



A consumer's guide to grass-fed beef

AUTHORS

Jack Kaestner, Chef Instructor, Milwaukee Area Technical College

Sarah Lloyd, Supply Chain Specialist, Forever Green Initiative, University of Minnesota

Anne Marie Nardi, Marketing Manager, UW-Madison Division of Extension Natural Resources Institute

Laura Paine, Outreach Coordinator, Grassland 2.0

Gene Schriefer, Outreach Specialist, UW-Madison Division of Extension





A consumer's guide to grass-fed beef

What is grass-fed beef?

Grass-fed beef is meat from cattle that are raised their entire life on pasture and hay with no corn or other grain in their diet. Grass-fed beef is considered to have nutritional benefits over grain-fed beef, and the pasture-based production system is thought to be better for the environment. But the devil is in the details! There are many sources of beef labeled as “grass-fed,” and some live up to those health and environmental claims better than others. Although the USDA has a definition for grass-fed beef ([Box 1](#)), there is no regulatory enforcement of the label as there is with the National Organic Standard. This publication will help consumers make informed decisions regarding their beef buying.

Awareness of and demand for grass-fed beef continue to grow as consumers learn about the positive benefits for their families, the environment, and the farm families that supply grass-fed beef.

Cattle are ruminant animals, meaning they have a four-chamber stomach. One chamber, the rumen, hosts millions of bacteria that feed on lignin, cellulose, sugars, and starches and break them down into energy, protein, and other nutrients the animal can utilize. This amazing system enables ruminants like cattle to transform indigestible materials like grasses (which humans cannot consume) into milk, meat, and fiber.

Many cattle in the United States spend most of their lives on pasture but most meat animals are finished on a grain-based diet. Most “cow-calf” operations maintain mother cows and their calves on pasture, with or without grain, until the calf is weaned at six months of age. At this stage, the calves may go to another farm where they are fed a combination of grain and forage or may be moved directly to a feedlot. The most common practice is for calves to be

Box 1. The USDA definition of grass-fed beef

“Grass (Forage) Fed’ means that grass and forage shall be the feed source consumed for the lifetime of the ruminant animal, with the exception of milk consumed prior to weaning. The diet shall be derived solely from forage consisting of grass (annual and perennial), forbs (e.g., legumes, Brassica), browse, or cereal grain crops in the vegetative (pre-grain) state. Animals cannot be fed grain or grain byproducts and must have continuous access to pasture during the growing season.”

moved to a feedlot and fed a high-energy, high-starch diet (grain-based) for the last three to six months of their lives to speed up growth and reduce the time to harvest. This concentration of livestock enables mechanization and labor efficiency. This high-energy diet can also change the rumen microbiology which, in turn, affects the flavor and nutritional profile of the meat. Cattle raised and finished on well-managed pasture harvest their own feed, redistribute

manure nutrients where living plants can use them, and produce a measurably different product.

Initially a hard-to-find niche item, grass-fed beef can now be found in many grocery stores in the fresh and freezer sections. Grass-fed brands are widely distributed across the country and are becoming easier and more convenient for consumers to purchase. Because demand is currently outstripping domestic supply, much of the grass-fed beef currently available from grocery stores is imported from Australia and South America.

Because of the lack of regulation of the term “grass-fed,” grass-fed brands often have competing and conflicting claims that can be confusing. Our goal with this guide is to highlight the potential differences in grass-fed beef, the benefit consuming grass-fed beef may offer for you and your family, and how your informed purchase impacts your health, as well as the environment, farmers, and communities.

Grass-fed beef packs a flavorful punch

Cattle raised on pasture produce meat with a flavor profile that is markedly different from grain-finished beef, resulting in large part from differences in the meat's fatty acid content. Grass-fed meats are often described as having a more rich flavor. Grass-fed beef is often leaner and less marbled than its grain-fed counterpart. Many people find grain-fed beef to be sweeter tasting, while grass-fed beef has a more intense, meatier taste. That said, not all grass-fed beef tastes the same. Breed, age, and animal gender; aging of the carcass; animal diet; and stress factors may all also contribute to flavor differences.

The flavor of grass-fed meat is influenced by differences in the pasture grasses and legumes the animals consume on the farm where they are raised. These variables are often influenced by the soil and climate of the region. Just like fine wine or cheese, grass-fed beef is influenced by the terroir of the region where it is raised. Because of this, you may find you love the taste of grass-fed beef from certain brands or farms over others! In contrast, grain-finished cattle are fed a diet primarily consisting of grain and silage, or crops that have been preserved through fermentation, in their final months, resulting in a more uniform product.

It is important to note that much of the grass-fed beef available in grocery stores is imported from Australia or South America. You may find a very different flavor profile in grass-fed beef purchased from local farmers.

Health benefits of grass-fed beef

There are several health benefits associated with grass-fed beef. Since it is often leaner than grain-fed, it can be lower in fat and calories (See [Table 1](#) for a breakdown of the nutrition profile for grain-fed and grass-fed ground beef). Research shows multiple health-related attributes associated with meat from animals raised on fresh pasture. Grass-fed meat tends to have higher levels of vitamins A and E, “healthy fats” such as conjugated linoleic acids, and omega-3 fatty acids including EPA and DHA, all of which have been shown to lower cholesterol and blood pressure and decrease the risk of diabetes and cancer (Ponnampalam, Mann, and Sinclair 2006). In fact, grass-fed beef has been found to have roughly double the amount of vitamin E as grain-fed beef (Daley, Abbott, Doyle et al. 2010). Grass-fed beef also tends to have a higher portion of other “healthy fats” (more cholesterol-neutral stearic fatty acids and less cholesterol-elevating stearic fatty acids) as compared to grain-fed, making it a heart-healthy red meat option (Daley, Abbott, Doyle et al. 2010).

Table 1: Grass-fed vs. grain-fed burger: Basic nutrition profile per 100 grams of ground beef

CALORIES/NUTRIENT	GRASS-FED, GROUND BEEF	GRAIN-FED, GROUND BEEF
Calories	198kcal	247kcal
Carbohydrate	0g	0g
Fat	12.73g	19.07g
Saturated	5.34g	7.29g
Monounsaturated	4.80g	8.48g
Polyunsaturated	0.53g	0.51g
Protein	19.42g	17.44g

Source: USDA Food Data Center.

Grass-fed: <https://fdc.nal.usda.gov/fdc-app.html#/food-details/168608/nutrients>

Grain-fed: <https://fdc.nal.usda.gov/fdc-app.html#/food-details/1098212/nutrients>

Grass-fed beef is also shown to contain higher levels of phytonutrients. While research on phytonutrients is still in its infancy, these compounds are potentially anti-inflammatory, antibacterial, antioxidant, and brain protective (van Vliet et al. 2021).

Taking care of the planet one farm at a time

Compared to annual crops like corn and soybeans, raising animals on well-managed pasture has many environmental benefits (Franzluebers et al. 2012; Spratt et al. 2021). On farms that raise grass-fed beef, most of the land is blanketed under perennial pastures composed of grasses and clovers. Cattle are rotated through subdivisions called paddocks, and each paddock is allowed to rest and regrow before it is grazed again. Well-managed pastures produce high yields of nutritious feed for cattle with no synthetic fertilizers or pesticides. Pastures don't need to be planted annually like corn and soybeans. This eliminates tillage that degrades soil health and leads to soil erosion and runoff of nutrients like phosphorus that cause pollution in surface waters. The perennial grassland cover also boosts the soil's ability to absorb water and provides high-quality wildlife and pollinator habitat. By buying locally raised grass-fed beef, you are supporting farmers who are helping protect natural resources in your community!

Buying local supports your community

Consolidation in agriculture and the food sector has resulted in fewer, larger farms, contributing to the depopulation of rural communities. Direct-market farmers, including grass-fed beef producers, can help counteract this trend. By selling direct to consumers or to local restaurants and stores, these farmers are able to generate a reliable income for their families on a smaller acreage. Buying locally allows consumers to gain an understanding of where their food comes from and get involved in supporting food production systems that they value.

Producing a premium product and cutting out the middleman helps local grass-fed farmers stay financially viable and active in their communities. In addition, grass-based production systems often have lower start-up and operational costs, which can allow new and beginning farmers and farmers from communities that have been

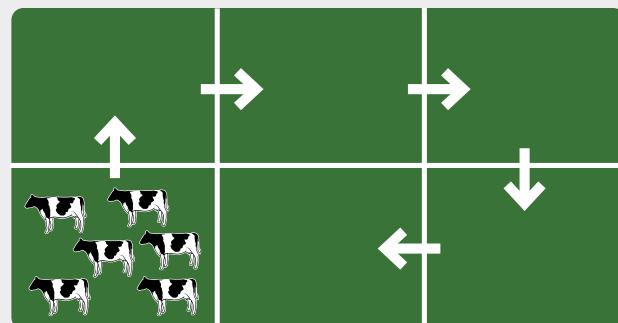
excluded from financing and asset building to establish their businesses.

The economic opportunities outlined above can generate social and community benefits. Farmers and consumers can come together to build relationships and strengthen communities. Local food systems encourage small business development and contribute to vital communities with increased social activities in schools, main streets, civic organizations, and churches (Lyson 2004).

Local food-producing farms and food businesses active in our communities are also important for food security. The economic shutdowns and resulting supply chain disruptions caused by the COVID-19 pandemic showed very clearly the weaknesses of a food system that relies too much on consolidated food production and processing (Hendrickson 2020).

How is grass-fed beef raised?

- On a typical grazing farm, 100 acres of annual crops are replaced with diverse perennial pasture.
- Well-managed pastures provide livestock with nutritious, low-cost feed, equivalent to grain and silage.
- The herd is moved through a series of subsections or paddocks, allowing each paddock to rest and recover for several weeks between grazings.
- The animals harvest their own feed and spread their own manure, reducing cost of production and labor and increasing livestock health.
- Managed grazing is a flexible production tool that can be scaled to fit any farming system and any size operation.





BUYING GRASS-FED BEEF

Although many grocery stores carry grass-fed beef in their fresh meat or freezer sections, buying grass-fed beef from a local farmer has significant benefits for you and the farmer. The selection of cuts available in the grocery store may be limited; most stores carry ground beef and one or two kinds of roast or steaks. And the grass-fed meat in the grocery store may come from international sources and be produced under very different conditions.

You may be able to find grass-fed beef at your local food cooperative or farmers market, allowing you to purchase directly from the farmer that raised the animal and get their advice on cuts to buy and recipes to try. If you have a storage freezer, it may be more economical for you to buy a whole, half (side), or a quarter of grass-fed beef. Some farmers offer boxes with 25 to 50 pounds of mixed cuts if you are not ready for a more considerable investment. Buying meat in smaller volumes is a great way to try several different local farmers to find the one that suits you best.

Small-scale local producers often pride themselves on providing a good life for their animals. Locally produced and processed animals also do not experience the stresses of a long journey before slaughter. Stress during transport and at slaughter can lead to less tender and darker-colored meat due to physiological changes and energy depletion during transit.

Aging grass-fed beef allows natural enzymes to break down muscle fibers which adds to the meat's flavor and tenderness. Aging beef is done in one of two ways: wet aging or dry aging. Wet aging is done after the carcass

is broken down into large sections called "primal cuts." The primal cuts are immediately put into plastic bags, vacuumed sealed, and aged at refrigerator temperatures for a few days to two weeks. Most locally produced meat (both grass-fed and grain-fed) is dry aged. Dry aging is the process of "hanging" the carcass in a temperature and humidity-controlled cooler at the processing plant for 7 to 21 days. In both wet and dry aging, natural enzymes help tenderize the meat for up to two weeks. Aging for longer than two weeks does not significantly increase tenderness but may result in increased flavor intensity as the meat loses moisture and natural flavors are concentrated.

A variety of factors affect the amount of meat a whole, half, or quarter of meat will yield. Dressing percentage is calculated by dividing the weight of the carcass after the hide, blood, and organs are removed by the live weight of the animal. Typically, dressing percentages range from 56 to 65%. This means that a 1,100-pound steer would result in a carcass weighing between 616 and 715 pounds. Often direct marketers sell their animals by carcass weight.

Cutting yield is the amount of meat remaining once a carcass is further processed and packaged in the familiar cuts we find in the supermarket. Typically, the cutting yield will be 65 to 75% of the carcass weight, with lower yields expected if the consumer prefers more boneless cuts. With a 650-pound carcass, a consumer can expect to take home 420 to 490 pounds of beef. A side of beef will yield about 200 to 240 pounds of meat, and a quarter will yield 100 to 120 pounds.

When buying meat direct from the farmer as a whole, half, or quarter, be sure to ask who will pay the processing costs. Processing is charged on a per-pound basis, and it is essential to know whether you are paying on a carcass weight or cutting weight. Most commonly, the customer works directly with the processing plant and pays the processing costs on carcass weight; however, some farmers will pay the fees for processing and include that charge in the overall price of the meat.

If you are new to buying meat in bulk, ask the farmer you're working with to assist you with this process. Most farmers consistently work with the same processing facilities and should be able to address any questions you may have. You will need to follow up with the processing plant soon after the animal has been delivered to the facility to provide cutting instructions (e.g., steak thickness, size of roasts) and any special requests you may have (e.g., sausages, special cuts, or items such as beef tongue and bones). Depending on how long the carcass is aged, the meat will not be ready for 2 to 3 weeks. The processing facility should call you when your meat is ready. Payment is expected when the meat is picked up.

Questions to ask the producer

Farmers use a variety of production practices to produce high-quality meat products, and it is worthwhile to talk to the producers about how their animals are raised.

Typically, beef cattle are harvested at 18 to 24 months of age. Grass-fed beef is usually produced without growth-promoting hormones or other antibiotics, but be sure to ask the producers about their production practices if it is important to you. Because of the lack of enforcement of a grass-fed standard, some beef that is advertised as grass-fed may be supplemented with corn. Some pasture-based farms feed a little grain to "finish" the animal. Ask for 100% grass-fed if you prefer a corn-free or grain-free diet.

If organic beef is a preference, be sure to ask the farmer if they are certified for organic production through the USDA National Organic Program. One benefit of buying directly from farmers is you can talk with them about their production practices, develop an understanding of their actions, and learn the reasons for their production decisions.

Cooking with grass-fed beef

The unique flavor of grass-fed beef provides opportunities for culinary adventures! Many people describe grass-fed beef as having a meatier taste (more like bison or even venison) than the sweeter-tasting conventional grain-fed beef. Because grass-fed beef tends to be leaner than conventional beef, it is not as "forgiving" as conventional beef in cooking. It needs to be handled with care for the best eating experience! A good visual indicator of quality meat is "marbling," or the amount of fat distributed throughout the cut. While fat does make the meat considerably more succulent, juicy, and flavorful, it is important to note that marbling has little effect on tenderness; it contributes only about 20% of the overall tenderness effect. (Modernist Cuisine. "Animal and Plants." Vol 3: pg. 88; <https://modernistcuisine.com/books/>)

General guidelines for cooking different cuts

Meat cooking methods fall into two general categories: dry-heat and moist-heat cooking. These terms describe how the heat is transferred from the heat source to the food. Among the cuts of meat in a typical beef carcass, some are more tender than others depending on where they are located and how much exercise they perform. The most tender, well-marbled cuts are good candidates for dry-heat cooking. Examples of dry-heat cooking methods are grilling, roasting, and sautéing. Less tender cuts are best suited to moist-heat cooking. Moist-heat cooking includes braising, stewing, and sousvide (cooking vacuum-sealed meat by immersing it in circulating warm water). Choosing the correct cooking method will help with cooking any meat and especially grass-fed beef.

Dry heat is used for tender cuts of meat such as rib-eye, New York, tenderloin, and roasts. All of these cuts should have some visible internal fat or "marbling."

Moist heat is used for less tender cuts of meat such as the chuck, short ribs, stew meat, or the shank. Making your favorite chili is an excellent example of moist heat cooking.

COOKING TIPS

The extra exercise grass-fed animals get from harvesting their own food creates more lean muscle and connective tissue and contributes to meat that is thought by many chefs to have a richer flavor. The extra collagen in the meat creates flavorful sauces with more body. On the other hand, grass-fed beef needs to be handled differently than grain-fed beef, which tends to remain more tender through the cooking process and is less sensitive to cooking mistakes. Generally, low and slow is a good guideline to follow!

- Reduce your cooking temperatures by 25 to 50°F from the temperature you use when cooking grain-fed beef. When grilling, medium-high is better than high and reduce your oven temperature by 25°F.
- Bring your grass-fed meat close to room temperature before cooking, about 30 minutes for steaks and not more than 90 minutes for a large roast.
- Check out the recipes below or visit the American Grassfed Association at <https://www.americangrassfed.org/recipes/>.

Shoulder:

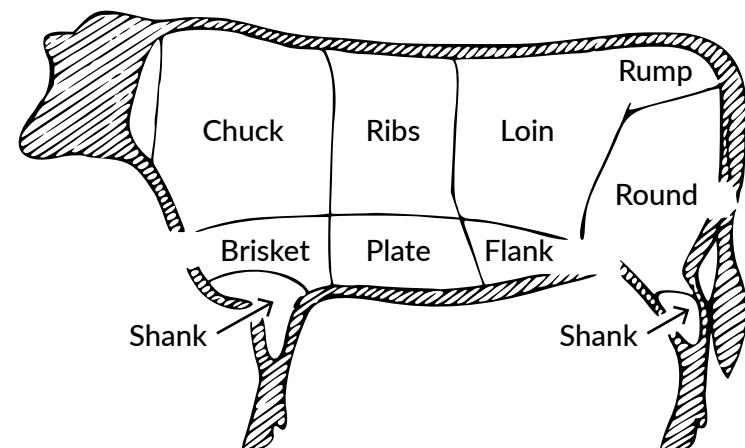
Cuts include chuck, arm roasts, and brisket. These cuts all work well braised or simmered in liquid. Braising involves browning the meat, then cooking slowly in a small amount of liquid in a covered pan on the stovetop or finished in the oven.

Rib and Loin:

The highest quality, most tender cuts of meat come from the rib and loin areas of the animal. These include such cuts as rib eye, prime rib, New York, T-bone, and tenderloin steaks. Most steaks can be cut bone-in, like T-bones, or boneless, like New York strips. Also, from the loin comes the sirloin, which provides for sirloin steaks and sirloin tip roasts. All these cuts are suitable for grilling, broiling, and roasting. Short ribs, which come from the rib section, are generally best braised. In some cooking traditions, they can be sliced thin, marinated and quickly grilled.

Round:

Rump roasts, round steaks, and round roasts tend to be less tender. Inside round steaks can be marinated and grilled, but they're more often cut into chunks or sliced thin and used for kabobs, stir fry, or stew. Rump and round roasts work well in braises or stews cooked in liquid on the stovetop or in the oven. Shanks from the front quarter or hind quarter add richness to any dish with their extra collagen.



Working with frozen meat

Buying meat directly from a farmer often involves working with frozen meat. Local processors use either white freezer paper, opaque plastic for ground, or vacuum-sealed plastic. All offer good protection for your investment. The vacuum-sealed plastic maintains quality for more extended periods in the freezer and reduces the risk of freezer burn. The clear plastic also allows you to see the cuts and look for marbling.

Thawing frozen meat

While it is possible to start cooking with a frozen cut of meat, most people thaw meat before cooking. There are several ways to thaw frozen meat.

Refrigerator thawing:

This is the preferred method and can take 24 hours or more, so it's best to plan ahead.

Microwave thawing:

Most microwave ovens have defrost settings that work for thin cuts of meat, but thicker cuts often end up being cooked around the edges before the center is thawed. The meat needs to be cooked immediately after it is thawed in a microwave.

Thaw in cold water:

If your meat is wrapped in freezer paper, remove and place in a water-tight plastic bag. If it is a vacuum-packed package, you may put it directly in the water. Change the water every 30 minutes. Make sure you keep the water under 70°F and thaw for no longer than 2 hours.



Seasoning grass-fed beef

Cooking with fresh local food can make cooking easier since local food can have more flavor from the start. Using salt and a little freshly ground pepper may be all you need to have a great-tasting grass-fed burger, steak, or roast.

In general, keep salt and pepper amounts the same as you would when cooking grain-fed beef; you may try reducing other seasonings to let the natural beef flavor come out. Or try adding some herbs that will enhance the inherent beefy flavor of grass-fed. Here are some examples of good pairings.

- Tomato, red wine, and thyme ([See recipe on page 11](#)).
- Garlic, earthy mushrooms such as shiitake or porcini with red wine (full body with tannins).
- Serve with mashed potatoes, cauliflower puree, or roasted root vegetables.

Also, check out the rubs listed on [page 9](#), which can be used with any of your dishes, whether grilled, sautéed, or braised.

Salt: a flavor enhancer and more!

When it comes to salt, it is important to think about which kind of salt you prefer. As an experiment, try three different kinds of salt: kosher, gray sea, and iodized. If you have another preference, add it to the mix as well.



Take one teaspoon of each salt and mix it each with 1 cup of warm water. Once you have made all three mixtures and thoroughly dissolved the salt, taste them in this order: kosher, gray sea, and iodized. Can you taste any difference? Which one do you like? When do you use each one?

Kosher salt is probably the most used salt. It gives you a clean salty enhancement or taste without costing much money. It is also frequently used in water for cooking pasta, potatoes, and grains. Gray sea salt is commonly used at the end of cooking or plating. It gives a slight flavor enhancement and a nice texture feature. Iodized salt has a strong salt flavor and slight chemical aftertaste that many people are familiar with.

Whichever salt you choose, use salt throughout the cooking process, not just at the end. Salting throughout the cooking process will help develop richer flavors in the finished dish.

Start with a grass-fed burger

A great place to start with grass-fed beef is ground beef. Ground beef is made from individual muscles (i.e., ground chuck or round), or it may be labeled as 80/20 or 90/10. This designation is the ratio of lean or muscle to fat. Use it wherever you typically use and enjoy ground beef, such as burgers, meatloaf, meatballs, tomato-meat sauce, or chili. Just remember to get an equivalent lean-to-fat ratio. If the grass-fed burger is a little leaner than what you typically cook with, you can add a little oil when browning or pan-frying hamburgers.

A kitchen thermometer is a good investment!

Buy an instant-read thermometer to ensure you don't overcook your meat and allow for carryover heat! Carryover heat is heat on the outside of the meat that will transfer inwards. Cooking your beef to rare (115 to 120°F) or medium-rare (120 to 125°F) preserves the meat's flavor, juiciness, and tenderness.

A good instant-read thermometer may cost the price of a good t-bone steak or two. However, if it saves you one or two steaks (probably more), it is a worthwhile investment for cooking all meats. A good one will range from \$35.00 to \$90.00.



Rubs to bring out the flavor of your grass-fed burgers

Here are three optional rubs adapted from *The Gourmet Grassfed Cookbook* by Shannon Hayes. All these rubs work great on any pasture-based meat as they all highlight the natural flavor of the meat.

Garlic, Salt, and Pepper Rub:

2 tsp. kosher salt, 1 tsp. freshly ground pepper, 1/2 tsp. garlic powder. Optional add 1/2 tsp. ground chipotle pepper to mix.

Garlic-Rosemary Rub:

1 1/2 tbsp. kosher salt, one clove garlic (minced), 2 tsp. freshly ground pepper, 2 tbsp. dried or fresh rosemary.

Garlic-Herb Rub:

1 1/2 tbsp. kosher salt, 1 tbsp. each of dried thyme, dried rosemary, oregano, 2 tsp. garlic powder and freshly ground black pepper, and 1 tsp. freshly crushed fennel seed.



Making grass-fed burgers

- Beef should be thawed, approximately 80/20 (lean/fat) blend, and portioned to around 5 oz each. When shaping the burger, keep the meat cold by working gently and quickly. The burger should be about 1/2" thick. Some people like to make a slight impression in the center of one side to prevent puffing during cooking.
- If grilling, preheat grill to medium-high at 450 to 475°F and make sure the grate is clean. On a charcoal grill, you can double-check your grill's temperature or heat level with your instant-read thermometer by measuring the air coming out of the vents or placing your hand about 4" or so from the vent hole. If you can only keep it above the hole under 3 seconds, the grill is too hot; if over 5 seconds, you need some more heat.
- Season burgers as you usually do, or with just a bit of kosher salt and fresh ground pepper or one of the rubs on [page 9](#).
- Place burgers on the grill over the heat for about 3 minutes, rotate 90 degrees to create cross marks, and cook about 1 minute more (the bottom corner edges should be browned and starting to creep up the sides). Turn the burger over and cook for about 3 minutes. Both sides should now be seared.
- Move the burger over to the side of the grill away from the direct heat. Continue cooking for another 3 to 5 minutes. Confirm the desired temperature using a kitchen thermometer and remember the burger will continue to cook, likely raising the internal temperature another 3 to 5°F.
- While the burger finishes cooking on the grill and resting, toast your buns. Split them in half and toast on the grill or in a pan. A little softened butter will help the toasting process, and the browned butter matches perfectly with the burger flavor. A bun-less burger is also an option to savor the full flavor.
- Caramelized onions that are plain or finished with a little balsamic vinegar are a great topping. The onion and sweetness of the vinegar pair well with a grass-fed burger.
- Applewood smoke, mature cheddar, and Emmentaler cheese pair well with grass-fed meats.

Beef short ribs in red wine sauce

The recipe calls for short ribs, but any mixture of tougher cuts will work. If you buy a quarter of beef you may have one or two short rib varieties. This recipe is a great way to use it all up. The extra collagen in the meats makes for a fantastic sauce. Grass-fed beef tends to contain less fat than grain-fed beef, which works out great with short ribs, which tend to be very fatty in the finished dish.

Oven: 325°F

Bake: 3 hours



INGREDIENTS:

- 2 tbsp. oil
- 5 lb bone-in short ribs or combination of short ribs, chuck, beef shank, or oxtail; 3 lb meat if using boneless.
- 2.5 tsp. kosher salt
- 1.5 tsp. black peppercorns, cracked
- 1 onion (yellow, leek, or pearl), medium diced
- 2 carrots, medium diced
- 2 ribs celery, medium diced
- 5 garlic cloves, minced
- 3 tbsp tomato paste (optional)
- 1 bay leaf
- 3 sprigs thyme, de-stem, and minced (optional)
- 0.5 tsp. fresh ground pepper
- 1.5 tsp. kosher salt
- 5 c stock, beef or veal
- 1 c red wine Cabernet (optional)
- 3 sprigs parsley, minced

INSTRUCTIONS:

- Remove meat from refrigerator and let sit on the counter for 30 minutes.
- Meanwhile, cut onions, carrots, and celery and keep them separate.
- Continue prepping garlic and the rest of the ingredients.
- Season meat with salt and pepper; start with 0.5 tsp. of salt per pound of meat.
- Sear and brown meat on all sides in a hot, 5-quart heavy-bottomed pan with 1 tbsp. of oil, adding more oil if needed.
- Remove meat from pan, turn the heat down to medium.
- Sauté onions till lightly golden, then add the rest of the vegetables, cook until golden, season with 1.5 tsp. salt and 0.5 tsp. pepper.
- If using, add tomato paste to finished vegetables and lightly cook; deglaze pan with red wine or cup of stock.
- Place meat in the pan and surround with vegetables; add enough stock to come up 1/2 - 3/4" way up to the meat surface. Bring to a strong simmer on stovetop.
- Cover and bake till tender. Test for doneness starting around 2 1/2 hours. Insert kitchen fork and if meat holds on, cook a little longer; if meat drops off the fork, it is done.
- Strain broth into another narrow container, skim fat (should have about 2-3 cups braising liquid) and reduce until it thickens. It should coat the back of a spoon.
- Divide ribs onto plates and top with sauce.
- Optional: You may add vegetables back into the broth, puree in a blender, and strain.
- Top with fresh parsley and serve with your favorite side dish.

REFERENCES

- Cuchillo-Hilario, M., N. Wrage-Mönnig, and J. Isselstein. 2018. "Forage selectivity by cattle and sheep co-grazing swards differing in plant species diversity" *Grass & Forage Sci.* 73:320-329.
- Daley, C. A., A. Abbott, P. S. Doyle, et al. 2010. "A review of fatty acid profiles and antioxidant content in grass-fed and grain-fed beef." *Nutrition Journal* 9:10.
- Food and Drug Administration. "HACCP Principles and Application Guidelines." <https://www.fda.gov/food/hazard-analysis-critical-control-point-haccp/haccp-principles-application-guidelines>
- Franzluebbers, A. J., L. K. Paine, J. R. Winsten, M. Krome, M. A. Sanderson, K. Ogles, and D. Thompson. 2012. "Well-managed grazing systems: A forgotten hero of conservation." *Journal of Soil and Water Conservation* 67(4):100A-104A.
- Hendrickson, Mary. 2020. "Covid lays bare the brittleness of a concentrated and consolidated food system." *Agriculture and Human Values* 37(3):579-580.
- Joseph, Michael. 2019. Grass-Fed vs Grain-Fed Beef: How do they compare? *Nutrition Advance* 12/19/2019; 5/8/2021. <https://www.nutritionadvance.com/grass-fed-vs-grain-fed-beef/>.
- Lyson, Thomas A. 2004. *Civic Agriculture: Reconnecting Farm, Food and Community*. Lebanon, New Hampshire: University Press of New England.
- Ponnampalam, E. N., N. J. Mann, and A. J. Sinclair. 2006. "Effect of feeding systems on omega-3 fatty acids, conjugated linoleic acid and trans fatty acids in Australian beef cuts: Potential impact on human health." *Asia Pac J Clin Nutr* 15(1):21-29.
- Spratt, E., J. Jordan, J. Winsten, P. Huff, C. van Schaik, J. Grimsbo Jewett, M. Filbert, J. Luhman, E. Meier, and L. Paine. 2021. "Accelerating regenerative grazing to tackle farm, environmental, and societal challenges in the upper Midwest." *Journal of Soil and Water Conservation* 76(1):15A-23A.
- United States Department of Agriculture. AskUSDA. What is "grass-fed" meat? <https://ask.usda.gov/s/article/What-is-grass-fed-meat>
- United States Department of Agriculture Food Data Center. <https://fdc.nal.usda.gov/fdc-app.html#/food-details/168608/nutrients>.
- United States Department of Agriculture Food Data Center. <https://fdc.nal.usda.gov/fdc-app.html#/food-details/1098212/nutrients>.
- van Vliet S., J. Bain, M. Muehlbauer, F. Provenza, S. Kronberg, C. Pieper, and K. Huffman. 2021. "A metabolomics comparison of plant-based meat and grass-fed meat indicates large nutritional differences despite comparable Nutrition Facts panels." *Scientific Reports* 1:11-13.



© 2022 by the Board of Regents of the University of Wisconsin System doing business as the University of Wisconsin–Madison Division of Extension. All rights reserved.

University of Wisconsin–Madison Division of Extension, in cooperation with the U.S. Department of Agriculture and Wisconsin counties, publishes this information to further the purpose of the May 8 and June 30, 1914, Acts of Congress. An EEO/AE employer, University of Wisconsin–Madison Division of Extension provides equal opportunities in employment and programming, including Title VI, Title IX, the Americans with Disabilities Act (ADA), and Section 504 of the Rehabilitation Act requirements. For communicative accommodations in languages other than English, please contact oaic@extension.wisc.edu. Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact Heather Lipinski Stelljes at heather.stelljes@wisc.edu.

This publication is available from Division of Extension Publishing website at learningstore.extension.wisc.edu.