, fish. • 140 °F – ready-to-eat foods taken from a commercially processed, hermetically sealed package; vegetables (frozen or canned). 	Cooking foods to the correct internal temperature will destroy existing bacteria, even though it may not kill toxins or bacterial spores.	<ul style="list-style-type: none"> • Avoid cross-contamination. • Cook foods to the proper internal temperature for appropriate time. • Use a clean and calibrated food thermometer. • Record internal food temperature.

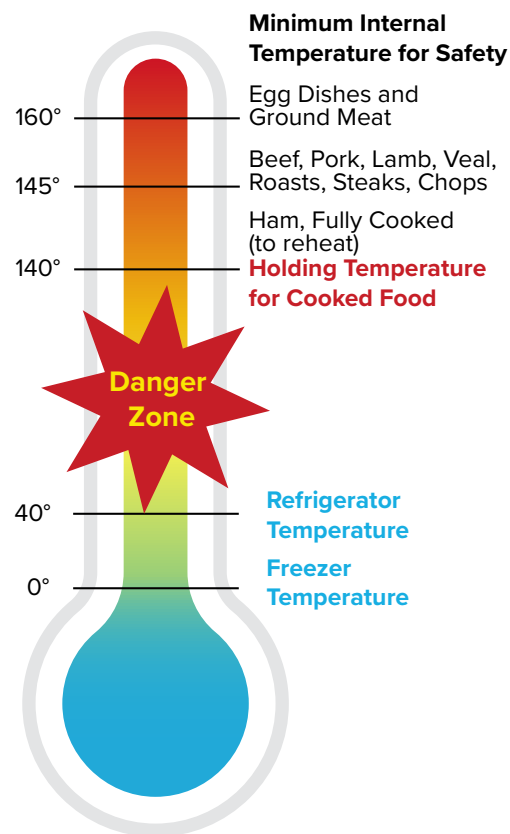
Preparation, Storage and Food Safety Tips Continued



Temperatures Through Food Production		
Important Temperatures	Why It's Important	Best Practices
Holding, Serving and Transporting		
<ul style="list-style-type: none"> Cold food: held at or below 40 °F. Hot food: held at or above 140 °F. Transporting: refer to temperatures for holding. 	These temperatures keep food out of the temperature danger zone and prevent pathogen growth.	<ul style="list-style-type: none"> Avoid cross-contamination. Keep foods out of the temperature danger zone. Monitor and record food temperatures. Monitor the temperature of hot holding and cold-holding equipment.
Cooling		
<ul style="list-style-type: none"> Hot food must be cooled from 140 °F to 70 °F within 2 hours. If not, the food must be reheated to 165 °F for 15 seconds or discarded. Food must be cooled within a total of 6 hours from 140 °F to 40 °F (if first step is achieved). Foods that start at room temperature (70 °F) must be cooled to 40 °F within 4 hours. 	These are the time and temperature regulations specified by the Food Code to safely cool foods in order to prevent bacterial growth.	<ul style="list-style-type: none"> Speed up cooling by using techniques such as: <ul style="list-style-type: none"> Stirring frequently Dividing food into small quantities Using shallow pans Using ice water baths or ice paddles whenever possible Use a clean and calibrated food thermometer to check temperatures. Monitor and record food temperatures during the cooling process. Store foods appropriately — covered, labeled with product name and date prepared.
Reheating		
<ul style="list-style-type: none"> 165 °F for 15 seconds within 2 hours. 	This is the temperature and time required to kill any bacteria that may be present in the food.	<ul style="list-style-type: none"> Reheat to internal temperature of 165 °F for 15 seconds within 2 hours or less. Monitor and record internal temperatures of foods. Never reheat food in hot holding equipment. Recommended to reheat food one time; quality diminishes each time.

CRITICAL CONTROL POINTS

Beef's CCP's include the product not being in the danger zone for more than 30 minutes during preparation. For example, if you are making 400 burgers for lunch, you should only pull out enough meat to make what you can cook in 30 minutes and then pull out more, in increments, not allowing the raw product to sit in the danger zone for more than 30 minutes.



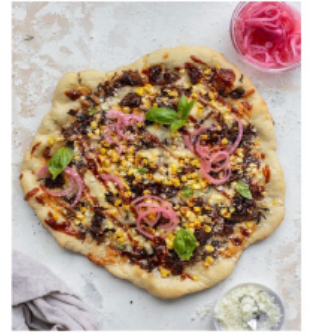
Sources:

<https://theicn.org/resources/1540/introduction-to-school-nutrition-leadership/122791/introduction-to-school-nutrition-participant-workbook.pdf> (pages 409-412)



THE WHY FOR BEEF IN SCHOOL MEALS

- **Beef is flavorful and is nutrient-rich.**
- **Beef pairs well with other healthy foods like vegetables, fruits, whole grains and dairy.**
- **We need to keep in mind that kids tend to accept and eat:**
 - » Foods served at home
 - » Foods served at local food establishments
 - » Foods on trend –influenced by peers, media, social media
- **School meal programs can provide nearly two-thirds of daily calories for kids, and therefore play an influential role in the development of a healthy dietary pattern.**

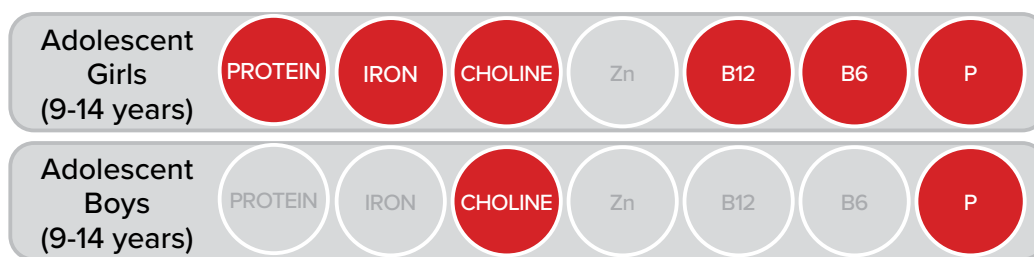


NUTRIENT AREAS OF CHALLENGE OR CONCERN

School-age years, especially adolescence, are a pivotal time for proper nutrition to support healthy growth—yet nutrient deficiencies are alarmingly common during this life stage.

In fact, many children, including adolescents, fall short on consuming essential nutrients to support learning, activity, and development such as high quality protein, iron, zinc, choline, and vitamins B₆ and B₁₂, which are all readily available in beef. Beef deliciously enhances nutritious meals—making it easier for growing children to enjoy key nutrients that fuel optimal physical and cognitive development, as well as immunity.^{1,2–5}

Nutrient Deficiencies in Adolescent Youth



1. Krebs, N.F., et al., Effects of different complementary feeding regimens on iron status and enteric microbiota in breastfed infants. *J Pediatr*, 2013. 163(2): p. 416-23.
2. Benton D. The influence of dietary status on the cognitive performance of children. *Mol Nutr Food Res* 2010;54:457–70.
3. Benton D, et al. Micronutrient status, cognition and behavioral problems in childhood. *Eur J Nutr* 2008;47:38-50.
4. Falkingham M, et al. The effects of oral iron supplementation on cognition in older children and adults: a systematic review and meta-analysis. *Nutrition Journal* 2010;9:4.
5. Smith AD, Refsum H. Vitamin B-12 and cognition in the elderly. *Am J Clin Nutr* 2009;89:707S-11S



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Nutrient-Rich Beef Can Help Fill the Nutrition Gaps



Beef's Top 10



IRON
helps your body use oxygen.



CHOLINE
supports nervous system development.



PROTEIN
helps preserve and build muscle.



ZINC
helps maintain a healthy immune system.



SELENIUM
helps protect cells from damage.



VITAMINS B₆ and B₁₂
help maintain brain function and give you energy.



PHOSPHORUS
helps build bones and teeth.



NIACIN
supports energy production and metabolism.



RIBOFLAVIN
helps convert food into fuel.



BEEF GIVES YOUR BODY MORE

On average, a 3-ounce serving of cooked beef provides 175 calories and:¹

B ₁₂	101% DV
Zinc	53% DV
Protein	51% DV
Selenium	48% DV
Niacin	31% DV
B ₆	28% DV
Riboflavin	19%
Phosphorous	16%
Iron	14%
Choline	13%

DV refers to Daily Value, the amount of a nutrient needed for a healthy adult on a 2,000-calorie diet. The %DV is the percent of a nutrient's Daily Value provided by a serving of food. For example, if a food has 50% of the DV for protein, then it provides 50% of the protein an adult needs each day. Even if your diet is higher or lower in calories, you can still use the DV as a guide to whether a food is high or low in a specific nutrient.

DID YOU KNOW?

- Don't be left unsatisfied. On average a 3-oz serving of beef provides half (25 g) of the Daily Value for protein,¹ which is one of the most satisfying nutrients.
- Get your workout in! Exercise is more effective when paired with a higher-protein diet.²

1. US Department of Agriculture, Agricultural Research Service, Nutrient Data Laboratory. USDA National Nutrient Database for Standard Reference, Legacy, NDB #13364. Version Current: April 2018. Internet: <https://ndb.nal.usda.gov/ndb/>

2. Jäger R, et al. International Society of Sports Nutrition Position Stand: protein and exercise. *Int Soc Sports Nutr.* 2017;14:20



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Implementing Local Beef



No matter where you choose to source the beef you prepare for school lunch trays, beef is an excellent choice for kids – providing a great source of nutrients and having a flavor profile they love. Students of all ages love to eat school lunch when you serve spaghetti and meat sauce, beef tacos, cheeseburgers, and savory meatballs, along with other delicious options like Philly cheesesteaks, beef stew or hot beef sandwiches. If you purchase products from local farmers and ranchers there are many ways to incorporate it into your school meals. Keep in mind the different preparation methods that kitchen staff may encounter if beef is sourced locally versus through your usual supplier.

QUESTIONS TO ASK YOUR FARMER

It works best to collaborate directly with the farmer, one that is familiar with wholesale orders. They can guide you on the most usable product for your school lunches. If there is not someone in your area who has fulfilled wholesale orders, a meeting with the farmer, processor and you can help guide the process.

After finding the farmer(s) you want to work with, below are a few important considerations and questions to ask to determine if the partnership will work. Do not be afraid to ask questions of the farmer, and be as specific as you can, when requesting information. The more you share with the farmer about your needs, the more likely he/she will be in meeting those requirements.



- a. Cost Structure
 - i. How does the farmer price product? Per pound live weight, hanging weight, by the cut or per head.
 - ii. Do they offer any quantity price breaks? If storage is available at the school, large volume orders may come with a discount and will help with overall costs.
 - iii. Do they have a guaranteed price period? In the beef industry, costs are constantly changing, and so might farmer prices. Ask about a timeline for the current prices, and a pre-order option to lock in at a lower price.
- b. Pricing List
 - i. Inquire and compare costs between different cuts. You may be able to swap some less expensive cuts for the traditional beef ingredients. Share your recipe needs with the farmer and have them make suggestions as to the most economical choices.
 - ii. Determine if the cost of further processed products, like a cooked beef crumble or pre-formed burger patty, are comparable with your in-house preparation capabilities.
- c. Payment Options
 - i. Cash or check? Does the farmer accept ACH payment?
 - ii. Do they require a down payment?
 - iii. What needs to be included on the invoice/receipt to receive payment from the school?
- d. Availability of Product
 - i. Will you be able to order as often as you need to maintain menus? Or, do you have adequate storage facilities to bring in more beef, less often?
 - ii. Is there a minimum quantity to order? If you cannot meet that order, is there another local district you could partner with to still get what you need?
 - iii. How long of a lead time does the farmer and processor need before you are menuing the product?
- e. Product Packaging
 - i. Some processors offer several types of packaging, pick the option that will last the longest, have the least waste, and be easiest for your staff to handle and prepare.
 - ii. Often processors and farmers can customize package labels, if you have certain needs make sure to ask for them.

Implementing Local Beef



KEY RECOMMENDATIONS FOR IMPLEMENTING LOCAL BEEF

Outlined below are key recommendations for implementing and sustaining locally sourced beef on your menu, as well as other items to think about, so you get the biggest bang for your buck when switching to local beef.

- Start small by choosing one day out of the month or one dish to feature local beef and build up to serving weekly local beef meals.
- Start with a product you are familiar working with and a recipe you know is well liked on your menu.
- Know your basic needs when ordering products. Think about any legal regulations you may have to follow or any equipment limitations you have. Beef producers and meat processors are required to adhere to food safety protocols established by state and federal policy, but be sure to share any other school specific needs/regulations they may have to follow.
- Think about the capabilities of your staff. Are they trained in handling raw products? Is there time to make patties from bulk ground beef? Where can you find resources for obtaining that training?
- Are there other districts in your area that have used local beef on their menu? How can you talk to them about how they started and their successes?
- How will you market the use of local beef to your students? Parents? Administrators? Does your district see value in supporting local businesses? How do you get their support?
- Leverage and take advantage of local resources. Expansion into local foods can be difficult because of funding limitations but there are creative solutions out there. Reach out to local cooperative groups, Department of Public Instruction, United States Department of Agriculture, and other local food resources to find opportunities. Be transparent and ask questions if you do not understand. Open communication is key when developing healthy relationships that work. Each party is an expert in their own area, be sure to leverage that and again, ask questions if you do not understand.



Tips for Crediting Meats/Meat Alternates in Child Nutrition Programs



Meats/Meat Alternates (M/MAs) are a required meal component for reimbursable lunches and suppers in Child Nutrition Programs (CNPs), such as the National School Lunch Program (NSLP), the Child and Adult Care Food Program (CACFP), and the Summer Food Service Program (SFSP). They are also a required meal component for lunches served under the Preschool Meal Pattern. M/MAs are not required for a reimbursable breakfast in CNPs, but may be offered in place of grains, with certain limitations, in the School Breakfast Program (SBP), the Preschool Breakfast Meal Pattern, and the CACFP. M/MAs may also be served as one of the two required meal components for a reimbursable snack in CNPs. When planning menus, remember:



- M/MAs are measured in ounce equivalents (oz eq). An oz eq of M/MA is the amount of the food that represents one ounce of edible portion of lean meat without the bone.
- The M/MA amount offered must provide a minimum of 0.25 oz eq per serving to be creditable in CNPs.
- The minimum creditable amounts do not apply to the CACFP infant meal pattern.

SPECIFIC PROGRAM REQUIREMENTS

School Meals: NSLP & SBP

NSLP has daily minimum requirements for M/MAs as well as weekly minimums and maximums at lunch, depending on grade level. Schools may exceed the weekly maximum for M/MAs, provided that meals (on average) meet the weekly dietary specifications for calories, saturated fat, sodium, and trans fat.

NSLP M/MA Daily and Weekly Requirements

Grades	Daily Min (oz eq)	Weekly Min (oz eq)	Weekly Max (oz eq)
K-5	1	8	10
6-8	1	9	10
9-12	2	10	12

SBP does not have a required M/MA meal component. However, schools can choose to offer them to meet the weekly required amount of grains, after the minimum daily 1 oz eq grains is met.

For more information, check out Offering Meats and Meat Alternates at School Breakfast at www.fns.usda.gov/tn/offering-meats-and-meat-alternates-school-breakfast.

NSLP Afterschool Snack Service: 1 oz eq M/MA for all ages.

The Meat/Meat Alternates Tip Sheet is designed for program operators as a handy and easy-to-use reference on how to credit meats/meat alternates and incorporate them into the meal pattern requirements. Published in July 2022 by USDA. Please reference your states' specific rules when reviewing the Daily and Weekly minimum requirements, as they may have changed from year to year.

Specific Program Requirements (continued)



CACFP & PRESCHOOL MEALS

CACFP has minimum M/MA requirements for children and adults that vary by meal/snack and age. Preschool meals, served through NSLP and SBP, follow the same meal pattern as CACFP.

M/MA Minimum Requirements (oz eq)

Age (years)	Breakfast* (when served in place of grains)	Lunch & Supper	Snack** (when served)
1-2	½	1	½
3-5	½	1 ½	½
6-12	1	2	1
13-18	1	2	1
Adult	2	2	1

SFSP: For all ages, 2 oz eq M/MA at lunch and supper; 1 oz eq, if offered, at snack; No requirement at breakfast.

For more information, check out Serving Meats and Meat Alternates at Breakfast at www.fns.usda.gov/tn/serving-meats-and-meat-alternates-breakfast-cacfp

*M/MA is not required at breakfast but may be served in place of grains up to 3 times per week to meet part or all of the grains requirement. 1 oz eq of M/MA replaces 1 oz eq of grains.

**M/MA is not required at snack but may be served as one of two required meal components.

WHAT TO SERVE AND HOW MUCH?

Below are common meats and meat alternates with the amount needed to provide 1 oz eq M/MA.

Common Creditable Meats* (oz eq)

- | | | |
|--|--------------------------------|---------------------------------|
| • Beef | • Lamb | |
| • Canadian bacon | • Pork (fresh or mildly cured) | |
| • Chicken•Duck | • Pork sausage | 1 oz cooked lean meat = 1 oz eq |
| • Fish•Game meat** (bison, venison (deer)) | • Shellfish | |
| • Ham (fresh) | • Turkey | |

- | | | |
|-----------------------|------------------|------------------------|
| • Bologna | • Knockwurst | 1 oz serving = 1 oz eq |
| • Frankfurter/hot dog | • Vienna sausage | |

- | | |
|---|---------------------|
| • Surimi seafood | 1.0 oz = 0.25 oz eq |
| » Surimi seafood is pasteurized, ready-to-eat, restructured seafood usually made from pollock (fish). | 3.0 oz = 1.0 oz eq |
| | 4.4 oz = 1.5 oz eq |

*Not an exhaustive list

** Only creditable if inspected and approved by an appropriate State, local, or Federal agency, or when served as traditional food on Indian Reservations or schools/institutions operated by Indian Tribes/Tribal organizations.

SCHOOL FOODSERVICE RECIPES





Beef Sausage Lasagna

Grade Group (s): K-8, 9-12

Portions: 50 Portion Size: 1 slice (approx. 4" x 2.5")

Meat/Meat Alternate: 4 oz. eq.

Yield: 2 steam table pans

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

Wisconsin Beef Council

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Ground Beef (85/15), fresh or frozen, no more than 15% fat	9 lbs.		<ol style="list-style-type: none"> Combine beef, Italian seasoning, garlic powder, onion powder, red pepper flakes, fennel seeds and salt in a large bowl and mix thoroughly. In a large pan or tilt skillet over high heat, brown beef quickly, breaking into ½" chunks and stirring until internal temperature reaches 155°. Add marinara sauce and tomatoes. Simmer 20 minutes. Squeeze thawed spinach to remove most of liquid. Combine with ricotta and eggs in a large bowl, mixing to break up eggs and spinach until evenly distributed. Using non-stick cooking spray, grease two (4-inch tall) steam table pans. Spread 4 cups of beef/tomato mixture in each pan. Cover with 8 oz. of lasagna noodles in a single layer, or overlapping slightly, in each pan. Top the noodles with 6 cups of tomato/meat mixture in each pan. Then layer ½ of the ricotta mixture dividing between the two pans. Sprinkle 4 cups mozzarella cheese evenly over the ricotta dividing between the two pans. Repeat with noodles, meat, ricotta and mozzarella. Cover with the remaining noodles and all the remaining beef/tomato mixture. Reserve the remaining mozzarella cheese. Cover each pan tightly with aluminum foil. Bake at 350° for 60 minutes, until noodles are tender and interior of lasagna has reached 165°. Remove the foil. Top each lasagna with the remaining mozzarella. Bake 10 more minutes until cheese is melted and begins to brown. Remove from oven and hold 15 minutes. Cut each pan into pieces 5 x 5. Serve 1 piece.
Italian Seasoning		½ cup	
Garlic powder		1 Tbl.	
Onion powder		1 Tbl.	
Crushed red pepper flakes		2 tsp.	
Fennel seeds		2 tsp.	
Salt		2 tsp.	
Marinara or Spaghetti sauce, no salt added	8 lbs.		
Canned diced tomatoes, low-sodium	6 lbs.		
Part skim ricotta cheese	4 lbs.	8	
Eggs			
Frozen, chopped spinach, thawed	2 lbs.		
Lasagne noodles, oven ready	4 lbs.		
Mozzarella cheese, shredded	4 lbs.		
Substitute: Pre-cooked ground beef 85/15 (no more than 15% fat)	7 lbs. 13 oz.		Skip Step 2. In Step 3 combine pre-cooked beef with marinara sauce and tomatoes. Simmer 20 minutes and ensure that mixture reaches an internal temperature of 165°. Proceed as directed.



Beef Cheddar Pockets

Grade Group (s): K-8, 9-12

Portions: 50 | Portion Size: 1 pocket (3 ¼ oz eq m/ma)

Meat/Meat Alternate: 3.25 oz. eq.

Yield: 50 pocket pies.

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

Beefitswhatfordinner.com

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Cooked, shredded, Beef Chuck Roast, visible fat removed	7 lbs. 12 oz.		<ol style="list-style-type: none"> Combine beef, cheese and onion in a large bowl. Chill until assembly. On a lightly floured surface roll pizza dough out to approximately ¼" thick. Cut into 50 uniform rectangles each 4" x 5 ½". If using sheeted pizza dough, cut each thawed sheet into 8 equal rectangles. Portion beef mixture into 3 ½ oz per pocket, squeezing the ingredients together to compact into a small log. Place each log lengthwise in the center of dough rectangles. Fold the long edges of each rectangle over filling pressing dough edges down to seal the center seam and ends. Place seam side down, leaving 2" space in between on 2 parchment lined sheet pans. Brush the top of each pocket with egg white. Cut a small slit in top of each pocket to vent. Bake at 375° for 15 minutes until golden brown and internal temperature reaches 165° for at least 15 seconds. Portion 1 pocket per serving.
Shredded cheddar cheese	3 lbs. 2 ½ oz.	12 ½ cups	
Yellow onion, diced		4 cups	
Whole wheat pizza dough, refrigerated	6 lbs. 4 oz.		
OR whole pizza dough sheets (approx. 13" x 19"), thawed		7 sheets	
Egg whites, lightly beaten		6	
Substitute: Pre-cooked Ground Beef 85/15 (no more than 15% fat)	7 lbs. 12 oz.		Proceed with recipe as written.



Beef Stroganoff

Grade Group (s): K-8, 9-12

Portions: 50 | Portion Size: $\frac{3}{4}$ cup

Meat/Meat Alternate: 2 oz. eq.

Yield: 2 gallons, 5 $\frac{1}{2}$ cups

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

HealthySchoolRecipes.com

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Canola oil Onions, sliced thinly Button mushrooms, sliced Garlic, minced Beef Round steak, top, inside, sliced across the grain into thin strips ($\frac{1}{4}$ " x $\frac{1}{4}$ " x 3") All-purpose flour Salt Ground black pepper Dried thyme Worcestershire sauce Beef stock Sour Cream Dijon mustard Minced Parsley	1 lb. 12 oz. 4 lbs. 9 lbs. 4 $\frac{1}{2}$ oz.	1 cup 3 Tbl. 1 cup, 2 Tbl. 2 tsp. 1 tsp. 2 tsp. $\frac{1}{2}$ cup 6 cups 4 cups 2 Tbl. $\frac{1}{2}$ cup	1. Saute onions in $\frac{1}{4}$ cup canola oil over medium heat until soft and translucent, about 7 minutes. Remove onions from pan and set aside. 2. Add $\frac{1}{4}$ cup canola oil and mushrooms to pan and saute until soft and browned. Remove mushrooms from pan, stir in garlic, and set aside. 3. Toss sliced beef with flour. Heat $\frac{1}{2}$ cup canola oil in pan and add beef strips. Sprinkle with salt, pepper, thyme. Saute over medium heat until beef is lightly browned and has reached an internal temperature of 155°. 4. Add Worcestershire sauce and beef stock to pan. Raise heat to high. Add onions and mushrooms back to pan. Cook, stirring until just boiling and sauce is thickened. 5. Turn off heat. Stir in sour cream, Dijon mustard and minced parsley. 6. Hold for service at 140° or higher. 7. Serve $\frac{3}{4}$ cup using a 6 oz. spoodle over buttered egg noodles, rice or bread.
Substitute: Raw ground beef	8 lbs. 8 oz.		In step 3, omit the $\frac{1}{2}$ cup of canola oil. Brown the ground beef over medium heat, breaking up into large pieces until lightly browned and has reached an internal temperature of 155°. Drain. Return beef to pan. Then add flour and spices and saute, stirring for 5 minutes before proceeding with step 4.
Substitute: Beef Eye of Round Roast, sliced across the grain into thin strips	10 lbs. 9 oz.		No change in instructions.



Creamy Cheeseburger Penne

Grade Group (s): K-8, 9-12

Portions: 50 | Portion Size: 1 cup, 8 oz spoodle

Meat/Meat Alternate: 1.5 oz. eq.

Yield: 3 gallons, 2 cups

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

TasteOfHome.com

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Whole grain penne pasta Olive oil Onion, finely chopped Beef, raw, ground 85/15 (no more than 15% fat, fresh or frozen and thawed) Garlic, minced Canned diced tomatoes with juices Tomato paste Dijon mustard Italian seasoning Milk, skim American cheese Parmesan cheese, grated Salt Black pepper	3 lbs. 2 oz. 6 lbs. 4 oz. 7 oz.	6 Tbl. 3 cups 6 Tbl. 13 cups $\frac{3}{4}$ cup 2 Tbl. $\frac{1}{4}$ cup 4 $\frac{5}{8}$ cups 3 cups 2 tsp. 1 tsp.	1. Bring a large pot of water to a boil. Cook pasta until just tender. Drain and reserve. 2. In a large saute pan or tilt skillet, heat olive oil over medium heat. Add onion and saute 5 minutes until softened. 3. Add beef and brown, breaking up into $\frac{3}{4}$ " crumbles until beef has reached an internal temperature of 155° for at least 15 seconds. Drain beef and return to pan. 4. Add garlic to pan over medium heat and saute until fragrant 1-2 minutes. 5. Add tomatoes, tomato paste, mustard and Italian seasoning and stir well. 6. Return pasta to pan, add milk, and stir to combine. Simmer 20 minutes until juices have thickened and been absorbed by pasta. 7. Remove from heat. Stir in cheese, salt and pepper. Transfer to 2 steam table pans. 8. Portion using an 8 oz. spoodle for a 1 cup serving.
Substitute: Pre-cooked Ground Beef 85/15 (no more than 15% fat)	4 lbs. 11 oz.		In Step #3 add pre-cooked ground beef to pan and heat to 165°. Skip the draining and proceed as directed.



Minestrone Soup

Grade Group (s): K-8, 9-12
 Portions: 50 | Portion Size: 1 cup
 Meat/Meat Alternate: 1 oz. eq.
 Yield: 3 gallons, 2 cups

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

USDA recipe for schools

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Water Onions, diced Carrots, diced Green Cabbage, chopped Celery, chopped Kale, chopped Zucchini, chopped Beef base, low-sodium Beef, Stew Meat, cut into ¾" chunks Water Tomatoes diced, canned low-sodium Pepper, black ground Oregano, dried Garlic powder Salt Marjoram Onion powder Parsley, dried Great northern beans, canned, drained Macaroni, elbow, whole-grain	8 oz. 8 oz. 8 oz. 8 oz. 8 oz. 8 oz. 5 lbs. 4 oz. 12 oz.	2 cups 3 Tbl. 16 cups 1 #10 can 1 tsp. 2 Tbl. ¼ cup 2 tsp. 2 tsp. 2 tsp. 2 tsp. 2 tsp. 1 #10 can	1. In a large stock pot, add water, onions, carrots, cabbage, celery, spinach, and zucchini. Simmer uncovered over medium-high heat for 15 minutes or until vegetables are tender. 2. Add beef base, beef, water, diced tomatoes, pepper, oregano, garlic powder, salt, marjoram, onion powder and parsley. Bring to almost a boil, stir, then reduce heat and simmer uncovered over medium-high heat for 30 minutes. 3. Add beans and macaroni. Simmer uncovered over medium-high heat for 20 minutes. Pour Minestrone Soup into a two half-steam table pans (12¾" x 10½" x 6"). Hold for hot service at 135° or higher. 4. Portion with 8 fl oz ladle (1 cup).
Substitute: Pre-cooked Ground Beef 85/15 (no more than 15% fat)	3 lbs. 4 oz.		Proceed as directed adding pre-cooked beef in place of stew meat in Step 2.
Substitute: Cooked, shredded Beef Chuck Roast, visible fat removed	3 lbs. 4 oz.		Proceed as directed adding shredded beef in place of stew meat in Step 2.



Cuban Crispy Shredded Beef (Vaca Frita)

Grade Group (s): K-8, 9-12
 Portions: 50 | Portion Size: 8 oz. spoodle (1 cup)
 Meat/Meat Alternate: 2.25 oz. eq.
 Yield: 3 gallons, 2 cups

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

BeefItsWhatForDinner.com

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Shredded, cooked, Beef Chuck Roast, visible fat removed, (large shreds or chunks) Green Peppers Large yellow onions Lime juice Olive oil Garlic, minced Black pepper, ground Salt	7 lbs. 12 oz. 5 lbs. 4 oz. 9 lbs.	3 cups, 2 Tbl. 1½ cups ½ cup 1 Tbl. 2 Tbl.	1. Core the green peppers and cut into thin strips. Peel the onions and slice thinly. 2. Combine the cooked, shredded beef, peppers, onions, lime juice, oil, garlic, salt and pepper in a large bowl. Toss to coat. Cover. Marinate in cooler for 15 minutes or up to 1½ hours. 3. Heat a large skillet, tilt skillet or griddle over medium-high heat. Add beef and vegetables in a single layer. Fry until crispy in spots, turning to crisp all sides 3 or 4-5 minutes. You may need to do this in batches to keep ingredients in a single layer. 4. Remove from heat. Serve by scooping 1 level cup of meat and vegetables. 5. If desired serve with steamed rice, black beans and lime wedges.
Substitutions: Any fully cooked shredded beef Chuck or Round roast, visible fat removed	7 lbs. 12 oz.		



Mexicali Taco Boat

Grade Group (s): K-8, 9-12

Portions: 50 | Portion Size: #6 scoop or 5/8 cup

Meat/Meat Alternate: 2.0 oz. eq.

Yield: 50 boats

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

USDA Recipe for Schools

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Beef, raw, ground 85/15 (no more than 15% fat), fresh or frozen and thawed	10 lbs.		<ol style="list-style-type: none"> 1. Brown ground beef and onions over medium-high heat in a large stock pot or tilt skillet, breaking beef up into chunks. Heat to 155° or higher for at least 15 seconds. 2. Meanwhile combine spices in a small bowl. Mix. 3. Drain beef in a fine-mesh colander, discarding fat and return meat to pot. 4. Add spices and salsa. Simmer over low heat for 5 minutes. 5. Hold for hot service at 135° or higher. 6. Spread sweet potato fries evenly on two parchment-lined sheet pans. Bake in conventional oven 425° for 15-20 minutes. Bake in convection oven at 425° for 12-15 minutes. 7. Assemble by laying about 16 fries (3 oz.) in the bottom of a paper boat or bowl. On top of fries layer a #6 scoop (5/8 cup) of beef mixture. 8. Top each taco boat with 1 Tbl of tomatoes, 1 tsp cheese, 1 tsp cilantro and 1 Tbl (#70 scoop) yogurt.
Onions, diced	2 lbs.		
Chili Powder		1/2 cup	
Cumin, ground		1/2 cup	
Garlic powder		2 Tbl.	
Onion powder		2 Tbl.	
Red pepper, crushed		2 tsp	
Black pepper, ground		2 Tbl.	
Salsa, low-sodium	2 lbs.	1 qt.	
Sweet Potato fries, frozen, straight cut	10 lbs.		
Tomatoes, fresh diced	1 lbs. 6 oz.	3 cups	
Cheddar cheese, low-fat shredded	6 oz.	1 1/2 cups	
Cilantro, fresh, chopped		1 1/2 cups	
Nonfat Plain or Greek Yogurt		3 cups	
Substitute: Pre-cooked Ground Beef 85/15 (no more than 15% fat)	7 lbs. 8 oz.		
Substitute: Cooked, shredded Beef Chuck Roast, visible fat removed	6 lbs. 5 oz.		<p>Omit Step 1. Add pre-cooked beef to large stock pot or tilt skillet over medium heat. Proceed with Step 4 making sure to heat mixture to 165° for at least 15 seconds.</p> <p>Omit Step 1. Add shredded beef to large stock pot or tilt skillet over medium heat. Proceed with Step 4 making sure to heat mixture to 165° for at least 15 seconds.</p>



Korean Braised Beef

Grade Group (s): K-8, 9-12

Portions: 50 | Portion Size: #12 scoop or 1/3 cup

Meat/Meat Alternate: 2.0 oz. eq.

Yield: 1 gallon

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

HealthySchoolRecipes.com

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Beef Stew Meat, fresh or frozen and thawed	10 lbs. 4 oz.	48 cups	<ol style="list-style-type: none"> 1. Bring water to a boil with onion, scallions, radish, garlic, ginger, and peppercorns. Boil for 5 minutes. 2. Add beef to water. Return pot to a gentle boil. Remove any scum that comes to the top. Boil, covered for about 30 minutes. 3. Strain the beef but retain 15 cups of liquid. Discard the vegetables and herbs. 4. Add the soy sauce, sesame oil, sugar, rice vinegar and bay leaves to the pot. Return the beef and the reserved liquid to the pot, stirring to coat. 5. Bring to a simmer over medium heat and cook covered until meat is very tender, 20-40 minutes. The liquid will reduce to 1/3rd. 6. Shred meat or mash chunks with a potato masher. 7. Portion 2 oz. of meat with 2 T. of sauce in a #12 scoop (1/3 cup). Serve over rice or rice noodles, cellophane noodles, ramen noodles or buckwheat noodles.
Water		3	
Onion, yellow medium, cut in wedges		2 bunches	
Scallions, roughly chopped			
Korean radish Large white radish, roughly chopped	2 lbs.	45	
Whole Garlic cloves		3 -4" piece	
Fresh ginger, sliced, or mashed		50	
Black peppercorns, whole			
Soy sauce		2 cups	
Sesame oil		3/4 cup	
Sugar		1 cup 2 Tbl.	
Rice vinegar		1 cup 2 Tbl.	
Bay leaf, whole dried		6	
Substitute: Beef, Chuck Roast, fresh or frozen, without bone	10 lbs.		
			Cut beef into 2-3" chunks. Proceed as directed in Steps 1-7.



Salsa Verde Breakfast Pizza

Grade Group (s): K-8, 9-12

Portions: 50 | Portion Size: 1 piece (2 oz. eq grain, 3 ¼ oz eq)

Meat/Meat Alternate: 3.25 oz. eq

Yield: 5 pans

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

Wisconsin Beef Council

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Ground Beef 85/15, fresh or frozen and thawed (no more than 15% fat) Garlic powder Onion powder Dried Oregano Ground Cumin Crushed red pepper Salsa Verde (prepared green salsa)	4 lbs. 3 oz.	¼ cup ¼ cup ¼ cup ¼ cup 1 Tbl. 6 cups	1. Combine beef, garlic powder, onion powder, oregano, cumin and crushed red pepper in a large bowl. Mix lightly but thoroughly. 2. Brown beef over medium heat, breaking into ½" crumbles and stirring until internal temperature reaches 155°. 3. Stir in salsa verde and hold until assembly. 4. Arrange frozen crusts on well-greased full sheet pans. Bake at 400° for 15 minutes. Remove from oven. 5. Immediately top each crust with 19 ounces of beef mixture, 12 oz. tomatoes, 15 oz. of eggs and 8 oz. of cheese. Sprinkle each pizza with ¼ cup green onions.
Frozen pre-proofed 13" x 18" whole-grain pizza crust. Tomatoes, diced Fully cooked egg patties, torn into pieces Shredded reduced-fat Mexican cheese blend or Monterey Jack cheese Green onions, chopped	3lbs. 12 oz. 4 lbs. 11 oz. 2 lbs. 8 oz. 5 oz.	5	6. Bake at 400° for 15 minutes or until crust is golden and cheese is melted and bubbly. Remove from oven. 7. Immediately cut each pizza into 10 rectangles. 8. Serve 1 piece of pizza.
Substitute: Pre-cooked Ground Beef 85/15 (no more than 15% fat)	3 lbs. 4 oz.		In Step 1 substitute pre-cooked ground beef for ground beef. Skip Step 2. Bake assembled pizzas until temperature of beef topping reaches 165° for at least 15 seconds.
Substitute: Cooked, shredded Beef Chuck Roast, visible fat removed	3 lbs. 4 oz.		In Step 1 substitute shredded beef for ground beef. Skip Step 2. Bake assembled pizzas until temperature of beef topping reaches 165° for at least 15 seconds.



Meatball Sub

Grade Group (s): K-8, 9-12

Portions: 50 | Portion Size: 3 meatballs (2 oz. eq.), ¼ cup sauce, 1 roll/bun

Meat/Meat Alternate: 2 oz. eq.

Yield: 50 sandwiches

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

Minnesota Child Nutrition Agency

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Ground Beef (85/15), fresh or frozen, no more than 15% fat Eggs Breadcrumbs Italian Seasoning Garlic Powder Black, pepper, ground Salt	8.5 lbs. 9 oz.	8 2 cups ¼ cup 1 Tbl. 1 Tbl. 2 tsp.	1. If ground beef is frozen: two days before meal service move the frozen ground beef to the bottom shelf of cooler to thaw. 2. Combine thawed or fresh ground beef with eggs, breadcrumbs, and seasonings in a large mixing bowl. Mix on low speed just until evenly combined. 3. Line two sheet pans with parchment paper 4. Using a #30 scoop meat onto sheet pans, or roll into 150 walnut-sized meatballs.
Marinara or Spaghetti sauce, no salt added		1 #10 can	5. Bake at 400° for 30 minutes or until 165° internal temperature. 6. Meanwhile heat marinara or spaghetti sauce to 140°.
Crusty torpedo rolls or brat buns, 2 oz.		50	7. Hold meatballs and sauce for service at 135°
Giardiniera, drained (optional)		6 ½ cups	8. To serve, split each roll lengthwise. Top with 3 meatballs, ¼ cup of sauce and 2 Tbl. of giardiniera, if using.



Shepherd's Pie

Grade Group (s): K-8, 9-12

Portions: 50 | Portion Size: 1 piece (about 2" x 3 ¾")

Meat/Meat Alternate: 2.0 oz. eq.

Yield: 2 Pans

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

USDA Standardized Recipe Project

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Cooked, shredded Beef Chuck Roast, visible fat removed Olive oil Onions, diced Peas and Carrots, frozen, thawed Beef stock or broth, low-sodium Cornstarch Water, cool Thyme, dried Sage, dried Onion powder Paprika Ground black pepper Salt Water Skim milk Instant potato flakes Olive oil Salt	7 lbs. 1 lb 3 lbs 4 oz. 2 lbs	2 Tbl. 3 1/8 cups 9 ¾ cups 2 qts. ¾ cup 1 cup 1 Tbl. 1 Tbl. 2 tsp. 2 tsp. 2 tsp. 1 Tbl. 2 qts. 2 qts. 2 cups 1 gallon ¾ cup 2 tsp.	1. Divide beef into 2 steam table pans (12" x 20" x 2 ½"). 2. Heat oil in a large skillet over medium heat. Add onions and saute 5-8 minutes or until onions are translucent. 3. Add peas and carrots. Stir well. Divide vegetables into the 2 steam table pans. 4. Heat beef stock in a large stock pot over high heat until boiling. 5. Stir together cornstarch and 1 cup water until smooth. Pour into boiling stock. Stir constantly with a wire whisk. Add Thyme, sage, onion powder, paprika, pepper and salt. Bring to a rolling boil while stirring. Mixture will thicken. Remove from heat and set aside. 6. Heat water to a rolling boil. 7. Pour water, milk, potato flakes, olive oil and salt into a commercial mixer bowl. Using a paddle attachment, mix 4-5 minutes on low speed. Mashed potatoes will be stiff. 8. Pour ½ of gravy mixture into each pan of beef and veggies. Mix well. 9. Spread ½ of potato mixture evenly over the top of each pan, pushing potatoes to each edge to seal. 10. Bake at 350° for 45 minutes until bubbly and potatoes and golden. Internal temperature must be 165° for at least 15 seconds. 11. Hold for hot service at 140° or higher. 12. To portion, cut each pan 5 x 5 into 25 pieces.
Substitute: Beef Stew Meat, fresh or frozen and thawed. Substitute: Ground Beef, fresh or frozen and thawed, 85/15 (no more than 15% fat)	10 lbs, 5 oz. 8 lbs. 6.5 oz.		Omit Step 1. In step 4, heat beef stew meat in beef broth until boiling. Proceed using a long-handled spoon or heat-resistant rubber spatula in place of wire whisk. In Step 1, brown ground beef in a large skillet over medium-high heat, breaking into small pieces, until an internal temperature of 155° is reached. Drain meat well and then divide into the 2 steam table pans (12" x 20" x 2 ½"). Proceed with rest of recipe.



Volcano Meatloaf

Grade Group (s): K-8, 9-12
 Portions: 50 | Portion Size: 1 meatloaf
 Meat/Meat Alternate: 2.5 oz. eq.
 Yield: 50 meatloaves

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

USDA Recipe for Schools

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Water		6 cups	1. Rinse lentils and sort out any unwanted materials. Drain well.
Lentils, red, dry	1 lb. 5 oz.	3 ¼ cups	Combine lentils and 6 cups water in a stock pot. Bring to a boil. Reduce heat to simmer, uncovered, until lentils are very tender, about 20 minutes.
Beef, raw, ground 85/15 (no more than 15% fat, fresh or frozen and thawed)	8 lbs. 6 oz.		2. Let cool for 15 minutes.
Water		3 cups	3. Meanwhile in a large mixer add ground beef, milk, eggs, breadcrumbs, tomato paste, Worcestershire and all seasonings listed. Add lentils. Mix well at low speed.
Eggs		6	4. Portion using a packed #6 scoop (2/3 cup) onto two parchment lined sheet pans lightly coated with pan spray, making 50 meatloaves.
Breadcrumbs		3 cups	5. Use the handle of a wooden spoon or other ½" diameter tool to make a divot down into the center of each meatloaf.
Tomato paste, canned, no salt added		¾ cup	6. Bake in a conventional oven at 400° for 25-30 minutes or in a convection oven at 375° for 15-20 minutes until the internal temperature reaches 165° for at least 15 seconds.
Worcestershire Sauce		¼ cup	7. If using optional ketchup or barbecue sauce, top each meatloaf with about 2 Tbl.
Dry mustard, ground		¼ cup	8. Hold for hot service at 135° or higher.
Dried parsley		3 Tbl.	
Garlic powder		3 Tbl.	
Onion flakes		3 Tbl.	
Thyme, dried		1 Tbl.	
Celery seed		1 Tbl.	
Salt		2 tsp.	
Ground black pepper		2 Tbl.	
Ketchup or barbecue sauce (optional)		6 cups	



Wisconsin Chili

Grade Group (s): K-8, 9-12
 Portions: 50 | Portion Size: 1 cup
 Meat/Meat Alternate: 2.0 oz. eq.
 Yield: 3 gallons

HACCP Process:

- ☐ #1 No Cook
- ☒ #2 Cook & Serve Same Day
- ☐ #3 Includes Cooling Step

Recipe Adapted From:

USDA Montana Bison and Lentil Chili

INGREDIENTS	WEIGHT	MEASURE	PROCEDURE
Olive oil		¼ cup	1. Heat oil in a large stockpot or tilt skillet. Add onions, green peppers, garlic and saute until soft. Add salt and beef and cook until browned, breaking up into chunks. Cook to 155° for at least 15 seconds.
Onions, finely diced	1 lb. 10 oz.	5 cups	2. Stir in spices and tomato paste to coat meat.
Green pepper, diced		2 ½ cups	3. Add lentils, diced tomatoes, beef stock and beans.
Garlic, minced		¾ cup	4. Bring to a boil then lower heat and allow to simmer, stirring occasionally until chili thickens and lentils are cooked through and falling apart, about 35 minutes. Add water if too thick.
Beef, raw, ground 85/15 (no more than 15% fat), fresh or frozen and thawed	5 lbs.		5. Just prior to service stir in lime juice and add fresh cilantro. Hold for hot service at 135° or higher.
Salt		1 Tbl.	6. Portion with an 8 oz. spoodle (1 cup).
Ground cumin		⅓ cup	
Chili powder		½ cup	
Smoked paprika		¼ cup	
Tomato paste, canned		2 cups	
Lentils, dried brown lentils	1 lb. 12 oz.	4 cups	
Diced tomatoes, canned, drained, low sodium	6 lbs. 6 oz.	3 qts.	
Beef stock, low sodium		2 qts.	
Kidney beans, canned, drained	4 lbs. 8 oz.	1 #10 can	
Pinto beans, canned, drained	4 lbs. 9 oz.	1 #10 can	
Lime juice		¼ cup	
Cilantro, fresh, chopped	3 oz.	1 cup	
Substitute: Beef, Stew Meat, fresh or frozen and thawed, cut into ½" cubes	6 lbs.		Proceed with recipe as directed in Steps 1-6



Funded by Beef Farmers and Ranchers

DID YOU KNOW?

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✓ 10 Cool Facts About Cattle



To the beef community, sustainability comprises much more than environmental considerations. Today, a sustainable food supply balances efficient production with environmental, social and economic impacts.



1

Cattle have been eating grass and plants on land and providing food for humans for hundreds of years.⁷

2

Cattle use their special stomach to digest grass in a way that humans can't and turn it into beef!¹



Cattle burps are part of a **natural cycle**. The gases they release only stay in the atmosphere for **10 years** before they return to the soil.⁷

Cattle farmers and ranchers use cattle as a tool to improve nature – like a **superpower**!³

4



When cattle graze, their manure, or poop, makes the soil healthier and helps plants to grow.⁵

5



3

The land where cattle live is also a home for many insects and animals like **birds, deer** and even **butterflies**.²

6



If beef cattle were removed from the land, weeds and grasses would crowd out important **native plants and flowers**.³

7

The land where cattle live also allows people to enjoy nature by biking, hiking, camping and more.²

8



10

9

Cattle naturally prevent wildfires by eating the grass that fire would burn if it was left behind.^{4,6}



90% of farms where cattle live are owned by families, meaning kids all over the country help their parents care for their animals and land.⁸

1. Baber, J.R. et al., 2018. Estimation of human-edible protein conversion efficiency, net protein contribution, and enteric methane production from beef production in the United States. *Trans. Anim. Sci.* 2(4): 439-450.
2. Barry, Sheila. 2021. Beef Cattle Grazing More Help than Harm for Endangered Plants and Animals.
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4. Davies et al. 2005. Winter grazing can reduce wildfire size, intensity and behaviour in a shrubgrassland. *International Journal of Wildland Fire*. Access at: https://owri.oregonstate.edu/sites/agscid7/files/eoarc/attachments/854_winter_grazing_2015.pdf
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6. Taylor, Charles. 2006. Targeted Grazing to Manage Fire Risk. University of Idaho. Access at: https://www.webpages.uidaho.edu/rx-grazing/Handbook/Chapter_12_Targeted_Grazing.pdf
7. UC Davis. 2020. Clear Center. The Biogenic Carbon Cycle and Cattle. <https://clear.ucdavis.edu/explainers/biogenic-carbon-cycle-and-cattle>
8. USDA-NASS. 2017. 2017 Census of Agriculture. Farm Typology. https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/Typology/typology.pdf

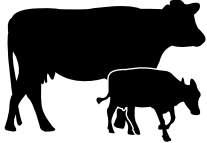
✓ The Beef Lifecycle

The beef industry continues to implement numerous proven sustainability practices throughout each and every step of the “pasture-to-plate” process that contribute to the way beef is responsibly raised today.



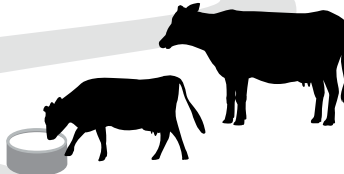
1 COW-CALF

Calves are born and raised every year on cow-calf farms and ranches, spending time grazing on grass pastures within sight of their mothers.



2 WEANING

Beef calves are weaned away from their mothers between 6-8 months of age.



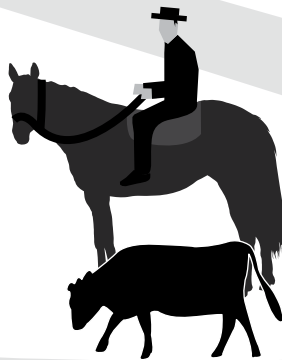
3 LIVESTOCK AUCTION MARKETS

Many calves leave the farm or ranch where they were born and are sold at livestock auction markets to stockers and backgrounders between 6-12 months of age.



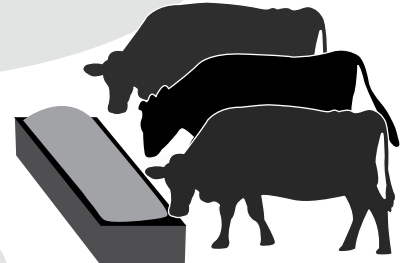
4 STOCKERS AND BACKGROUNDERS

Between 6 - 12 months of age cattle spend time at stocker and backgrounder farms and ranches where they graze on a variety of pastures. Here they gain weight and convert forage and grass into lean protein.



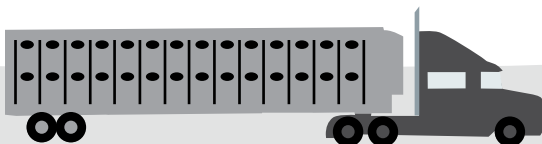
5 FEEDYARD

Cattle spend 4 - 6 months at a feedyard being fed a scientifically-balanced diet and receiving daily care. Some spend the rest of their lives on a pasture being grass finished.



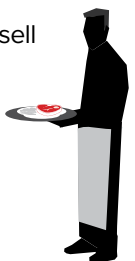
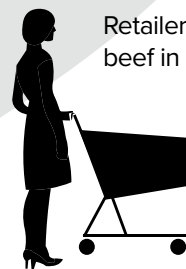
6 PACKING PLANT

Cattle are sent to a packer/processing facility to be harvested and processed to be distributed to supermarket retailers and restaurants.



7 SUPERMARKETS AND RESTAURANTS.

Retailers and foodservice operators sell beef in stores and restaurants.



FACTS AT A GLANCE

50

STATES ARE HOME TO
COW-CALF FARMS AND
RANCHES

91%

OF FARMS AND
RANCHES ACROSS
THE U.S. ARE FAMILY
OWNED AND
OPERATED

40

HEAD IS
THE AVERAGE
HERD SIZE

4-6

IS TYPICALLY THE
NUMBER OF MONTHS
CATTLE SPEND AT A
FEEDLOT

130

COUNTRIES IMPORT
U.S. BEEF DUE TO
GLOBAL DEMAND

✓ Why Protein Quality Matters

Protein is an essential part of a healthy diet. When it comes to the type of protein we select on a day-to-day basis, are all sources of protein created equal? Not necessarily...



To understand the differences between various protein sources, we first have to understand the very basics of dietary protein and how it works in our bodies:

PROTEIN BASICS

Proteins are made up of building blocks called amino acids. There are 20 unique amino acids, 9 of which are essential amino acids, and must come from the foods we eat. Our bodies are able to create the other 11 amino acids we need using elements already present in the body. These are called *nonessential amino acids*.

PROTEIN QUALITY

Different measurement scales are used to rate the quality of protein in different foods.⁴ These measurements usually look at two things:

1. How many essential amino acids are present in the protein (remember, those are the building blocks that we need to get from a healthy diet).
2. The body's ability to digest and use the protein from the food source (this is referred to as bioavailability).

A well-balanced diet that includes a variety of protein foods will ensure your athlete is getting enough to meet his or her needs.

■ **ANIMAL PROTEINS:** The protein found in beef, fish, poultry, eggs, and milk generally have the highest protein quality - these are considered complete protein sources - they contain all 9 essential amino acids and are easy to digest.¹ In addition, animal proteins are optimal in their ability to help the body build and maintain muscle.²






■ **PLANT PROTEINS:** The protein from plant sources often scores lower in protein quality because most plant-based proteins are incomplete, meaning they are lacking one or more of the essential amino acids (with soy and quinoa being notable exceptions).¹ While the fiber in plants can support our health in many ways, dietary fiber along with other components can interfere with how the body absorbs and digests amino acids.³ Research shows that plant-based proteins are less effective than animal proteins in supporting muscle growth and maintenance.⁵

FEELING FULL YET?

Studies tell us that eating high-quality, whole food proteins can help us to feel full and satisfied and help us feel less hungry between meals.^{4,5,6} A 3 oz serving of cooked lean beef (about the size of a deck of cards) packs a powerful punch of high-quality protein with a reasonable number of calories. Keeping a target of 20-30 grams of protein per meal in mind, take a look at how some plant-based protein foods compare to one 3 oz serving of cooked beef:

■ WHAT DOES 25 GRAMS OF PROTEIN LOOK LIKE??

Compared to plant-based protein sources, lean beef provides more high-quality protein with fewer calories. On the other hand, plant-based protein foods may provide dietary fiber and other vitamins and minerals that animal-based protein foods do not! Variety is the name of the game. Including lean beef as part of your balanced, healthy lifestyle is something you and the whole family can feel good about!

	AMOUNT	CALORIES	PROTEIN
Quinoa	 3 cups	666	25g
Peanut Butter	 6.5 tbsp	613	25g
Black Beans	 1 2/3 cups	379	25g
Edamame	 1 1/3 cups	249	25g
Beef	 3 ounces	173	25g

1. Hoffman J, Falvo M. Protein – which is best. *J Sports Sci Med*. 2004;3(3):118-130.
2. Berrazaga I, Micard V, Gueugneau M, Walrand S. The role of the anabolic properties of plant-versus animal-based protein sources in supporting muscle mass maintenance: a critical review. *Nutrients*. 2019;11(8):125
3. Velickovic T, Stanic-Vucinic D. The role of dietary phenolic compounds in protein digestion and processing technologies to improve their antinutritive properties. *Comprehensive Reviews in Food Science and Food Safety*. 2017;17(1):82-103.
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5. Brennan IM, Luscombe-Marsh ND, Selmon RV, et al. Effects of fat, protein, and carbohydrate and protein load on appetite, plasma cholecystokinin, peptide YY, and ghrelin, and energy intake in lean and obese men. *American journal of physiology gastrointestinal and liver physiology*. 2012;303(1):G129-140.
6. Astrup A. The satiating power of protein—a key to obesity prevention? *Am J Clin Nutr*. 2005;82(1):1-2.
7. U.S. Department of Agriculture, Agricultural Research Service. 2015. USDA National Nutrient Database for Standard Reference, Release 28. Available at: <http://www.ars.usda.gov/ba/bhnrc/ndl>.

✓ Ground Beef and Meat Substitutes



Ground beef differs from meat substitutes in nutrition. 93% lean ground beef has fewer calories, fat, saturated fat, and sodium, but more high-quality protein than substitutes. It is a genuine source of protein, iron, zinc, and B-vitamins, essential for good health.

Nutrient	Ground Beef 80% Lean, 4 oz, raw ¹	Ground Beef 93% Lean, 4 oz, raw ²	Ground Beef 96% Lean, 4 oz, raw ³	Soy-Based Burger, 4 oz, raw ⁴	Pea-Based Burger, 4 oz, raw ⁵
Calories (kcal)	290	170	150	240	250
Total Fat (g)	23	8	4.5	14	18
Saturated Fat (g)	9	3.5	2	8	6
Cholesterol (mg)	80	70	70	0	0
Sodium (mg)	75	75	75	370	390
Total Carbohydrate (g)	0	0	0	9	3
Protein (g)	19	24	25	19	20

LOOK AT THE LABEL

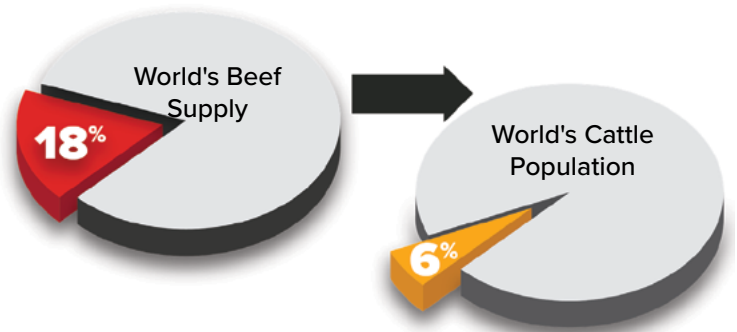
Beef has the taste and the simple ingredients that consumers crave.

Product	Ingredients
80% Lean ¹	Beef
93% Lean ²	Beef
96% Lean ³	Beef
Soy-Based Burger ⁴	Water, Soy Protein Concentrate*, Coconut Oil, Sunflower Oil, Natural Flavors, 2% or less of: Potato Protein, Methylcellulose, Yeast Extract, Cultured Dextrose, Food Starch Modified, Soy Leghemoglobin, Salt, Soy Protein Isolate, Mixed Tocopherols (Vitamin E), Zinc Gluconate, Thiamine Hydrochloride (Vitamin B ₁), Sodium Ascorbate (Vitamin C), Niacin, Pyridoxine Hydrochloride (Vitamin B ₆), Riboflavin (Vitamin B ₂), Vitamin B ₁₂ *Contains: Soy

Pea-Based Burger ⁵	Water, Pea Protein**, Expeller Pressed Canola Oil, Refined Coconut Oil, Rice Protein, Natural Flavors, Dried Yeast, Cocoa Butter, Methylcellulose, Contains 1% or Less: Potato Starch, Salt, Potassium Chloride, Beet Juice Color, Apple Extract, Pomegranate Concentrate, Sunflower Lecithin, Vinegar, Lemon Juice Concentrate, Vitamins and Minerals (Zinc Sulfate, Niacinamide [Vitamin B ₃], Pyridoxine Hydrochloride [Vitamin B ₆], Cyanocobalamin [Vitamin B ₁₂], Calcium Pantothenate) ** Peas are legumes. People with severe allergies to legumes like peanuts should be cautious when introducing pea protein into their diet because of the possibility of a pea allergy. Contains no peanuts or tree nuts. Note: Ingredients and the nutrition facts panel reflect U.S. product only.
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MORE HIGH-QUALITY BEEF, MORE SUSTAINABILITY

U.S. farmers and ranchers produce 18% of the world's beef with only 6% of the world's cattle.⁶



1. U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. <https://fdc.nal.usda.gov/> (NDB #23572, SR Legacy)
2. U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. <https://fdc.nal.usda.gov/> (NDB #23472, SR Legacy)
3. USDA Ground Beef Calculator <https://www.ars.usda.gov/northeast-area/beltsville-md-bhnrc/beltsville-human-nutrition-research-center/methods-and-application-of-food-composition-laboratory/mafcl-site-pages/beefcalculator/>
4. <https://impossiblefoods.com/burger> (Accessed 5/11/2021)
5. <https://www.beyondmeat.com/products/the-beyond-burger/> (Accessed 5/11/2021, reformulation 3.0)
6. <http://www.fao.org/faostat/en/#data/GE> and https://quickstats.nass.usda.gov/results/3AC161F7-F361-3A66-9B6C-2E1220FEBF52?pivot=short_desc

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✓ Understanding the Label and Beef Grades

Beef has long been America's favorite protein and rightfully so as it delivers great flavor and powerful nutrition. The following tips will give you a better understanding of how to decipher your choices.



The meat package label identifies the kind of meat (i.e. beef), the wholesale (primal) cut and the cut name. It also includes the weight, price per pound, total price, sell-by date and safe handling instructions. It may also include a grade, nutrition and preparation information, and the country of origin.

Ground Beef packages are labeled according to USDA standards. The information on the labels will be expressed as percent lean to percent fat (80% Lean/20% Fat, for example).¹

WHAT TO LOOK FOR

- Select beef with a bright cherry-red color. Beef in a sealed bag typically has a darker purplish-red color. When exposed to the air, it will turn a bright red.
- Choose beef that is firm to the touch.
- Make sure the package is cold with no holes or tears.
- Choose packages without excessive liquid.
- Purchase beef on or before the sell-by date.

BEEF GRADES

Beef grading sets the standards for the various quality levels of beef. The beef grading program uses highly trained specialists and sometimes grading instruments to determine the official quality grade. Beef quality grading is voluntary and administered by the USDA and paid for by beef packers.

The grade is primarily determined by the degree of marbling — the small flecks of fat within the beef muscle. Marbling provides flavor, tenderness and juiciness to beef and improves overall palatability. Other grading factors include animal age, and color and texture of the muscle.

FACTORS IN DETERMINING A QUALITY GRADE:

Distribution of Marbling within Lean Muscle at 12th/13th Rib

Age/Maturity of Carcass

Color, Texture & Firmness of Lean Muscle



PRIME



CHOICE



SELECT

NOT ALL BEEF IS GRADED

Beef does not require a USDA grade to be sold. Product that does not have a designated USDA grade may be called "No Roll" or simply not have a grade mentioned. Quality grade does not impact the wholesomeness of a product.

✓ Beef Sustainability Facts

To the beef community, sustainability comprises much more than environmental considerations. Today, a sustainable food supply balances efficient production with environmental, social and economic impacts.



FAMILY-OWNED FOR GENERATIONS

More than **90% of U.S. farms and ranches are family-owned**, meaning they have a vested interest in sustainability.¹

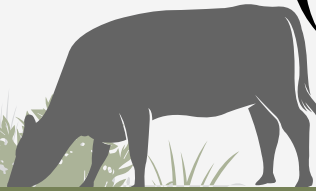


PROVIDE HABITAT FOR WILDLIFE

Cattle producers are the **original conservationists**, maintaining habitats for wildlife like hummingbirds, ducks, butterflies and more.²

CONVERT PLANTS TO PROTEIN

Cattle upcycle human-inedible plants into high-quality protein, which generates **more protein for the human food supply than would exist without them.**³

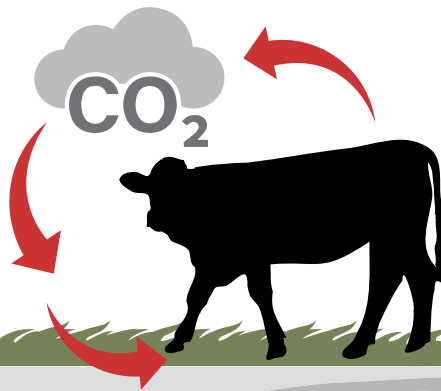


PERFECT LAND FOR CATTLE

Approximately **one third** of the land in the U.S. is pasture and rangeland that is **unsuitable for growing food crops**, but it's **perfect for raising cattle.**^{4,5}

STORE CARBON IN SOIL

Beef cattle **regenerate land and sequester carbon naturally**, simply by grazing. In fact, the U.S. land where cattle graze contains **up-to 30% of the world's carbon stored in soil.**⁶



RECYCLE CARBON WITH CATTLE

The methane belched **from cattle** only stays in the atmosphere for **approximately 9-12 years** before being recycled back into the ground via the biogenic carbon cycle.⁷

1. USDA-NASS. 2017. Census of Agriculture. Farm Typology. https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/Typology/typology.pdf

2. Barry, Sheila. 2021. Beef Cattle Grazing More Help than Harm for Endangered Plants and Animals.

3. Baber, J.R. et al., 2018. Estimation of human-edible protein conversion efficiency, net protein contribution, and enteric methane production from beef production in the United States. *Trans. Anim. Sci.* 2(4): 439-450.

4. USDA-ERS. 2021. Economic Research Service using data from the Major Land Use data series. Available at: <https://www.ers.usda.gov/data-products/major-land-uses.aspx>

5. Brooks, Ashley et al. 2017a. Carbon Footprint Comparison between Grass- and Grain-finished beef. OSU Extension, AFS-3292.

6. Silveira, et al. 2012. Carbon sequestration in grazing land ecosystems. University of Florida Extension. <https://edis.ifas.ufl.edu/pdf/SS/SS57400.pdf>

7. UC Davis. 2020. Clear Center. The Biogenic Carbon Cycle and Cattle. <https://clear.ucdavis.edu/explainers/biogenic-carbon-cycle-and-cattle>



Funded by Beef Farmers and Ranchers