



COOKING OVER CAMPFIRE COALS

A Guide for Adult Mentors

Nothing seems to make food taste better than cooking it outdoors. The experience can be an excellent learning opportunity for youth whether it is a simple one-pot cookout in the backyard, several cookouts, or a campout. An outdoor cooking activity can be used to help youth achieve many 4-H learning outcomes, including:

- Learn practical skills (cooking a meal without electricity or gas)
- Acquire positive self-attitude (building a fire without help)
- Develop leadership capabilities (volunteering to be in charge of the cookout)
- Develop abilities to be a responsible group member (“we’ll make the salad”)

Above all, the cookout should be fun—and that starts with organization.



GETTING ORGANIZED

A cookout is likely to be successful if you are organized and plan ahead. Here are a few pointers to get started.

1. Think about what you can do if there’s a heavy rain or storm. Will you prepare the food under a tarp, in a sheltered area, or move indoors, or postpone? Do you have food along that would require little or no cooking?
2. Make lists so that nothing is forgotten. Here are some things you might include:
 - Menu
 - Food ingredients and amounts that are needed
 - Recipes and directions for preparing the food
 - Equipment needed for preparation, storage, and cleanup
 - Jobs and assignments that need to be made—consider how much experience is needed and whether the task needs a single person or a team.
3. Be sure that a safe water source is available for drinking, cooking, washing hands, and cleaning up. Check the water’s safety before your cookout or carry in your own water.
4. Test new recipes or suggestions before having the entire group make them. You’ll be able to be more helpful if you’ve tried the recipes first.
5. Make a realistic plan for the time you have available.
6. Prepare for the unexpected. Ask youth to help make a list of fire safety reminders. Here are some ideas to get you started:
 - Remember “stop, drop, and roll.”
 - Be careful of loose clothing, open-toed shoes, and open jackets.
 - Always keep a safe distance from the campfire.





PLANNING OUTDOOR MEALS

Nutrition

Think about color and variety when planning meals for outdoors. Choosing an assortment of colors among fruits and vegetables provides a variety of flavors and nutrition to your meals. Appetites seem to increase with outdoor activities, so people may want more than one serving. Have youth help in the meal planning so they include their favorites. Encourage youth to include foods that are less familiar also. Look in magazines or special outdoor cookbooks for meal ideas.

These menu patterns can be a guide when planning. You can also check out the five day meal planning worksheet from Spend Smart. Eat Smart. at <https://spendsmart.extension.iastate.edu/plan/menu-planning/>.

Breakfast

- Fruit
- Protein Food
- Bread or Cereal
- Beverage



Lunch

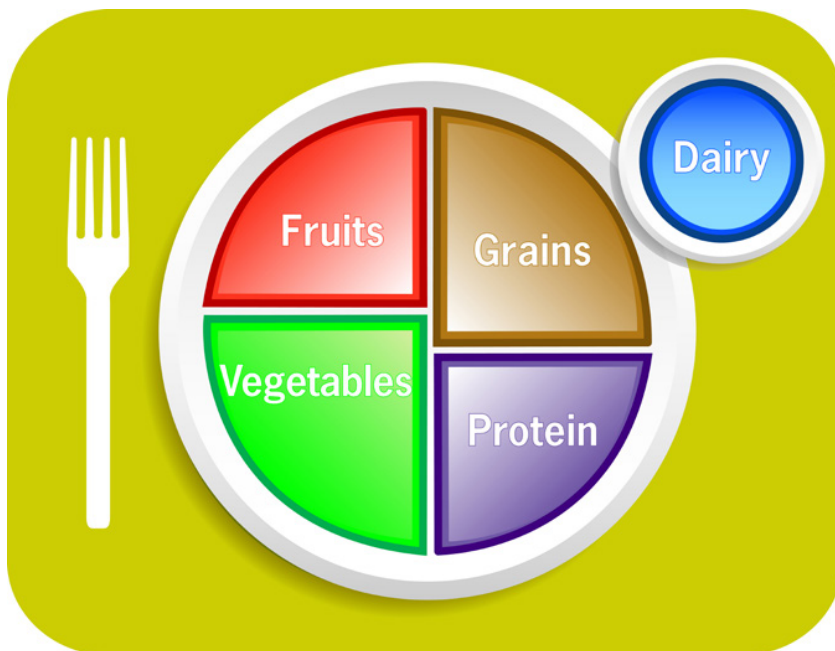
- Main Dish
- Vegetable
- Bread
- Dessert
- Beverage



Dinner

- Meat or Main Dish
- Vegetable
- Vegetable or Fruit
- Salad
- Bread or Grain
- Dessert
- Beverage

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CAMPFIRE COOKING CHECKLIST:

- Matches
- Firewood/plan to obtain firewood or charcoal
- Spray bottle
- Hot pads/mitts
- Cooking utensils
- Hand washing supplies
- Dishes
- Dishwashing supplies
- Eating utensils
- First aid kit
- Food thermometer
- Bug spray

Manage time and money

When you plan meals, consider the time you have available. Baked beans in a Dutch oven may take hours when you have only one or two to spare.

Pudding mixes, biscuit mixes, cake mixes, and cocoa mixes can save time, but some convenience foods may be too expensive for your budget. For example, freeze-dried meals may be too costly for a whole group, but you might want to prepare one as a tasting sample. Nonfat dry milk powder is a handy, low-cost ingredient for pudding that is also lightweight and easy to carry.

Unless you have plenty of time and fuel, don't plan to cook the entire meal. Hungry people may like to munch on something like crisp vegetables while the food is cooking.

Sanitation safety

The first rule of food safety is to keep hot foods hot ($\geq 140^{\circ}\text{F}$) and cold foods cold ($\leq 40^{\circ}\text{F}$). If your menu calls for perishable food ingredients, be sure to keep them cold until they are used. Insulated bags and ice chests are necessary.

Perishable leftovers like meats, cooked egg dishes, and most dairy products are hazardous if they can't be chilled. Plan meals to avoid leftovers or discard the leftovers.

Take packaged handwipes, hand sanitizer or provide water, paper towels, and soap for hand washing as the food is prepared and eaten. Also remember to bring a kettle for heating water and dishwashing liquid for cleanup.

Safe Cooking Temperatures	
As measured with a food thermometer	
Ground Meat and Meat Mixtures	
Beef, Pork, Veal, Lamb	160°F
Turkey, Chicken	165°F
Fresh Beef, Veal, Lamb	
Medium Rare	145°F
Medium	160°F
Well Done	170°F
Poultry	
Chicken & Turkey, Whole	165°F
Poultry Parts	165°F
Duck and Goose	165°F
Stuffing (cooked alone or in bird)	165°F
Fresh Pork	
Medium	160°F
Well Done	170°F
Ham	
Fresh (raw)	160°F
Pre-cooked (to reheat)	140°F
Eggs & Egg Dishes	
Eggs	Cook until yolk & white are firm
Eggs Dishes	160°F
Seafood	
Fin Fish	145°F or flesh is opaque & separates easily with a fork
Shrimp, Lobster & Crabs	Flesh pearly & opaque
Clams, Oysters & Mussels	Shells open during cooking
Scallops	Milky white or opaque & firm
Leftovers & Casseroles	165°F

When you're through cooking

Be sure the fire is out. Spread the coals and sprinkle with water. (It takes less water to put out a fire by sprinkling than by pouring it on.) No fire is safe to leave until you can place your hand directly on the ashes. Do not bury live coals! They may cause underground fires, which creep out in unexpected places.

Be sure the cooking site is as clean, or cleaner, than it was before you used it. Carry away all garbage.



BUILDING THE FIRE

For the beginner, the first step is learning to build a fire properly. Successful outdoor cookery calls for glowing coals, not active flames. The coals give off even heat. You may be an “old hand” at building campfires, but here are some practical suggestions.

1. Select an open spot, away from trees, dead leaves, or anything that may easily catch fire.
2. Start with a crumpled piece of paper or handful of tinder.
3. Arrange very small twigs or sticks in teepee fashion. Do not use leaves; they smother the fire. Lay the sticks so that plenty of air can get through the spaces between them.

For a teepee fire—After the small twigs begin to burn, add larger sticks the same way you did the small ones. A teepee fire burns quick and hot, with the flame directed to one spot.

For a log cabin fire—Build larger sticks in log cabin style around the kindling. This is a long-burning fire but takes longer to get started.

For a charcoal fire—This fire is easy to light. If you have never used charcoal, follow this plan.

1. Place the charcoal under the rack where the food is to be cooked.
2. Add crumpled newspaper. Light the newspaper.
3. When the coals begin to turn white or glow, they are ready. Stir the hot coals with a long, thick stick or an iron rod to distribute the heat more evenly. Add food onto the rack.

If the coals flame from fat dripping into the fire, sprinkle with water. A spray bottle is handy to use.

Be sure to check with your Department of Natural Resources office for any fire restrictions that may be in place. Consider the time of year in which you plan your cookout, as fires are not allowed during the dry, windy season.

ACTIVITIES TO MAKE OUTDOOR COOKING FUN

A variety of other activities can be planned as part of the outdoor cookery experience. Here are some possibilities:

- Make a cookbook of favorite cookout recipes.
- Look for convenience foods in the store and compare prices.
- Have an outdoor cooking contest.
- Invite guests for a sunrise, outdoor breakfast.
- Experiment with pioneer recipes.
- Visit a historical site or festival where outdoor cooking is demonstrated.
- Learn about wild edibles and make a salad or herbal tea.
- Attend a wild game dinner.
- Challenge youth to prepare a campfire using only one match.
- Plan a winter cookout.

Choose your firewood

The kind of fire also depends on the kind of wood you use. Avoid wood with a pithy center. It does not burn easily and gives little heat. Use split logs rather than round, smooth ones. They burn more readily.

Soft woods (pine, spruce, cedar, aspen, basswood, and birch) burn quickly and leave ashes but few coals.

Hard woods (oak, ash, hickory, apple, walnut, cherry, maple) burn slowly and provide excellent coals for baking or toasting.

Remember that firewood can transport invasive pests like the emerald ash borer, so do not move firewood from one location into other! This will help limit the spread of harmful insects.

How hot to build the fire

Beginners often ask how hot to build a fire. A quick rule of thumb is to hold your hand palm-side down at about the position the food will be above the fire and count (one-thousand-one, one-thousand-two, etc.).

If you can hold your hand for 6 seconds or more, it is a slow fire; 5 seconds is a medium-slow fire; 4 seconds is a medium fire; 3 seconds is medium-hot; and 2 seconds is a hot fire.

Most foods are best cooked over a medium fire.

Planning outdoor meals

Any method used for cooking indoors also can be used outdoors. Foods can be baked, barbecued, braised, broiled, roasted, fried, steamed, or stewed. However, it may be more challenging to get the same quality as is possible with indoor appliances. Cooking times also will be more variable. On the other hand, the smoky flavor from cooking outdoors is something that can't be duplicated indoors.

Cooking equipment—either made or purchased—can range from green sticks to tin cans and reflector ovens to Dutch ovens and grills. Here are a few suggestions for using some different types of containers and equipment.



COOKING ON A GRILL

Meats, fish, poultry, and some bread products can be cooked directly on the grill. Foods on or in foil, or in pots and pans, also may be cooked on the grill. Cooking speed can be controlled by adjusting the distance between the food and the coals as well as the number of coals you use.

GRILLED ROASTING EARS

Turn back husks of sweet corn, and strip off silk. Lay husks back in position and line up on grill over hot coals.

Turn ears frequently using long handled tongs and cook for 15 to 20 minutes or until husks are dry and browned. (Corn will look “suntanned.” For browner, sweeter corn, continue roasting to preferred taste.) To serve, break off husks. Serve with butter, salt, and pepper. For even more flavor, sprinkle with lemon juice.



COOKING ON A STICK

Combinations of meat and vegetables, fruits, and even breads can be cooked on a skewer or stick. It is dry heat cooking and is much like using a rotisserie indoors. Hold the food near the coals and rotate until it is evenly cooked. Metal skewers, green sticks, wood dowels, and straightened metal coat hangers may be used. Cooking is controlled by the distance of the food from the coals and the amount of rotating.

SUPPER ON A SKEWER

Cut 1 pound of big bologna or hot dogs into 1-inch pieces. Cut 1/2 pound of Swiss or other cheese in 1-inch cubes. Cut big dill pickles in 1-inch slices. Alternate meat, cheese, and pickle on oiled skewers or sticks. Baste with a commercial barbecue sauce or sauce made from the recipe below. Roast over coals for about 15 minutes, turning frequently. Makes 6 to 8 servings.

HOMEMADE BARBECUE SAUCE

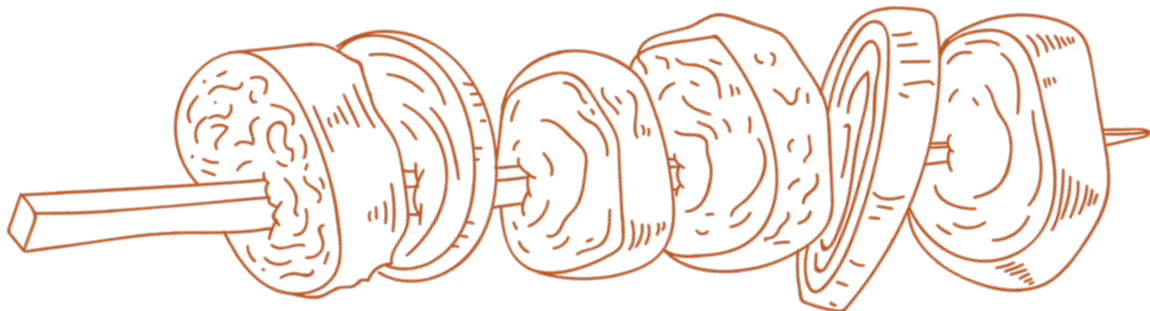
- 1 cup chili sauce or ketchup
- 2 tablespoons French dressing
- 2 teaspoons vinegar
- 2 teaspoons prepared mustard
- 1/2 teaspoon Worcestershire sauce.

Combine all ingredients in a saucepan. Heat to boiling.

FRUIT KABOBS

- Fresh or canned fruit (no melon), cut into uniform pieces
- 1 cup honey
- 1-1/2 Tablespoons lemon juice
- Melted butter (to brush over kabobs while cooking)

Cut a variety of fresh or canned fruit (except melons) into uniform pieces. Thread fruit on long skewers. Blend 1 cup honey and 1-1/2 tablespoons lemon juice. Brush over fruit. Grease grill to prevent sticking if these are placed on the grill rather than held over the fire. Heat over medium fire, brushing occasionally with butter. Avoid scorching. Serve with remaining honey mixture.





COOKING IN A DUTCH OVEN OR SKILLET

These utensils may be used for a variety of cooking methods—frying, roasting, baking, braising, and stewing. The cast iron helps to provide even heat. Number of coals and placement of the coals control cooking speed. Coals can be placed around the Dutch oven and on top of the cover, if desired. The Dutch oven may even be buried with some coals for slow, even cooking.

SKILLET BISCUITS

- ¼ cup butter or margarine
- 1 tube of biscuit dough, or make your own biscuits from a recipe
- Your choice of seasoning: garlic powder, onion salt, paprika, or other

Melt 1 / 4 cup butter or margarine in a heavy 9- or 10-inch skillet on the grill. If desired, sprinkle with garlic powder, onion salt, or paprika. Prepare biscuit dough according to package directions (or use refrigerated biscuit dough from a tube).

Pat to 1 / 2-inch thickness. Form into 12 biscuits. Arrange in skillet, turning biscuits to coat both sides with the butter. Cover skillet with lid or heavy aluminum foil.

Place on grill 4 inches from medium-hot to hot coals. Bake 8 to 10 minutes. Check often to be sure biscuits do not burn. Bake for 5 minutes longer or until done. If desired, biscuits can be turned so they brown on both sides. Makes 12.

GRAHAM CRACKER CHERRY PUDDING

- 20 graham crackers, crushed
- 1 / 2 cup chopped nuts
- 1 / 4 cup butter or margarine, softened
- 2 tablespoons sugar
- 1 can cherry pie filling

Line bottom of Dutch oven or skillet with aluminum foil and butter well. Blend crackers, nuts, butter or margarine, and sugar. Sprinkle 2 / 3 of this mixture on bottom of foil-lined Dutch oven. Cover with cherry pie filling. Sprinkle with remaining crumbs. Cover and bake 20 to 30 minutes or until heated through. Makes 8 to 10 servings.

CAMPFIRE FONDUE

In a small saucepan, heat 1 cup (8 ounces) condensed cheddar cheese or nacho cheese soup and 1 cup shredded Swiss cheese until cheese is melted. Stir frequently to prevent sticking. To eat, place cubes of French bread or bagels on sticks or fondue forks. Dip into hot cheese mixture. Makes 4 servings.



COOKING WITH ALUMINUM FOIL

Meals can be cooked in aluminum foil packets. Makeshift cooking utensils can be made for baking, braising, broiling, and steaming foods.

CHICKEN-IN-THE-GARDEN

For each person, tear off a 40-inch length of aluminum foil and fold in half. Just off center, place 2 or 3 pieces of chicken, 1 peeled potato, 1 sliced tomato, 1 sliced onion, and 2 green pepper rings.

Sprinkle with 2 tablespoons instant rice, 1 teaspoon Worcestershire sauce, dash of salt and pepper. Dot with butter.

Fold foil into a packet. Cook over glowing coals about 1-1/4 hours, or until chicken and potatoes are done (needs to reach 165°F). Turn package about every 20 to 30 minutes.

CAMPER'S PIZZA

- 1 cup buttermilk baking mix
- 1/3 cup milk
- Bottled or canned pizza sauce (about 14 ounces)
- 1 package (3 1/2 ounces) sliced pepperoni or other cooked meat
- 8 ounces shredded mozzarella cheese or other cheese
- Dried oregano

Using baking mix and milk, prepare biscuit dough as directed on a box of buttermilk baking mix. Divide into 4 equal parts. Pat each part into an 8-inch circle (or use English muffin halves). Place circles on a greased grill 5 inches from medium coals, or place dough on a sheet of aluminum foil on the grill. Cook until lightly browned underneath. Turn each circle over and spread with sauce; top with the meat, cheese, and oregano. Cook 12 to 15 minutes longer or until sauce bubbles and edges of dough are browned. Makes 4 servings.

BAKED SHOESTRING POTATOES

- 4 medium baking potatoes
- 3 tablespoons butter or margarine
- 1 1/2 teaspoons salt
- Dash of pepper
- 1/2 cup grated cheese
- 1/4 cup milk

Cut a 48-inch length of aluminum foil and fold in half. Scrub or peel potatoes; cut them into thin lengthwise fries and place just off centered on the foil. Dot each with butter; sprinkle with salt, pepper, and 2 tablespoons cheese. Pull edges of foil upward, then pour 1 tablespoon milk over the potatoes. Make foil into a packet. Cook over glowing coals, about 1 hour or until done.

If desired, fold back edges of foil and sprinkle potatoes with extra cheese. Makes 4 servings.



COOKING WITH PIE IRONS

A pie iron is a small two-part pan made of cast iron or aluminum. It connects with a hinge and has a long handle so cooking can be done on hot coals or on a campfire. Pie irons can be purchased almost anywhere camping equipment is available. They are easy to transport and are an economical way of cooking any meal for one person.

It is good practice to learn to handle the pie iron only by the wooden handles, including connecting the hinge and opening and closing the pie iron. It is difficult to tell if the pan portion is hot until it is too late.

PIE IRON PIZZAS

- English muffin, sliced open
- Butter or margarine
- Pizza sauce
- Cheese
- Choice of pizza toppings

Spread butter or margarine on the outside of each English muffin slice. This will keep the muffin from sticking to the pie iron. On the inside of the muffin, spread pizza sauce on the inside of each slice. Then place your choice of pizza toppings on one side of the muffin. Be careful not to overfill the English muffin. Place the second slice on top (like a sandwich). Put the English muffin (butter side out) in the pie iron. Put the pie iron on hot coals. Be sure to turn the pie iron to toast both sides. It will take 5-7 minutes on each side, depending on how hot the fire is. Check for melted cheese and a toasted outside. Be careful when opening pie iron. Let cool, as the pizza will be very hot. Makes 1 pizza. Enjoy!

FRUIT TURNOVER

- 2 slices of bread
- Butter or margarine
- Fruit pie filling of your choice

Spread butter or margarine on one side of each slice of bread. Place one slice of bread in the pie iron. The buttered side needs to be face down on the pie iron to prevent sticking. Spoon some of the fruit pie filling into the center of the bread slice. Cover with the second slice of bread, buttered side out. Close the pie iron. Put the pie iron on the hot coals for 2-3 minutes on each side. Be sure to turn the pie iron to prevent burning. Remove pie iron and open carefully.



RESOURCES

<https://www.ndsu.edu/fileadmin/4h/OutdoorSkills/CampFireCooking.pdf>

<https://www.recservices.iastate.edu/backcountry-campfire-recipes/>

<https://www.ndsu.edu/fileadmin/4h/OutdoorSkills/DutchOvenCooking.pdf>

https://digitalcommons.usu.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1019&context=extension_curall

https://hardin.ca.uky.edu/files/best_campfire_meals_to_cook_with_kids.pdf

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