



Lesson 5 – Increasing Plant-based Foods in School Nutrition Programs

Background Information

Many people today are opting to eat plant-based meals. These meals may be once per week on Meatless Mondays, several times per week, or even two out of three meals a day. Others are choosing to eat entirely plant-based meals (a vegetarian diet). There are many reasons why people are choosing to eat plant-based meals, such as for personal health benefits, environmental concerns, or cost effectiveness. With meatless meals becoming a trend nationwide, schools are encouraged to provide this choice for student customers. Planning and serving plant-based meals may have a variety of benefits, including providing students with new, nutritious food choices and promoting future healthful lifestyles.

Plant-based meals are sometimes referred to as **vegetarian** meals however, these terms have different definitions. Plant-based meals place an emphasis on plant-based foods such as vegetables, fruits, whole grains, and **legumes**. Vegetarian meals, in addition to being plant-based, exclude meat and other animal products, to varying degrees.

A major benefit of **plant-based foods** is that they contain **dietary fiber** and **phytonutrients** that are not found in animal foods. Plant-based foods are also a source of **micronutrients** such as **calcium, iron, potassium**, folate, vitamin A, and vitamin C. Research on the possible health benefits of plant-based foods show that regular consumption of plant-based meals may lower the risk of cardiovascular disease and certain types of cancer. Diets rich in fruits, vegetables, whole grains, nuts, and legumes are linked to lower rates of obesity and a decrease in both blood cholesterol and blood pressure.

The American Academy of Nutrition and Dietetics supports plant-based meals for all stages of life including childhood, adolescence, and athletes. Although increased consumption of vegetables and fruits is a key recommendation of the Dietary Guidelines for Americans, research shows that Americans are still not eating the recommended amount of daily servings of fruits and vegetables. To address this finding, introducing children to fruits and vegetables at a young age may establish healthful habits throughout their lifetime. For example, schools may model healthful food choices by replacing traditional meat recipes with plant-based options that meet reimbursable meal requirements.

An important consideration for plant-based meals is that they are planned to meet the requirements for essential nutrients. For example, meat is a good source of **iron**, so when planning plant-based menus consider other iron sources, such as beans and cereals. Protein sources are another consideration. Plant-based meals should be designed to include a variety of complementary protein sources, including legumes, nuts, and seeds. Other foods, such as tofu and **tempeh**, are good sources of plant-based protein as well as calcium.

Americans are also exceeding the recommended intake of **saturated fats**. Saturated fats often come from animal sources and mixed dishes such as hamburgers, tacos, or pizza. There is evidence that shows high levels of saturated fat may lead to an increased risk of cardiovascular disease. When **unsaturated fats** replace saturated fats, the risk of

cardiovascular disease events (such as heart attacks) may decrease. **Plant oils** are high in unsaturated fats and are a source of essential fats and vitamin E. Common sources of plant oils are nuts and seeds, avocado, and vegetable oil such as olive and canola oils.

In summary, incorporating more plant-based foods is a great way for schools to model healthful meals, encourage consumption of fruits and vegetables, and help students meet their nutrient recommendations.

Concepts and Vocabulary

Calcium: A mineral important for bone health and muscle function.

Dietary fiber: A type of carbohydrate that can't be digested, but is important for digestive health. It may help reduce blood cholesterol and lower risk of heart disease.

Iron: A mineral that is important in red blood cells, and is used to move oxygen around in the blood.

Legumes: Types of seeds that can be eaten and are highly nutritious. Legumes include all types of beans, chickpeas, edamame (soybean), and lentils.

Micronutrients: Nutrients we consume in small amounts, including vitamins and minerals.

Phytonutrients: Natural plant chemicals that may have beneficial health effects. They are found in fruits, vegetables, whole grains, and drinks such as tea and wine. Also called phytochemicals.

Plant oils: Oils from plant sources that are usually liquid at room temperature and include mono- and poly-unsaturated fats.

Plant-based foods: Foods that come from plant sources such as fruits, vegetables, whole grains, and legumes; diets consisting primarily of plant-based foods are recommended by the Dietary Guidelines for Americans.

Potassium: A mineral that is important for muscle and nerve function. Eating a diet rich in potassium is also helpful in preventing high blood pressure.

Protein: A macronutrient that is needed for muscle growth and maintenance, but also several other important functions in the body. Protein can also be used for energy.

Saturated fats: A type of fat that is solid at room temperature. Too much saturated fat may raise the risk for heart disease.

Tempeh: A fermented soy food pressed into blocks that have a nutty flavor and firm texture. Tempeh is highly nutritious and known for its high levels of protein and micronutrients.

Unsaturated fats: A type of fat that is liquid at room temperature and considered healthier than saturated fats.

Vegan: A person who does not eat or use animal products.

Vegetarian: A person who does not eat meat, and sometimes other animal products.

5.1: Learning Activity

Overview

In this activity, participants will explore the health benefits of plant-based foods by adapting a meat-based recipe into a plant-based one. Participants will use food cards with nutrient information to swap out or add major ingredients.

Getting Ready

Time Required

50 minutes

Materials Needed

(Materials provided in the curriculum)

For Each Group of 2-4 Participants <ul style="list-style-type: none"><input type="checkbox"/> Flip chart paper<input type="checkbox"/> Markers, pens, or pencils<input type="checkbox"/> <i>Food Cards (Lesson Material 5-B)</i><input type="checkbox"/> <i>Recipe Changes Worksheet (Activity Sheet 5-C)</i><input type="checkbox"/> Calculator	For the Facilitator <p>Optional:</p> <ul style="list-style-type: none"><input type="checkbox"/> <i>Lesson 5 (PowerPoint)</i><input type="checkbox"/> Computer<input type="checkbox"/> PowerPoint Projector
For the Class <ul style="list-style-type: none"><input type="checkbox"/> <i>Sample Recipes (Activity Material 5-A)</i>	For Each Participant <ul style="list-style-type: none"><input type="checkbox"/> None

Preparation

Handouts

1. Make copies of the following:
 - **Sample Recipes (Activity Material 5-A)**, one or more copies as needed. (Each group will receive one recipe.)
Facilitator Tip: If there are more than five groups, it is acceptable for some groups to have the same recipe.
 - **Recipe Changes Worksheet (Activity Sheet 5-C)**, one copy per group.

Other Materials

2. Print and cut out copies of the **Food Cards (Lesson Material 5-B)**, one set per group.

Classroom Set-Up

3. Organize the class into small groups of 2 to 4 participants. Provide each group with a sheet of flip chart paper and markers, pens, or pencils to answer opening questions/prompts.

Optional

4. Before participants arrive, connect laptop to projector. Load **Focus on Food Lesson 5** (PowerPoint).

Lesson 5:
Increasing Plant-
based Foods in
School Nutrition
Programs

Slide 1



Opening Questions

Slide 2

What are plant-based
foods?

Slide 3

Explain the benefits of
plant-based foods.

Slide 4

Opening Questions/Prompts

Small Group Discussion

1. **Say:** Let's get started with Lesson 5 Increasing Plant-based Foods in School Nutrition Programs! **(Slide 1)** To begin, I'd like everyone to discuss some opening questions within your group. **(Slide 2)** Once you've discussed the prompts within your groups, we will come back together as a class and discuss your thoughts and responses as a whole.

The first prompt I'd like you to discuss within your groups is: **(Slide 3)**

- What are plant-based foods?

Facilitator Tip: Explain to participants that they may write their answers independently or assign one person in their group to write down everyone's thoughts. It may be helpful to explain to the class that they will learn more about these topics throughout the lesson.

Facilitator Tip: If participants are struggling with the distinction between plant-based and more common terms such as vegetarian or vegan, then encourage them to focus on the foods that are included in plant-based. These foods are fruits, vegetables, whole grains, legumes, nuts, and seeds. Redirect talk and discussion on what "isn't included" or what people "cannot have".

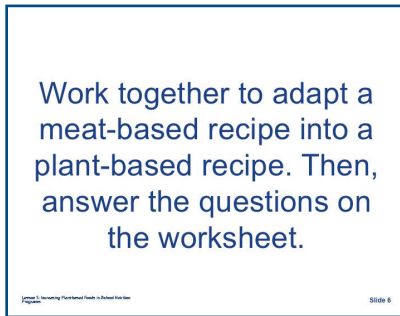
2. **Do:** Allow 2 to 3 minutes for groups to discuss the prompt. Repeat with the remaining prompt:
 - Explain the benefits of plant-based foods. **(Slide 4)**

Class Discussion

3. **Say:** As a class, let's discuss what you talked about in your groups. What were some of your thoughts on the first prompt, what are plant-based foods?
4. **Do:** Allow about a minute for participants to share their thoughts on this topic with the class. Repeat with the remaining prompt: Explain the benefits of plant-based foods.



Slide 5



Slide 6

Procedure (Experiencing)

Recipe activity

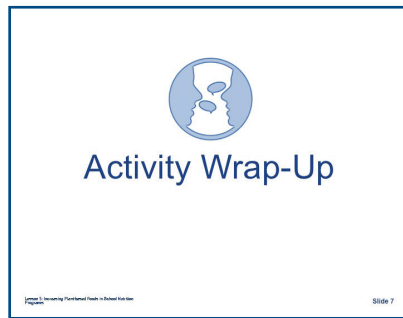
5. **Say:** Now that we've completed our opening discussion, we'll start on the activity for this lesson. **(Slide 5)** This activity involves changing a meat-based recipe to a plant-based recipe.
6. **Say:** I'm going to pass out a different recipe to each group as well as a set of food cards. Your goal is to recommend some changes to the recipe in order to make it plant-based. **(Slide 6)**
 - This might mean swapping out some ingredients or adding other ingredients.
7. **Say:** Once you've made changes that you are satisfied with, work together to fill in the recipe changes worksheet. You may need calculators for this exercise which we will also pass out as you work.
8. **Do:** Pass out **Sample Recipes (Activity Material 5-A)**, **Food Cards (Lesson Material 5-B)**, **Recipe Changes Worksheet (Activity Sheet 5-C)**, and a calculator for participants.

Facilitator Tip: *If participants ask about how they will know if the recipe will taste good, ask them how they would usually try new recipes at home or at work.*

Facilitator Tip: *If you do not have enough calculators for each group then have participants use their mobile devices.*

Facilitator Tip: *Participants may be concerned with creating a recipe that has an equal number of grams of protein compared to the original. If this is the case, assure them that their recipe doesn't necessarily need to match the protein content.*

Activity Wrap-Up (Sharing, Processing, Generalizing)



Slide 7

9. **Say:** Let's have each group share what changes they made to their recipe. **(Slide 7)**
10. **Do:** Follow the group's line of thinking, and if necessary, ask more targeted questions.
 - Explain how you decided which foods or ingredients to add or swap out.
 - Explain how your changes to the recipe change the nutrients in the recipe.
 - Using what you know about those changes in nutrients, how would you describe this new recipe?
 - How are your changes similar to each other? How are they different?
 - How are the nutrient changes you've observed similar to each other? How are they different?
 - Thinking about the second opening prompt, how would you answer "Explain the benefits of plant-based foods?" differently?

Facilitator Tip: Save the questions about similarities and differences until after a few of the groups have presented their changes.

Facilitator Tip: If there are any misconceptions remaining in this phase of the lesson, you should address these now.

Concept and Term Discovery/Introduction

Over the course of the lesson, participants should be able to identify the following concepts:

- Plant-based foods are important sources of essential nutrients.
- Plant-based meals may include a wider variety of nutrients than meat-based meals.
- Recipes can be adapted to be more plant-based by swapping out meat-based ingredients for plant-based ingredients.

The following key vocabulary terms should be discovered by participants or introduced to them: plant-based foods, dietary fiber, legumes, protein, and micronutrients.

5.2: Expanding Knowledge

Overview

In this mini-lecture, participants will learn more about what plant-based meals are, their potential health benefits, and important considerations when making plant-based meals.

Getting Ready

Time Required

5 minutes

Materials Needed

(Materials provided in the curriculum)

For the Facilitator <ul style="list-style-type: none"><input type="checkbox"/> Lesson 5 (PowerPoint)<input type="checkbox"/> Computer<input type="checkbox"/> PowerPoint Projector	For Each Group of 2-4 Participants <ul style="list-style-type: none"><input type="checkbox"/> None
For the Class <ul style="list-style-type: none"><input type="checkbox"/> None	For Each Participant <ul style="list-style-type: none"><input type="checkbox"/> None

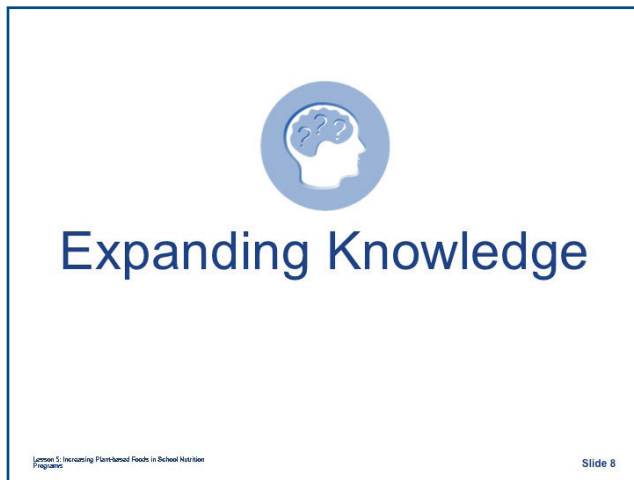
Preparation

Projector Set-Up

1. Connect laptop to projector. Load **Focus on Food Lesson 5** (PowerPoint).
2. Queue the PowerPoint presentation to Slide 8.

Procedure

1. Do: Go through the Expanding Knowledge presentation slide by slide. The following script is available for use if you so choose.



Slide 8

Slide 8

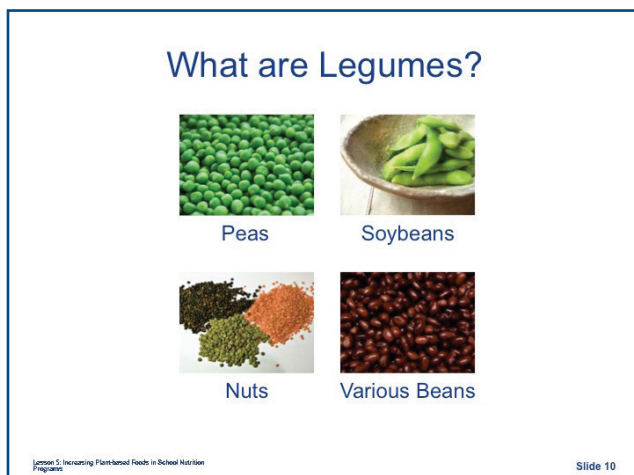
That was a great discussion! Now it's time to recap some concepts we learned throughout Lesson 5, Increasing Plant-based Foods in School Nutrition Programs.



Slide 9

Slide 9

Plant-based foods include fruits, vegetables, whole grains, legumes, nuts, and seeds.



Slide 10

Slide 10

Legumes are types of highly nutritious seeds that can be eaten. These include peas, soybeans, lentils, and various types of beans. Meals with legumes are a healthy alternative to meat-based dishes because they include protein, fiber, and various vitamins and minerals.

Now we'll move onto the potential health benefits of plant-based foods.

What are some health benefits that plant-based foods offer?

[Pause to allow responses from the class.]

Plant-based Foods Provide...

- Essential nutrients for growth and development.
- Protective effects against disease and deficiency

Lesson 5: Increasing Plant-based Foods in School Nutrition Programs

Slide 11

Slide 11

Slide 11

Those are great answers!

For the purposes of our discussion, plant-based foods provide the essential nutrients required for growth and development, and offer protective effects against disease and deficiency.

Nutrients in Plant-based Foods

Nutrients	Food sources
Iron	Dried fruit, fortified beans and cereals, spinach
Calcium	Collard greens, spinach, almonds, fortified orange juice
Zinc	Whole grains, nuts, legumes
Potassium	Most fruits and vegetables
Magnesium	Legumes, whole grains
Omega-3 fatty acids	Walnuts, ground flaxseed

Lesson 5: Increasing Plant-based Foods in School Nutrition Programs

Slide 12

Slide 12

Slide 12

Some important plant-based nutrients include:

- Iron, which is in dried fruit, fortified beans and cereals, and spinach.
- Calcium, which is in collard greens, spinach, almonds, and fortified orange juice.
- Zinc, which is in whole grains, nuts, and legumes.
- Potassium, which is in most fruits and vegetables.
- Magnesium, which is in legumes and whole grains, and lastly,
- Omega-3 fatty acids, which can be found in walnuts and flaxseed.

Nutrients in Plant-based Foods

Nutrients	Function
Iron	Moves oxygen in the body
Calcium	Bone health, muscle function
Zinc	Growth and immune health
Potassium	Muscle and nerve function
Magnesium	Bone health, muscle and nerve function
Omega-3 fatty acids	Involved in cardiovascular and brain health, inflammation

Lesson 5: Increasing Plant-based Foods in School Nutrition Programs

Slide 13

Slide 13

Slide 13

Before we move any further, let's also review what some of the functions of these nutrients are.

- Iron helps move oxygen in the body.
- Calcium helps build and repair bones and has a role in how muscles function.
- Zinc is involved in growth and immune health.
- Potassium has a role in the way muscles and nerves function.
- Magnesium contributes to bone health and also how muscles and nerves function, and lastly,
- Omega-3 fatty acids are involved in cardiovascular and brain health, and are anti-inflammatory.

Plant-based foods are high in vitamins and minerals that help the body perform important functions.

Can someone explain what fortified foods are?

[Pause to allow responses from the class.]

What are Fortified Foods?

- More nutrients are added to the original amount. Such as:



Cereals



Soy products



Juices

Lesson 5: Increasing Plant-based Foods in School Nutrition Programs

Slide 14

Slide 14

Slide 14

Those were great answers!

In plant-based diets many nutrients come from fortified foods. Fortified foods are foods with more nutrients added to the original amount. For example, fortified foods are often cereals, soy products, and juices. These foods make up an important part of plant-based meals because they provide a more complete range of nutrients.

Always check nutrition fact labels to verify that foods are fortified with the nutrients you are looking for. For example, you might be looking for calcium-fortified soy or vitamin D fortified juices.

Potential Health Benefits

- Lowers risk for
 - Obesity
 - Cardiovascular disease
 - Diabetes
 - Hypertension
 - Certain types of cancers

Lesson 5: Increasing Plant-based Foods in School Nutrition Programs Slide 15

Slide 15

Slide 15

In the long run, eating plant-based diets may reduce the risk factors of obesity, cardiovascular disease, diabetes, hypertension, and certain types of cancers.

Diets rich in plant-based foods are also linked to lower rates of obesity and a decrease in both cholesterol and blood pressure.

Let's take a deeper look at why the risk factors of certain chronic diseases may decrease. Keep in mind this is not a comprehensive take on nutrition and disease, but a brief overview of how plant-based foods can help reduce the risk factors that contribute to chronic disease.

Potential Health Benefits

```

    graph LR
      A[Plant-based foods] --- B[Nutrient-dense]
      A --- C[Often lower in calories than meats and cheeses]
      A --- D[Fiber may help you feel full longer]
  
```

Lesson 5: Increasing Plant-based Foods in School Nutrition Programs Slide 16

Slide 16

Slide 16

Reduced calorie diets can result in meaningful weight loss and health benefits that help fight obesity. Plant-based foods are usually nutrient dense and lower in calories than meals with meats and cheeses. The fiber and protein found in plant-based foods also keeps you feeling fuller for longer.

Potential Health Benefits

```

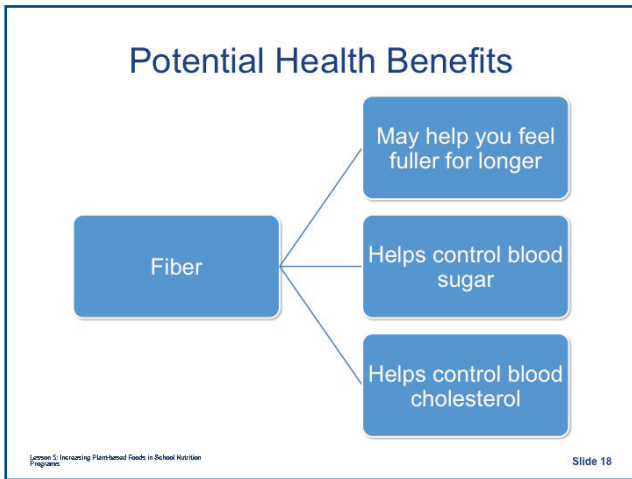
    graph LR
      A[Plant-based foods] --- B[Low in sodium]
      A --- C[High in potassium and magnesium]
      A --- D[High in many vitamins and minerals]
  
```

Lesson 5: Increasing Plant-based Foods in School Nutrition Programs Slide 17

Slide 17

Slide 17

Additionally, dietary choices can help control blood pressure to reduce the risk factors of hypertension and cardiovascular disease. For example, a common recommendation is to lower the amount of sodium in the diet from processed foods. However, it is also important to replace those foods with fruits and vegetables to increase the amount of potassium and magnesium in the diet.



Slide 18

Slide 18

Chronic diseases share similar risk factors with each other and reducing your risk for one may lower the risk of several others. For example, in plant-based foods fiber has many functions such as helping you feel fuller for longer, controlling blood sugar, and controlling blood cholesterol. These effects contribute to lowering the risk factors of several conditions we discussed like diabetes and cardiovascular disease at the same time.

Fruit and Vegetable Consumption in Adolescents

Percent of California adolescents (grades 9-12) who consume fruits or vegetables **less than 1 time per day** (2015).

	Fruits	Vegetables
California	32.3%	38.4%
National	36.7%	39.0%

Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity and Obesity. Data, Trends and Maps [online]. [accessed May 22, 2017]. URL: <https://www.cdc.gov/nccdphp/dnpao/data-trends/maps/index.html>

Lesson 5: Increasing Plant-based Foods in School Nutrition Programs Slide 19

Slide 19

Slide 19

Unfortunately, data from the Centers for Disease Control and Prevention (CDC) suggest that in 2015 around a third of California adolescents in grades 9-12 eat fruits and vegetables less than 1 time per day. These number were similar for adults. Keep in mind that one of the key recommendations of the Dietary Guidelines is to increase consumption of fruits and vegetables across all age groups. There are many strategies to encourage children and adolescents to eat more plant-based foods, let's discuss some of them.

Mix it Up!

1. Build meals around protein
2. Use calcium-fortified, soy-based beverages
3. Turn meat-based foods into plant-based ones
4. Try ethnic cuisines

Lesson 5: Increasing Plant-based Foods in School Nutrition Programs

Slide 20

Slide 20

Slide 20

Many school districts in California are serving creative plant-based meals. Here are five suggestions to try at work or at home to start serving plant-based meals of your own.

1. Build meals around protein. Use sources that are naturally low in fat like beans and rice. Avoid overloading meals with meat and cheese.
2. Use calcium-fortified, soy-based beverages: Soy foods provide calcium in similar amounts to milk and also contain less saturated fat.
3. Turn meat-based foods into plant-based ones: Many meat-based dishes can be adapted to be plant-based by swapping out or adding ingredients. For example, you could try black bean casserole, Greek quinoa, or garbanzo bean salad.
4. Try ethnic cuisines: Mediterranean, Indian, Middle Eastern, Hispanic, Asian, and foods have many nutritious plant-based dishes to draw inspiration from. Try something new.

MyPlate Strategies

1. Include beans and peas
2. Nuts make great snacks
3. Make some small changes at restaurants

Lesson 5: Increasing Plant-based Foods in School Nutrition Programs

Slide 21

Slide 21

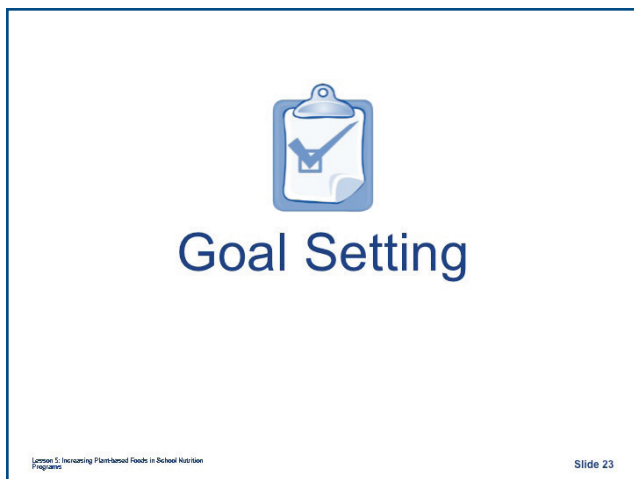
Slide 21

MyPlate also has great recommendations for eating more plant-based foods.

1. Include beans and peas. Vegetarian chili, three bean salad, or split pea soup are all ways to enjoy beans and peas in meals.
2. Nuts make great snacks. Unsalted almonds, walnuts, or pecans can be in side dishes or salads. Lastly,
3. Make some small changes in restaurants. Ask restaurants for vegetarian options or if substitutions are available like tofu and beans for meat.

Which of these strategies do you like the most?

[Pause to allow responses from the class.]



Slide 22

Slide 22

Whether it is at home, at school, or in the community there are many settings to promote plant-based foods. For example, at home you might consider family meal planning or cooking. Schools might participate in Meatless Mondays or include healthy meals and snacks in their menus. Communities may have farmer's markets or community gardens to visit. Incorporating more plant-based foods is a great way for everyone to model healthful meals, eat more fruits and vegetables, and help meet nutrient recommendations.

5.3: Goal Setting Activity

Overview

In this activity, participants will use what they've learned to set goals for incorporating more plant-based foods in their lives.

Getting Ready

Time Required

5 minutes

Materials Needed

(Materials provided in the curriculum)

For the Facilitator Optional: <input type="checkbox"/> Lesson 5 (PowerPoint) <input type="checkbox"/> Computer <input type="checkbox"/> PowerPoint Projector	For Each Group of 2-4 Participants <input type="checkbox"/> Food Cards (<i>Lesson Material 5-B</i>)
For the Class <input type="checkbox"/> None	For Each Participant <input type="checkbox"/> Goal Setting – Increasing Plant-based Foods in School Nutrition Programs (<i>Activity Sheet 5-D</i>) Optional: <input type="checkbox"/> Focus on Food Lesson 5 Newsletter (<i>Handout 5-E</i>)

Preparation

Handouts

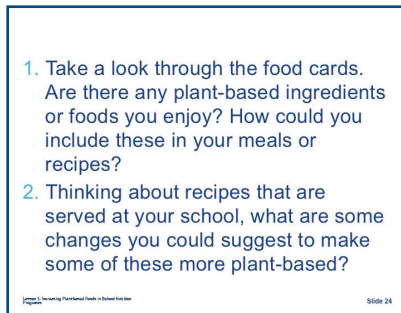
1. Make copies of the following handouts:
 - **Goal Setting – Increasing Plant-based Foods in School Nutrition Programs** (*Activity Sheet 5-D*), one for each participant.
 - Optional: **Focus on Food Lesson 5 Newsletter** (*Handout 5-E*), one for each participant.

Projector Set-Up

2. Connect laptop to projector. Load Focus on Food Lesson 5 (PowerPoint).
3. Queue the PowerPoint presentation to Slide 23.



Slide 21



Slide 22



Slide 23

Procedure

1. **Say:** Now let's move onto Goal Setting! **(Slide 21)** We've worked on adapting recipes to make them more plant-based. The next step is to set some goals and make a plan. I am going to distribute a Goal Setting Handout that has the following questions: **(Slide 22)**
 - Take a look through the food cards. Are there any plant-based ingredients or foods you enjoy? How could you include these in your meals or recipes?
 - Thinking about recipes that are served at your school, what are some changes you could suggest to make some of these more plant-based?
 2. **Do:** Provide a copy of the ***Goal Setting – Increasing Plant-based Foods in School Nutrition Programs (Activity Sheet 5-D)*** to each participant. Allow participants a few minutes to complete the handout.
 3. **Say:** Would anyone like to share the goals they set for themselves?
 4. **Do:** Allow participants to share their goals.
- Optional:**
5. **Say:** I'm going to distribute one last handout, which is a newsletter with some extra information you might be interested in. Thank you all for participating in Lesson 5! **(Slide 23)**
 6. **Do:** Provide a copy of the ***Focus on Food Lesson 5 Newsletter (Handout 5-E)*** to each participant.



INGREDIENTS:

- ★ Ground beef
- ★ Mozzarella cheese
- ★ Ricotta cheese
- Finely chopped onion
- Minced garlic cloves
- Tomato sauce
- Tomato juice
- Dry lasagna noodles
- Shredded mozzarella cheese
- Grated Parmesan cheese

TOTAL NUTRIENTS/PORTION:

Calories	329 kcal
Carbohydrates	26 grams
Protein	20 grams
Fat	16 grams
Fiber	2 grams
Iron	3 milligrams

INGREDIENT FACTS:

Ground Beef

1.6 oz/portion

Protein	13 grams
Fat	3.5 grams
Calcium	4 milligrams
Potassium	208 milligrams
Iron	1.46 milligrams
Fiber	0 grams

Mozzarella Cheese

0.8 oz/portion

Protein	5.36 grams
Fat	4.47 grams
Calcium	162 milligrams
Potassium	30 milligrams
Iron	0.05 milligrams
Fiber	0 grams

Ricotta cheese

0.8 oz/portion

Protein	2.58 grams
Fat	1.79 grams
Calcium	62 milligrams
Potassium	28 milligrams
Iron	0.10 milligrams
Fiber	0 grams



SPAGHETTI WITH MEAT SAUCE

INGREDIENTS:

- ★ Ground beef
- ★ Spaghetti
- Tomato puree
- Tomato sauce
- Onions, chopped
- Garlic cloves, minced
- Worcestershire sauce

INGREDIENT FACTS:

Ground Beef

2.5 oz/portion

Protein	21	grams
Fat	5	grams
Calcium	6	milligrams
Potassium	325	milligrams
Iron	2.29	milligrams
Fiber	0	grams

Spaghetti

1.6 oz/portion

Protein	5.6	grams
Fat	0.80	grams
Calcium	0	milligrams
Potassium	67	milligrams
Iron	1.44	milligrams
Fiber	0	grams

TOTAL NUTRIENTS/PORTION:

Calories	371	kcal
Carbohydrates	48	grams
Protein	21	grams
Fat	11	grams
Fiber	4	grams
Iron	6	milligrams



PASTA, BEEF, AND TOMATO CASSEROLE

INGREDIENTS:

- ★ Ground beef
- ★ Pasta, elbows
- Onions, chopped
- Celery, chopped
- Diced tomatoes, canned
- Tomato puree
- Chile sauce

TOTAL NUTRIENTS/PORTION:

Calories	313 kcal
Carbohydrates	27 grams
Protein	22 grams
Fat	13 grams
Fiber	1 grams
Iron	4 milligrams

INGREDIENT FACTS:

Ground Beef

2.24 oz/portion

Protein	18.5 grams
Fat	4.81 grams
Calcium	6 milligrams
Potassium	291 milligrams
Iron	2 milligrams
Fiber	0 grams

Pasta, elbows

0.8 oz/portion

Protein	2.83 grams
Fat	0.41 grams
Calcium	0 milligrams
Potassium	34 milligrams
Iron	0.73 milligrams
Fiber	0.8 grams



BEEF, PORK, AND NOODLE CASSEROLE

INGREDIENTS:

- ★ Ground beef
- ★ Ground pork
- ★ Cheddar cheese, grated or ground
- Onions, finely chopped
- Tomato soup
- Noodles
- Bread crumbs

TOTAL NUTRIENTS/PORTION:

Calories	332	kcal
Carbohydrates	21	grams
Protein	20	grams
Fat	18	grams
Fiber	1	grams
Iron	3	milligrams

INGREDIENT FACTS:

Ground Beef

1.28 oz/portion

Protein	10.6	grams
Fat	2.75	grams
Calcium	3	milligrams
Potassium	166	milligrams
Iron	1.17	milligrams
Fiber	0	grams

Ground Pork

1.28 oz/portion

Protein	9.38	grams
Fat	7.53	grams
Calcium	8	milligrams
Potassium	131	milligrams
Iron	0.47	milligrams
Fiber	0	grams

Cheddar cheese

0.64 oz/portion

Protein	4.15	grams
Fat	6.04	grams
Calcium	129	milligrams
Potassium	14	milligrams
Iron	0.03	milligrams
Fiber	0	grams



TERIYAKI CHICKEN AND RICE

INGREDIENTS:

- ★ Chicken breasts
- ★ Teriyaki sauce
- ★ White rice
- Orange juice
- Dijon mustard
- Dried parsley
- Honey

TOTAL NUTRIENTS/PORTION:

Calories	250 kcal
Carbohydrates	38.9 grams
Protein	20.6 grams
Fat	2.1 grams
Fiber	0.3 grams
Iron	2.33 milligrams

INGREDIENT FACTS:

Chicken breasts

2 oz/portion

Protein	17.7 grams
Fat	2.03 grams
Calcium	9 milligrams
Potassium	146 milligrams
Iron	0.59 milligrams
Fiber	0 grams

Teriyaki sauce

1 serving

Protein	0.73 grams
Fat	0.12 grams
Calcium	8 milligrams
Potassium	0 milligrams
Iron	0.40 milligrams
Fiber	0 grams

White rice

0.5 cups/serving

Protein	2.21 grams
Fat	0.20 grams
Calcium	3 milligrams
Potassium	27 milligrams
Iron	1.39 milligrams
Fiber	0.3 grams

Food Cards

Tofu (Firm)**¼ block**

Protein – 7.32 grams
 Fat – 3.38 grams
 Calcium – 553 milligrams
 Potassium – 192 milligrams
 Iron – 2.15 grams
 Fiber – 1.9 grams

Wild Rice**½ cup**

Protein – 3.27 grams
 Fat – 0.28 grams
 Calcium – 2 milligrams
 Potassium – 83 milligrams
 Iron – 0.5 grams
 Fiber – 1.5 grams

Tempeh**3 ounces**

Protein – 16.92 gram
 Fat – 9.67 grams
 Calcium – 82 milligrams
 Potassium – 341 milligrams
 Iron – 1.81 milligrams
 Fiber – 0 grams

Corn Tortilla**1 ounce**

Protein – 1.62 grams
 Fat – 0.81 grams
 Calcium – 50 milligrams
 Potassium – 44 milligrams
 Iron – 0.4 grams
 Fiber – 1.5 grams

Green Peas (Raw)**½ cup**

Protein – 3.93 grams
 Fat – 0.29 grams
 Calcium – 18 milligrams
 Potassium – 177 milligrams
 Iron – 1.07 grams
 Fiber – 4.1 grams

Almonds**1 ounce**

Protein – 5.94 grams
 Fat – 14.90 grams
 Calcium – 76 milligrams
 Potassium – 208 milligrams
 Iron – 1 gram
 Fiber – 3.5 grams

Black Beans (cooked) $\frac{1}{2}$ cup

Protein – 7.62 grams
 Fat – 0.46 grams
 Calcium – 23 milligrams
 Potassium – 305 milligrams
 Iron – 1.81 grams
 Fiber – 7.5 grams

Green Beans (Cooked) $\frac{1}{2}$ cup

Protein – 1.18 grams
 Fat – 0.17 grams
 Calcium – 28 milligrams
 Potassium – 91 milligrams
 Iron – 0.41 grams
 Fiber – 2 grams

Brown Rice (Cooked) $\frac{1}{2}$ cup

Protein – 2.25 grams
 Fat – 0.81 grams
 Calcium – 5 milligrams
 Potassium – 33 milligrams
 Iron – 0.25 grams
 Fiber – 0.9 grams

Broccoli (Cooked) $\frac{1}{2}$ cup

Protein – 1.86 grams
 Fat – 0.32 grams
 Calcium – 31 milligrams
 Potassium – 229 milligrams
 Iron – 0.52 grams
 Fiber – 2.6 grams

Baked Potato (With skin)

1 medium

Protein – 4.33 grams
 Fat – 0.22
 Calcium – 26 milligrams
 Potassium – 926 milligrams
 Iron – 1.9 grams
 Fiber – 3.8 grams

Kale (Cooked) $\frac{1}{2}$ cup

Protein – 1.24 grams
 Fat – 0.26 grams
 Calcium – 47 milligrams
 Potassium – 148 milligrams
 Iron – 0.58 milligrams
 Fiber – 1.3 grams

Acorn Squash (Cooked) $\frac{1}{2}$ cup, cubes

Protein – 1.15 grams
Fat – 0.14 grams
Calcium – 45 milligrams
Potassium – 448 milligrams
Iron – 0.95 grams
Fiber – 4.5 grams

Carrots (Raw) $\frac{1}{4}$ cup

Protein – 0.30 grams
Fat – 0.08 grams
Calcium – 11 milligrams
Potassium – 102 milligrams
Iron – 0.1 grams
Fiber – 0.9 grams

Corn (Yellow) $\frac{1}{2}$ cup

Protein – 2.54 grams
Fat – 1.12 grams
Calcium – 2 milligrams
Potassium – 162 milligrams
Iron – 0.34 grams
Fiber – 1.8 grams

Cherry Tomatoes $\frac{1}{4}$ cup

Protein – 0.50 grams
Fat – 0 grams
Calcium – 4 milligrams
Potassium – 88 milligrams
Iron – 0 grams
Fiber – 0.1 grams

White Beans (Canned) $\frac{1}{2}$ cup

Protein – 9.51 grams
Fat – 0.38
Calcium – 97 milligrams
Potassium – 595 milligrams
Iron – 3.9 grams
Fiber – 6.3 grams

Asparagus (Cooked) $\frac{1}{2}$ cup

Protein – 2.16 grams
Fat – 0.20 grams
Calcium – 21 milligrams
Potassium – 202 milligrams
Iron – 0.82 grams
Fiber – 1.8 grams

Soybeans $\frac{1}{2}$ cup

Protein – 11.12 grams
 Fat – 5.76 grams
 Calcium – 130 milligrams
 Potassium – 485 milligrams
 Iron – 2.25 grams
 Fiber – 3.8 grams

Dates $\frac{1}{4}$ cup

Protein – 0.9 grams
 Fat – 0.6 grams
 Calcium – 14 milligrams
 Potassium – 241 milligrams
 Iron – 0.37 grams
 Fiber – 3 grams

White Mushrooms (Raw) $\frac{1}{2}$ cup

Protein – 1 gram
 Fat – 0 grams
 Calcium – 1 milligrams
 Potassium – 111 milligrams
 Iron – 0.17 grams
 Fiber – 0.3 grams

**Mixed Vegetables
(Cooked)**

1 cup

Protein – 4.22 grams
 Fat – 0.41 grams
 Calcium – 44 milligrams
 Potassium – 474 milligrams
 Iron – 1.71 grams
 Fiber – 4.9 grams

Pinto Beans (Canned) $\frac{1}{2}$ cup

Protein – 7.70 grams
 Fat – 0.56 grams
 Calcium – 39 milligrams
 Potassium – 373 milligrams
 Iron – 1.79 grams
 Fiber – 7.7 grams

Spinach (Raw)

1 cup

Protein – 0.86 grams
 Fat – 0.12 grams
 Calcium – 30 milligrams
 Potassium – 167 milligrams
 Iron – 0.8 grams
 Fiber – 0.7 grams

Spaghetti Squash $\frac{1}{2}$ cup

Protein – 0.51 grams
 Fat – 0.20 grams
 Calcium – 16 milligrams
 Potassium – 91 milligrams
 Iron – 0.26 milligrams
 Fiber – 1.1 grams

Zucchini (cooked w/skin) $\frac{1}{4}$ cup

Protein – 0.51 grams
 Fat – 0.16 grams
 Calcium – 8 milligrams
 Potassium – 119 milligrams
 Iron – 0.17 milligrams
 Fiber – 0.5 grams

**Yellow Squash
(cooked w/skin)** $\frac{1}{4}$ cup

Protein – 0.47 grams
 Fat – 0.18 grams
 Calcium – 10 milligrams
 Potassium – 80 milligrams
 Iron – 0.17 milligrams
 Fiber – 0.5 grams

Avocado $\frac{1}{2}$ cup, pureed

Protein – 2.25 grams
 Fat – 17.72 grams
 Calcium – 15 milligrams
 Potassium – 583 milligrams
 Iron – 0.70 milligrams
 Fiber – 7.8 grams

Sweet potato

1 small

Protein – 1.21 grams
 Fat – 2.0 grams
 Calcium – 23 milligrams
 Potassium – 285 milligrams
 Iron – 0.41 milligrams
 Fiber – 2.0 grams

Sunbutter spread

2 Tbsp.

Protein – 6.00 grams
 Calcium – 0 milligrams
 Potassium – 180 milligrams
 Iron – 1.44 milligrams
 Fiber – 2.0 grams

Recipe Changes Worksheet

Describe the changes that you made to the recipe

Explain why you made those changes.

Which nutrients increased and by how much? Which decreased?

Focus on Food Lesson 5 Newsletter

The optional newsletter on the following pages is designed to help reinforce the concepts learned. If offering this course in a single workshop, you may wish to distribute the lesson newsletters weekly in order to help refresh participants' memory and solidify the concepts.

Increasing Plant-Based Foods in School Nutrition Programs

In this issue...

Are All Vegetarian Diets the Same? Page 2

Going Plant-Based for Your Health Page 2

Delicious Dunking Dip Recipe! Page 3

What is Fortification? Page 3

Five Tips for Planning Plant-Based Meals Page 4

Getting Your Nutrients From Plant-Based Sources Page 4

Test your knowledge! Take the plant-based foods quiz! Page 5



Plant-based is great!

Maybe you've heard that meatless meals are a trend. Not only are they trendy, they can be really healthy too! Plant-based foods are some of the best sources of several nutrients, such as potassium, vitamin C, and folate.

There are many reasons why people are choosing to eat plant-based meals, such as for personal health benefits, environmental concerns, or because it can be less expensive than eating meat. Some people even choose to eat an entirely plant-based diet, which is usually referred to as a vegetarian diet. So how can we eat a more plant-based diet? Why should we?

Turn the page to learn more!



Did you know?

Getting the benefits from plant-based foods doesn't mean you have to be 100% meat-free! It just means focusing on healthy plant-based foods!



Are all vegetarian diets the same?

Nope! There are many different types of vegetarian diets. Here are a few of the most common ones:

Vegetarian: A diet that does not include meat, poultry, or fish, but might include eggs, dairy, or both.

Semi-vegetarian: A diet that is mostly vegetarian, but includes small amounts of poultry, eggs, dairy, or fish from time to time.

Pescatarian: A diet that includes fish, but not other types of meat.

Vegan: A diet that does not contain any animal products including meat, poultry, fish, eggs, dairy, or gelatin.



Going Plant-Based for Your Health

Benefits of a plant-based diet

Plant-based diets have many potential health benefits. Research shows that vegetarians have a **lower risk** of developing heart disease and certain types of cancer.

This might be because vegetarian diets often have **more fiber** and **lower saturated fat** compared to diets with meat.

Let's not forget all the great nutrients in plant-based foods including **dietary fiber** and **phytonutrients** (which aren't found in animal foods at all!), as well as **calcium**, **iron**, **potassium**, **folate**, **vitamin A**, and **vitamin C**.

Most Americans aren't eating enough fruits, vegetables, and whole grains and eating plant-based meals is a great way to add more of these foods to your diet!

Plant-based diets are also a way to introduce children to fruits and vegetables at a young age to help them start **healthy habits** that last a lifetime!

Delicious Dunking Dip Recipe!

This recipe is a great plant-based snack that goes well with a variety of fresh veggies and whole grain crackers or pitas.

Recipe serves 4-6 people



Dunking Dip:

- 1 15-oz can cannellini or garbanzo beans, drained
- 3 cloves garlic, roughly chopped
- 1 cup spinach
- 2 tablespoons tahini (sesame seed paste)
- 2 tablespoons lemon juice from 2 lemons
- 1/4 cup extra virgin olive oil
- 2 tablespoons rice vinegar
- 1/2 teaspoon salt



Dunkers:

- Carrots sliced into large medallions (baby carrots work great too!)
- Broccoli, cut into bite-size florets
- Radishes, sliced
- Cauliflower, cut into bite-size pieces
- Asparagus, sliced into bite-size pieces
- Whole wheat pita bread, cut into pieces
- Whole wheat crackers

These dunkers are just some suggestions. Try it with your favorite fresh veggies!

Directions:

1. In a food processor or blender, blend all Dunking Dip ingredients for approximately 2 minutes until smooth.
2. Place bean dip in a serving bowl.
3. Scoop bean dip with various vegetable and whole grain dunkers to enjoy!

Recipe courtesy of Cooking Up Healthy Choices. For more information about this curriculum, please visit: <http://cns.ucdavis.edu/programs/shcp/cooking.html>.



What is fortification?

Fortifying foods with nutrients means that more is added to the original amount. For those that go entirely plant-based (such as vegetarians or vegans), fortified foods are important. For example, vegetarians who don't eat dairy should get calcium from a combination of foods that are calcium-fortified. In fact, schools that serve soy milk in the lunch or breakfast program need to make sure that the soy milk they serve is fortified so that it has the same amount of nutrients as regular milk.

Five Tips for Planning Plant-Based Meals



1 Build your meals around protein: Use sources that are naturally low in fat such as: beans, lentils, and rice. Avoid overloading meals with high-fat cheeses to replace meat.

2 Use calcium-fortified, soy-based beverages such as soy milk: These can provide calcium in amounts similar to milk, and also be lower in saturated fat.

3 Choose complementary foods: Complementary foods such as beans and brown rice, lentil soup and bread, tofu or tempeh with quinoa, or even a peanut butter sandwich (but don't forget to go whole grain) allow the right combinations of essential protein to be included in the diet.



4 Turn meat-based dishes into plant-based dishes: Many recipes that contain meat can be adapted to be plant-based by substituting tofu, beans, or lentils for meat.

5 Try ethnic cuisines: Indian, Middle Eastern, Hispanic, and Asian foods have many plant-based dishes that have plenty of protein from beans, nuts, and high-protein grains.

Getting Your Nutrients from Plant-Based Sources

Protein: Beans, nuts, quinoa, tofu, and other soy-based protein foods

Iron: Dried or fortified beans, cereals, spinach, chard, and dried fruit

Calcium: Collard greens, spinach, almonds, calcium-fortified orange juice, fortified cereal, fortified soymilk, and tofu

Vitamin B12: Vitamin supplements,

fortified breakfast cereals, fortified soymilk, and nutritional yeast

Vitamin D: Fortified breakfast cereals, fortified soymilk, and fortified orange juice

Omega-3 Fatty Acids: Walnuts and ground flaxseeds

Zinc: Whole grains, nuts, and legumes

Test your knowledge with the plant-based foods quiz!

1. What does it mean for a food to be fortified?
 - a. It is unprocessed.
 - b. It has fewer calories.
 - c. Nutrients are removed in processing.
 - d. More of a nutrient is added to the original amount.
2. Which of the following is generally true about vegan diets?
 - a. They contain small amounts of eggs and dairy.
 - b. They include small amounts of poultry and fish.
 - c. No animal products of any kind are included.
 - d. They only include raw foods.
3. True or false: Walnuts are a source of omega-3 fatty acids.
 True
 False
4. Which of these foods is a good source of protein?
 - a. Quinoa
 - a. Dried fruit
 - b. Orange juice
 - c. Bell pepper



The Results are In!

If you got all four right:

You really know your plant-based foods! Keep on learning more and trying new foods.

If you got two or three right:

You're on the right track! Try finding the information you missed in the other pages of the newsletter to become a nutrient master.

If you got one or less right:

It just means you have more chances to learn! Try reading through this newsletter again to learn more about what you missed.

Check your answers at the bottom of the page!

1. d; 2. c; 3. True; 4. a.

