



G4G CULINARY TRAINING



G4G 2.0 & Armed Forces Recipe Service (AFRS) Culinary Training

Session #4: Whole Grains

Total time: 90 minutes for 2 sessions

Participants: 20 (1 group)

Instructors: 2

Class outline:

- ▶ 5 minutes: Introductions (if new instructors) and review training objectives
 - ▶ 40 minutes: Training session
 - Whole Grains: The Basics (#4A)
 - ▶ 40 minutes: Training session
 - Cooking Whole Grains (#4B)
 - ▶ 5 minutes: Wrap-up, questions & cleanup
-

Session #4A: Whole Grains: The Basics

Overview: Teach (or review) basics of whole grains and their nutritional benefits.

Session length: 40 minutes

Session format: Group explanation, participant hands-on & tasting

Learning objectives:

By the end of the session, participants will be able to:

- ▶ Describe what defines a whole grain kernel
- ▶ List examples of whole grains
- ▶ Understand the health benefits of whole grains

Demo recipes for tasting (see Recipes section):

- ▶ [Tabbouleh M-305-00](#) and [Chili Macaroni L-028-50](#)

Instructor notes:

- ▶ Make Tabbouleh ahead of time.
- ▶ Extra portions of Tabbouleh or Chili Macaroni can be saved and served at the next meal as a menu option or taste test for diners.



G4G CULINARY TRAINING



Ingredients needed for demos and hands-on training:

Tabbouleh (25 portions)

- ▶ 3½ cups (1 lb 13 oz) water
- ▶ 1½ cups (9 oz) bulgur, medium grind, dry
- ▶ 1 qt + ¾ cup (12½ oz) fresh parsley, minced
- ▶ 1½ cups (3¾ oz) fresh mint, minced
- ▶ 3½ cups (1 lb 10 oz) diced tomatoes, canned, drained
- ▶ ¾ cup (3⅞ oz) yellow onion, minced
- ▶ 1 cup (7½ oz) canola oil
- ▶ 1 cup (8½ oz) bottled lemon juice
- ▶ 1½ tsp (0.32 oz) salt

Chili Macaroni (25 servings)

- ▶ 4 lb 90/10 ground beef
- ▶ 1 qt (1 lb 2 oz) yellow onion, diced
- ▶ 2½ cups (11 oz) red bell pepper, diced
- ▶ 9 Tbsp (2⅔ oz) chili powder, ground
- ▶ 2 Tbsp + 2 tsp (1⅔ oz) salt
- ▶ 3 Tbsp (0.60 oz) cumin, ground
- ▶ 3 Tbsp (0.67 oz) paprika, ground
- ▶ 1 Tbsp (0.35 oz) garlic, granulated
- ▶ 1 scant tsp (0.07 oz) cayenne pepper, ground
- ▶ 2 qt (4 lb 3 oz) diced tomatoes, canned
- ▶ 1 cup (8¾ oz) tomato paste, canned
- ▶ 2½ gallons (20 lb 14 oz) water
- ▶ 1 Tbsp + 1 tsp (0.84 oz) salt
- ▶ 9½ cups (2 lb 5 oz) whole-wheat elbow macaroni, dry

Equipment needed for Chili Macaroni demo:

- ▶ Printouts of [whole grains graphic](#)
- ▶ Examples of whole grains to show while reviewing talking points
- ▶ Examples of nutrition labels and ingredient lists for whole grain and white versions of the same items (for example, pasta or flour)
- ▶ Printouts of demo recipe
- ▶ 22 plates, bowls, or paper plates
- ▶ 22 forks
- ▶ Stovetop or steam-jacketed kettle



G4G CULINARY TRAINING



KITCHEN INSTRUCTIONS

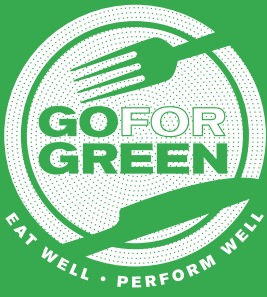
Instructor prep: Make Tabbouleh ahead of time (before training).
Have ingredients available for Chili Macaroni recipe.

Staff hands-on & Instructor demo (30 minutes):

1. Make Chili Macaroni by dividing up tasks among participants.
 - Dice onion.
 - Dice bell pepper.
 - Measure spices.
 - Measure tomatoes and tomato paste.
 - Boil water and measure out salt and pasta.
 - Measure out ground beef.
2. Show steps to make recipe, highlighting the use of whole-grain pasta.

Instructor talking points:

- ▶ Grain structure
 - Grains are composed of three edible parts.
 - > **Bran** is the outer shell that protects the seed. It's rich in fiber and supplies B vitamins, iron, antioxidants, and phytochemicals (chemicals found in plants that protect against bacteria, viruses, and fungi).
 - > **Germ** is the core of the seed where the growth occurs. It's rich in healthy fats, vitamins E and B, antioxidants, and phytochemicals.
 - > **Endosperm** is the interior layer of seed making up the majority of the grain. It contains carbohydrates, protein, and small amounts of vitamins and minerals.
 - Whole grains contain all three components (bran, germ, endosperm) and are the most nutritious form of grains.
 - > Examples include brown rice, whole-wheat pasta, and whole-wheat flour. (*Show examples, if available.*)
 - > Beyond the whole-grain versions of common grains, whole grains include oats, barley, bulgur, and sorghum.
 - » Tabbouleh, the recipe for tasting, contains bulgur.
 - > Quinoa is known as a pseudo-grain because it's different in botanical origin (it's technically a seed), but similar to cereal grains in composition and use.
 - Refined grains are processed to remove the bran and germ, leaving just the endosperm.
 - > Examples include white rice, white flour, and white pasta.
 - > Removing the bran makes the product easier to chew and digest.



G4G CULINARY TRAINING



- > Removing the germ removes the seed of fat, which extends the shelf life.
 - » When fat is exposed to oxygen, it oxidizes, causing the fat to go bad. Oxidized fats taste “off” and shorten the food’s shelf life.
- Some nutrients can be added back to the food after processing (“fortification”), but most of the health-promoting components of the grain cannot be replaced.
- Compare ingredient lists on food packages to see differences between white and whole-wheat versions of pasta or flour. (*Show the ingredient list for both whole-grain and white versions of the same item [pasta or flour].*)
 - > Nutrition labels list the ingredients in descending order by weight.
 - > Look for “whole grain” as the first ingredient.
 - > Make sure you’re choosing the product that’s called for in your recipe.
- ▶ Nutritional value
 - Most people don’t eat enough whole grains.
 - Since whole grains contain all three parts of the seed, they have more health- and performance-enhancing nutrients—such as minerals, vitamins, dietary fiber, and phytochemicals—than refined grains.
 - > Whole grains contain more protein and fiber (and are more filling and satisfying) than processed grains.
 - Carbohydrates in whole grains help fuel active Service Members to complete their physical missions.
 - > **Note:** High intake of whole grains prior to intense exercise isn’t recommended due to their fiber content, which can cause stomach discomfort.
 - Eating more whole grains is associated with a healthier body weight.
 - Bran, which is rich in fiber, slows the breakdown of starch into glucose, helping to maintain a steady blood sugar level rather than causing sharp spikes.
 - Fiber might help reduce blood cholesterol and lower risk of heart disease.
 - Fiber helps support healthy digestion.
 - Phytochemicals in whole grains might protect against some cancers.

Staff tasting (10 minutes):

- ▶ Pre-prepared Tabbouleh
- ▶ Chili Macaroni



G4G CULINARY TRAINING



Session #4B: Cooking Whole Grains

Overview: Teach (or review) best practices for cooking whole grains.

Session length: 40 minutes

Session format: Group explanation, participant hands-on & tasting

Learning objectives:

By the end of the session, participants will be able to:

- ▶ Describe best practices for cooking whole grains
- ▶ Describe ways their facility plans to incorporate whole grains into menus

Demo recipes for tasting (see Recipes section):

- ▶ [Dark Chocolate Cake \(G-308-00\)](#) and [Lemony Herbed Quinoa \(E-303-00\)](#)

Instructor notes:

- ▶ Make Dark Chocolate Cake ahead of time (before training).
- ▶ Extra portions of cake or Lemony Herbed Quinoa can be saved and served at the next meal as a menu option or taste test for diners.

Ingredients needed for demos and hands-on training:

Dark Chocolate Cake (25 portions)

- ▶ 1¼ qt (2 lb 10 oz) water
- ▶ 2½ cups (14½ oz) white quinoa, dry
- ▶ 1¾ cups + 2 Tbsp (15 oz) unsalted butter, softened
- ▶ 1¼ qt (2 lb 3 oz) sugar, granulated
- ▶ 1½ cups (12½ oz) water
- ▶ ¼ cup + 2 Tbsp (1⅓ oz) nonfat milk, dry
- ▶ 1 Tbsp + 2 tsp (0.80 oz) vanilla extract
- ▶ 1 qt (2 lb 6 oz or 19 each) whole eggs
- ▶ 2¾ cups (6⅞ oz) cocoa powder
- ▶ 2 Tbsp + 2½ tsp (1 oz) baking powder
- ▶ 1 Tbsp + ½ tsp (0.59 oz) baking soda
- ▶ 1 oz nonstick cooking spray

Lemony Herbed Quinoa (33 servings)

- ▶ 3½ qt + ⅔ cup (7 lb 10 oz) water
- ▶ 3 Tbsp + 2 tsp (2⅓ oz) low-sodium vegetable base
- ▶ 1¾ qt (2 lb) yellow onion, diced
- ▶ 1 Tbsp + 1½ tsp (0.21 oz) thyme leaves, dried
- ▶ ⅓ cup (2½ oz) canola oil
- ▶ 2 qt (2 lb 14 oz) white quinoa, dry



G4G CULINARY TRAINING



- ▶ ½ cup (½ oz) lemon zest
- ▶ 1 Tbsp + 2 tsp (1 oz) salt
- ▶ ¾ tsp (0.05 oz) black pepper, ground
- ▶ ¼ cup (2½ oz) fresh lemon juice
- ▶ 1 cup (1⅓ oz) fresh parsley

Equipment needed for demo:

- ▶ Examples of whole and white versions of the same grain to show while reviewing talking points (brown and white rice and/or whole-grain and white pastas)
- ▶ Oven
- ▶ 18 × 26-inch sheet pan
- ▶ Stovetop or small steam-jacketed kettle

KITCHEN INSTRUCTIONS

Instructor demo (30 minutes):

1. Demonstrate preparing and cooking Lemony Herbed Quinoa.
2. Discuss talking points as quinoa is cooking.

Instructor talking points:

- ▶ Cooking with whole grains (*show both versions of the same grain [pasta or rice]*)
 - Appearance
 - > Whole grains are darker in color than refined grains.
 - Cook time
 - > They might require a longer cook time due to the presence of the outer layers of the grain (vs. removal of the outer layer with refined grains).
 - > Review AFRS recipes carefully for cook times.
 - Taste
 - > Since whole grains have the germ and bran intact, they tend to have a slightly different flavor profile than refined grains.
 - » Whole grains are heartier in flavor and texture.
 - » They might taste somewhat earthy to diners not familiar with them.
 - > AFRS whole-grain recipes often call for slightly more salt than refined-grain versions to achieve a similar seasoning impact (taste).
 - Texture
 - > The texture of whole grains is also heartier than refined grains.



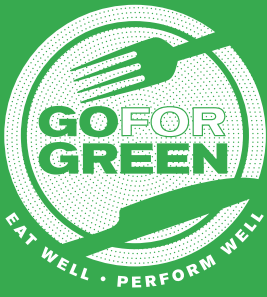
G4G CULINARY TRAINING



- ▶ Baking with whole grains
 - It's different than baking with white flour.
 - Ingredient modifications:
 - > Baking with whole-grain flour sometimes requires adding slightly more moisture (for example, yogurt, applesauce, or oil).
 - > Whole-grain flour tends to need more spices to help mask its earthy flavor.
 - Whole-grain flour might be darker in color, changing the color of the final product.
 - > Whole grains work better in some recipes than others due to diners' expectations of what the baked good should look like.
 - » For example, carrot cake, pumpkin muffins and bread, and coffee cake are typically darker in appearance, so they tend to hide whole-grain flour.
 - The chocolate cake we'll taste later contains an unexpected whole grain. Think about which one as you taste it.
- ▶ **Bottom line:** Review AFRS recipes and follow as written!
- ▶ Ideas and plans to introduce whole grains into your menu

***Note:** The following ideas and options are suggestions for introducing whole grains into your local menu. It's best to discuss the ones that your facility is either actively implementing or planning to implement and provide specific examples (for instance, "We plan to serve whole-grain pasta in addition to white pasta as a starch option."). There are also discussion questions to actively engage participants and allow time for them to share their thoughts and give feedback.*

- Slowly introduce whole grains in a wide variety of recipes while still serving refined grains.
 - > Diners need time to taste and accept new recipes.
 - » For example, whole-wheat pasta can be a big change for diners who have only eaten white pasta.
 - > Staff also needs time to adjust to new or different recipes and feel comfortable cooking and baking with new ingredients.
 - » **Ask participants:** "What's working with whole-grain recipes? What isn't? What challenges have you encountered when cooking with whole grains?"
 - > Examples:
 - » Mix white and whole-wheat pastas together.
 - » Use a multigrain pasta since many are actually blends of grain and legume flours. They tend to look and taste more like white pasta while packing a much bigger nutritional punch.



G4G CULINARY TRAINING



- » Use whole-wheat pasta in a recipe with lots of flavors to help minimize the whole-wheat flavor.
- » Serve a whole-grain recipe in place of a refined-grain recipe twice a week, while still offering familiar, refined recipes.
- Serve whole grains with flavorful seasonings or sauces to take on those flavors.
 - > Examples include marinara, pesto, and tikka masala.
- Offer whole grains with familiar flavor profiles.
 - > **Ask participants:** “Which flavors and recipes are popular with the diners in our facility? What ideas do you have to swap refined grains for whole grains?”
 - > Serve whole grains in mixed dishes where they’re an ingredient, not the main focus.
 - > Serve blended recipes that use a combination of whole grains and animal protein.
 - > **Ask participants:** “Which mixed dishes do you think would work well here?”
- Work to make whole grains the default option.
 - > Most diners will accept this because they’re still eating their favorites.
 - > Serve sandwiches and burgers on whole-wheat bread and buns.
 - » Offer white bread, but out of diner sight, requiring them to request it.
- ▶ Feedback from diners will provide a better understanding of the best ways to serve whole grains.
 - Ask diners for comments on new recipes.
 - > **Ask participants:** “What feedback have you heard from diners? Are whole grains more or less popular in any particular serving areas (sides, entrées, mixed dishes, specialty bars, or desserts)?”
 - Have patience and try new recipes if certain ones don’t work.
 - > Try a new flavor profile.
 - > Use the correct Food Card on the serving line.
 - » Avoid calling out the whole grain in the recipe (for example, refer to lasagna made with whole-grain noodles as “lasagna”).

Staff tasting (10 minutes):

- ▶ Pre-prepared Dark Chocolate Cake
- ▶ Lemony Herbed Quinoa

Wrap-up and discussion (5 minutes):

1. Whole grains differ from enriched grains in nutrition, cook time, and taste. They’re more nutrient-dense, have a slightly longer cook time, and provide a heartier texture and mouthfeel.



G4G CULINARY TRAINING



2. It's important to follow AFRS recipes as written for the best possible product when cooking and baking with whole grains.
3. It might take time for diners to adjust to and accept whole grains, so introduce them slowly and in a wide variety of recipes.
4. **[Customize based on facility]:** “Our facility plans to introduce whole grains in the following ways *[insert facility-specific plans]*. Our facility plans to ask for feedback from both diners and staff in the following ways *[insert facility-specific plans]*.”

RECIPES

4A MAKE-AHEAD Recipe #1:

Tabbouleh (Green/Low)

M-305-00 (modified)

Servings: 25

Prep time: 10 minutes

Cook time: 20 minutes

Ingredients:

- ▶ 3½ cups (1 lb 13 oz) water
- ▶ 1½ cups (9 oz) medium-grind bulgur, dry
- ▶ 1 qt + ¾ cup (12½ oz) fresh parsley, minced
- ▶ 1½ cups (3¼ oz) fresh mint, minced
- ▶ 3½ cups (1 lb 10 oz) diced tomatoes, canned
- ▶ ¾ cup (3⅞ oz) yellow onion, minced
- ▶ 1 cup (7½ oz) canola oil
- ▶ 1 cup (8½ oz) bottled lemon juice
- ▶ 1½ (0.32 oz) tsp salt

Directions:

1. Prepare all fruits and vegetables in accordance with **G4G Technical Guidelines: Produce, A-G-31**. Mince onion.
2. Drain and roughly chop tomatoes. Set aside.
3. In a large stockpot, bring water to a boil. Add bulgur and return to a boil. Cover, reduce heat, and simmer for 15 minutes or until the water is absorbed. Remove from heat and spread on sheet pans to cool under refrigeration at 41°F (5°C).
4. Working in batches, pulse parsley and mint in a food processor until the mixture resembles a fine dice. Be sure not to overprocess and create a paste.
5. Combine parsley mixture, tomatoes, and onion in a large bowl.
6. In a separate bowl, whisk together oil, lemon juice, and salt.



G4G CULINARY TRAINING



7. Add cooled bulgur to vegetable mix and toss with dressing. CP: Refrigerate tabbouleh at 41°F (5°C) for at least 2 hours before serving.

4A DEMO Recipe #2:

Chili Macaroni (Green/High)

L-028-50 (modified)

Servings: 25

Prep time: 10 minutes

Cook time: 20–25 minutes

Ingredients:

- ▶ 4 lb 90/10 ground beef
- ▶ 1 qt (1 lb 2 oz) yellow onion, diced
- ▶ 2½ cups (11 oz) red bell pepper, diced
- ▶ 9 Tbsp (2⅔ oz) chili powder, ground
- ▶ 2 Tbsp + 2 tsp (1⅓ oz) salt
- ▶ 3 Tbsp (0.60 oz) cumin, ground
- ▶ 3 Tbsp (0.67 oz) paprika, ground
- ▶ 1 Tbsp (0.35 oz) garlic, granulated
- ▶ 1 scant tsp (0.07 oz) cayenne pepper, ground
- ▶ 2 qt (4 lb 3 oz) diced tomatoes, canned
- ▶ 1 cup (8¾ oz) tomato paste, canned
- ▶ 2½ gallon (20 lb 14 oz) water
- ▶ 1 Tbsp + 1 tsp (0.84 oz) salt
- ▶ 9½ cups (2 lb 5 oz) whole-wheat elbow macaroni, dry

Directions:

- ▶ Thaw CP: If frozen, thaw beef under refrigeration at 41°F (5°C).
1. Prepare all fruits and vegetables in accordance with [G4G Technical Guidelines: Produce, A-G-31](#). Dice onions and bell peppers to a ½-inch dice.
 2. Preheat tilt skillet to 350°F (177°C).
 3. Cook beef, onions, peppers, chili powder, salt, cumin, paprika, garlic, and cayenne pepper in a tilt skillet for 5–10 minutes or until beef is no longer pink. Stir to break apart.
 4. Add diced tomatoes and tomato paste to tilt skillet and stir until fully combined. Bring to a boil and reduce heat to 300°F (149°C). Cover and simmer for 10 minutes until thickened. CCP: Internal temperature must reach 155°F (68°C) for 15 seconds.
 5. While chili is cooking, combine water and salt in a stockpot or steam-jacketed kettle and bring to a boil. Add pasta and return to a boil. Cook for 4–5 minutes. Drain well.



G4G CULINARY TRAINING



6. Add cooked pasta to tilt skillet and toss thoroughly to combine. Serve immediately or CP: Hold hot at 135°F (57°C).

4B MAKE-AHEAD Recipe #1

Dark Chocolate Cake (Yellow/Low)

G-308-00 (modified)

Servings: 50

Prep time: 15 minutes plus 2 hours to cool quinoa

Cook time: 45–50 minutes

Ingredients:

- ▶ 1¼ qt (2 lb 10 oz) water
- ▶ 2½ cups (14½ oz) white quinoa, dry
- ▶ 1¾ cups + 2 Tbsp (15 oz) unsalted butter, softened
- ▶ 1¼ qt (2 lb 3 oz) sugar, granulated
- ▶ 1½ cups (12 ½ oz) water
- ▶ ¼ cup + 2 Tbsp (1⅓ oz) nonfat milk, dry
- ▶ 1 Tbsp + 2 tsp (0.80 oz) vanilla extract
- ▶ 1 qt (2 lb 6 oz or 19 each) whole eggs
- ▶ 2¾ cups (6⅞ oz) cocoa powder
- ▶ 2 Tbsp + 2½ tsp (1 oz) baking powder
- ▶ 1 Tbsp + ½ tsp (0.59 oz) baking soda
- ▶ 1 oz nonstick cooking spray

Directions:

- ▶ Thaw CP: If frozen, thaw eggs under refrigeration at 41°F (5°C).
1. Preheat oven to 325°F (163°C).
 2. In a stockpot or small steam-jacketed kettle, bring first measure of water and quinoa to a boil. Cover and simmer for 10–15 minutes or until water is absorbed. Remove quinoa from heat, spread on a sheet pan, and cover lightly. CP: Refrigerate at 41°F (5°C) for 2 hours or until cool.
 3. In a mixing bowl with the paddle attachment, cream butter and sugar on low speed for 2 minutes. Scrape down sides of bowl.
 4. Whisk second measure of water and dry milk until fully incorporated. Add vanilla and half of the eggs. Mix on low speed for 1 minute. Add the remaining eggs and mix again for 1 minute. Scrape down sides of bowl.
 5. Sift together cocoa powder, baking powder, baking soda, and salt. Add the dry ingredients to the mixer along with the cooled quinoa. Mix on low speed for 2 minutes.



G4G CULINARY TRAINING



6. Lightly spray each sheet pan with cooking spray. Pour 1¼ gal (9 lb 8 oz) batter into each pan and spread evenly.
7. Using an oven on convection mode, bake at 325°F (163°C) on low fan for 45–50 minutes.
8. Cool. Cut into 6 × 9-inch squares.

4B Demo Recipe

Lemony Herbed Quinoa (Green/Moderate)

E-303-00 (modified)

Servings: 33

Prep time: 10 minutes

Cook time: 25–30 minutes

Ingredients:

- ▶ 3½ qt + ⅔ cup (7 lb 10 oz) water
- ▶ 3 Tbsp + 2 tsp (2⅓ oz) low-sodium vegetable base
- ▶ 1¾ qt (2 lb) yellow onion, diced
- ▶ 1 Tbsp + 1½ tsp (0.21 oz) thyme leaves, dried
- ▶ ⅓ cup (2½ oz) canola oil
- ▶ 2 qt (2 lb 14 oz) white quinoa, dry
- ▶ ⅓ cup (½ oz) lemon zest
- ▶ 1 Tbsp + 2 tsp (1 oz) salt
- ▶ ¾ tsp (0.05 oz) black pepper, ground
- ▶ ¼ cup (2⅛ oz) fresh lemon juice
- ▶ 1 cup (1⅓ oz) fresh parsley

Directions:

1. Prepare all fruits and vegetables in accordance with [G4G Technical Guidelines: Produce, A-G-31](#). Dice onions to a ½-inch dice, zest and juice lemon, and chop parsley.
2. Combine warm water and vegetable base. Whisk until fully incorporated. Reserve for use in Step 5.
3. In a large stock pot or small steam-jacketed kettle, sauté onions and thyme in oil for 5 minutes or until onions are tender, stirring occasionally.
4. Add quinoa to onion-thyme mixture. Cook for 2 minutes, stirring occasionally.
5. Add reserved vegetable broth, lemon zest, salt, and pepper to quinoa mixture and mix thoroughly. Bring liquid to a boil. Reduce heat, cover, and simmer for 25–30 minutes or until the quinoa has absorbed all of the liquid. CCP: Internal temperature must reach 135°F (57°C) for 15 seconds.
6. Remove quinoa from heat and stir in lemon juice and parsley. Serve immediately or CP: Hold hot at 135°F (57°C).