

Specialty Crops

Fruits and Vegetables

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North Dakota farmers grow many types of fruits and vegetables. Farmers start the process that brings fruits and vegetables to our plates. Fruits and vegetables take a journey through the agriculture cycle, which includes production, processing, distribution and consumption. Without any one of these steps, we would not have the local, fresh fruits and vegetables on our plate that help us stay healthy.

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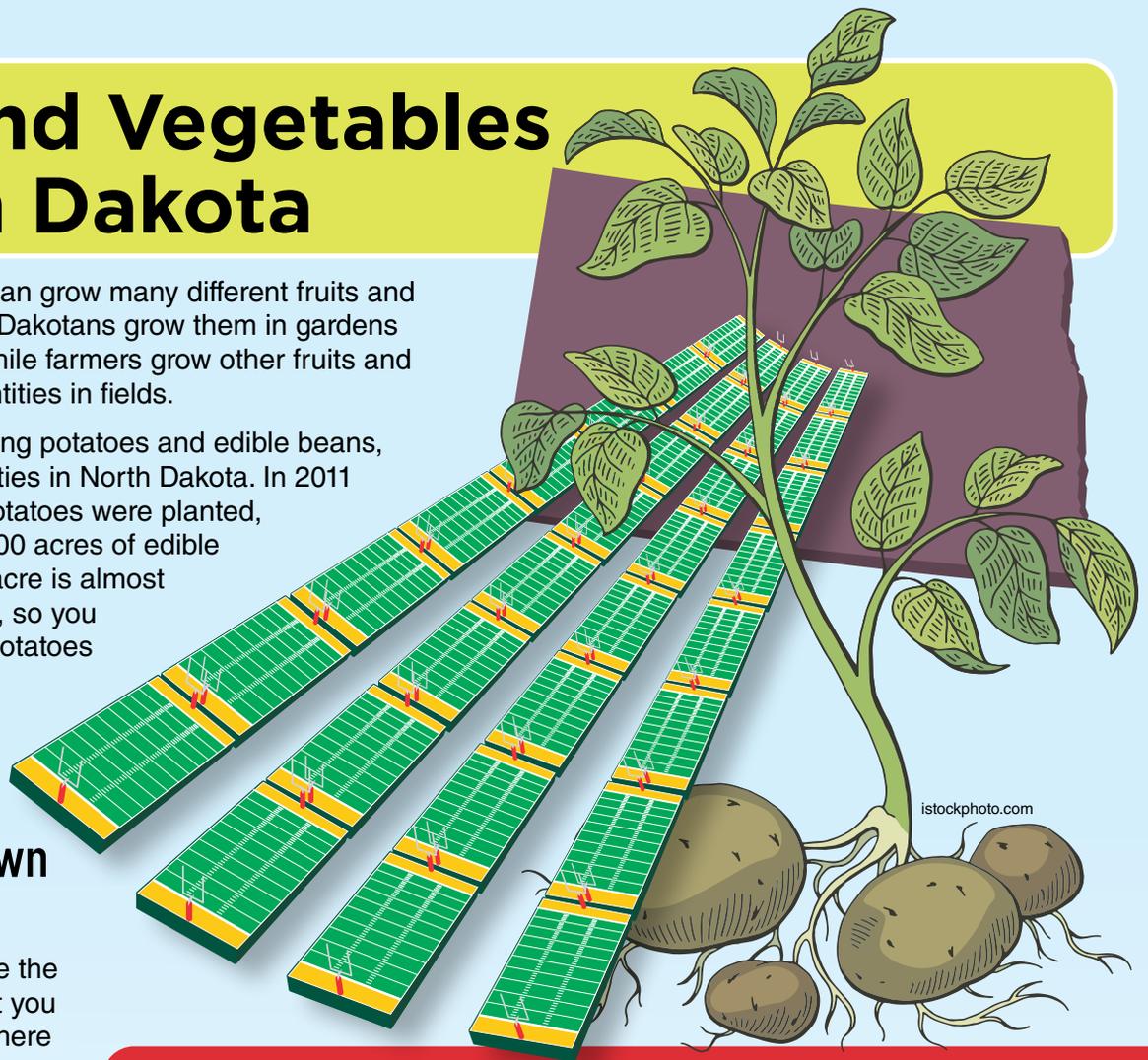
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Fruits and Vegetables in North Dakota

People in North Dakota can grow many different fruits and vegetables. Some North Dakotans grow them in gardens right in their own yard, while farmers grow other fruits and vegetables in larger quantities in fields.

Some vegetables, including potatoes and edible beans, are grown in large quantities in North Dakota. In 2011 alone, 84,000 acres of potatoes were planted, and in 2013, almost 60,000 acres of edible beans were planted. An acre is almost the size of a football field, so you can imagine how many potatoes and beans that is!



What can be grown in North Dakota?

Using the list below, circle the fruits and vegetables that you think can be grown right here in North Dakota.

Pineapple



Sweet corn



Avocado

Onions



Apples

Potatoes



Oranges

Cabbage



Tomatoes

Kiwi

Strawberries



Squash

Beans

Pomegranate

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Classifications

Fruits and vegetables can be classified into groups based on what part of the plant we eat. Fruits and vegetables can be broken into six main groups: roots, stems, flowers, fruits, leaves and seeds. Can you match the definition to the correct group?

A. Roots **B. Stems** **C. Flowers** **D. Fruits** **E. Leaves** **F. Seeds**

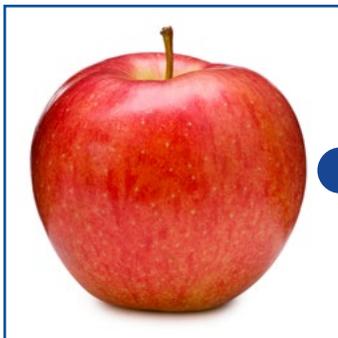
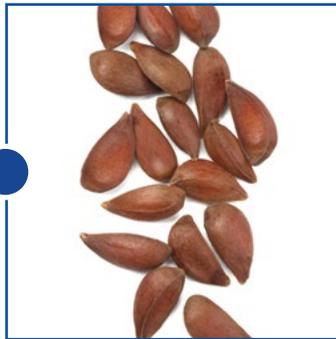
- _____ Grow underground to collect nutrients and water for the plant; also hold the plant in the ground. Examples: radish, carrot, potato
- _____ Brightly colored to attract bees to the plant so that buds can grow into fruits. Example: broccoli
- _____ Grow from the flowers that are on plants and produce seeds. Examples: squash, strawberry, tomato, pumpkin
- _____ When given the correct environment, will grow into a new plant. Examples: corn
- _____ Used to collect light that helps the plant produce food for itself. Examples: lettuce, spinach
- _____ Support the plant so that it can stand; also contain inner systems to transport nutrients around the plant. Example: celery

Production

Production is the process of making or growing something. In the agriculture cycle, production refers to the growing of crops such as fruits and vegetables. The production step is the first step in the cycle. Without this step, the product wouldn't be available to go through the rest of the cycle.

Fruits and vegetables start out as seeds. From there, they grow into plants or trees that produce the fruits and vegetables that we eat.

Match the fruits and vegetables below with their seeds.



Processing

Fruits and vegetables are naturally perishable foods, which means they spoil or go bad in a short amount of time. However, multiple ways are available to help preserve fruits and vegetables. Processing can take place at businesses or even in your own kitchen. Some examples of processing are canning, freezing and drying.

Name some fruit and vegetable products that have been processed.

Processing fruits and vegetables also plays a role in the nutritional value of the food. Depending on what is being processed, the nutritional value may be decreased or even enhanced by the processing step.





Specialty Crops

Circle the correct spelling of the words to complete each sentence.

- Specialty crops (require or reqier) special harvesting methods when they are done growing.
- **Apples, squash, pumpkins** and leafy (greans or greens) are some of the many specialty crops grown in North Dakota.
- Honeycrisp is a popular (variety or varitee) of apple grown and eaten in North Dakota.
- **Romaine lettuce, arugula** and **beet greens** are all types of leafy greens that provide us with important (nutrients or newtreants).
- Pumpkins are grown to carve into jack-o-lanterns, but they also are grown to eat, and they are very low in (calorees or calories).
- **Tomatoes** are a specialty crop that can be preserved by canning or (freesing or freezing).
- **Potatoes**, including **white, yellow, red** and **russet** varieties, are (groan or grown) in fields in North Dakota.

Label the different specialty crops by using the bolded words in the sentences above.

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E D S T A T E

Distribution

The distribution of fruits and vegetables can be as simple as picking vegetables from a garden and giving them to neighbors, or as complicated as using a semi-truck or ship to transport them to other states or countries. Just like we send our fruits and vegetables to other places, we must import some fruits and vegetables, or get them from other places. Below are a few fruits or vegetables and the countries from which we get them. Write the number for each of the countries in the circles where they are located.

- 1. Pineapple – Costa Rica
- 2. Bananas – Guatemala
- 3. Lemons – Columbia
- 4. Avocados – Mexico

Can you name some reasons why we would have to get fruits or vegetables from places other than North Dakota?

Consumption

The last step of the agriculture cycle is perhaps the tastiest. After the production, processing and distribution of fruits and vegetables, they end up on our plate. By adding fruits and vegetables to our plates, we add very valuable and needed nutrition.

Nutrition

Test your knowledge of fruit and vegetable nutrition by answering these true or false questions:

- T or F** Fruits contain vitamin C.
- T or F** Cooking vegetables causes the nutrients to be “cooked away.”
- T or F** Eating whole fruit provides you with fiber.
- T or F** A diet high in fruits can cause many health problems.
- T or F** Carrots get their orange color from vitamin K.
- T or F** We are supposed to eat a variety of colors of fruits and vegetables each day.



Food Safety

Handling fruits and vegetables safely is important because, just like other raw foods, they can cause food poisoning. You can take simple steps to prevent harmful bacteria from growing in fruits and vegetables. Follow the simple steps below to keep your fruits and vegetables safe to eat:

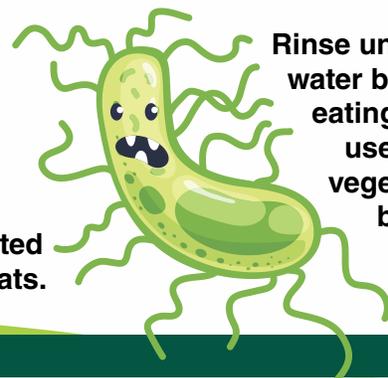
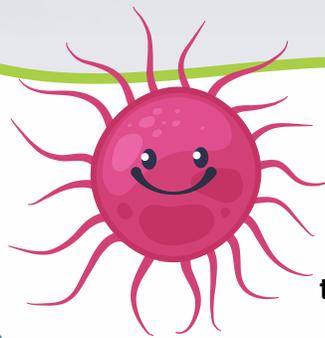
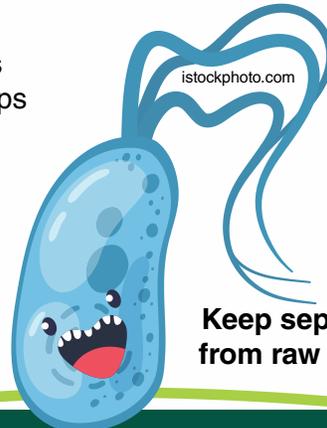
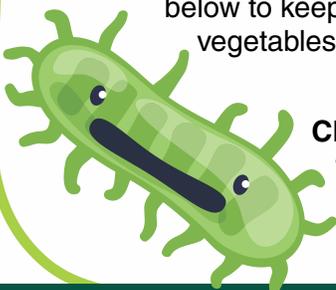
Chill after the fruit/vegetable has been cut.

Do not eat damaged/bruised areas.

Keep separated from raw meats.

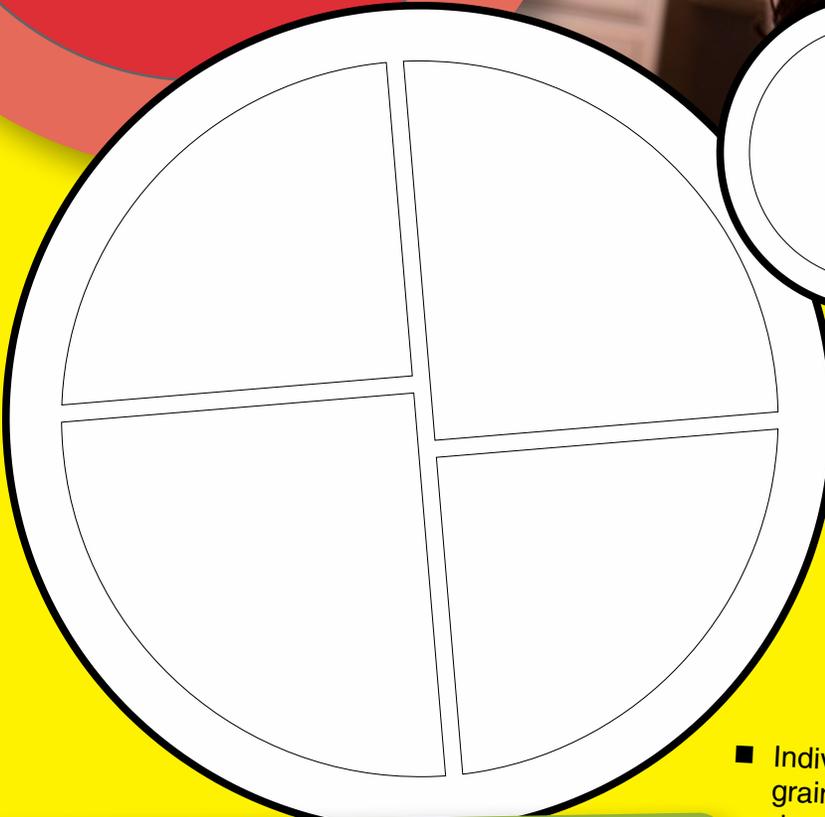
Wash hands and surfaces that fruits and vegetables touch.

Rinse under water before eating and use a vegetable brush if needed.



MyPlate

MyPlate, created by the U.S. Department of Agriculture, shares valuable information about the amount and types of food that are needed in our diet to meet our nutrition needs. About half our plates should consist of fruits and vegetables. The other parts of MyPlate are grains, protein and dairy. Can you label the plate below?



- Four- to 13-year-olds should eat 2 cups of vegetables a day and 1½ cups of fruit.
- People over the age of 13 should eat 2½ to 3½ cups of vegetables daily and from 1½ to 2 cups of fruit.
- A person should have three servings of dairy according to MyPlate.
- Individuals should consume 5 to 8 ounces of grain and 5 to 6½ ounces of protein each day, depending on a person's age.

Choose **MyPlate.gov**

Use your knowledge or explore the MyPlate website to complete the following math problems:

1. 12 baby carrots + 1 large sweet potato + 1 large green pepper = _____ cups of vegetables according to MyPlate.
2. One glass of milk + 2 cups of cottage cheese + 1 cup of yogurt = _____ servings of dairy. 1 MyPlate serving of cottage cheese = _____ cup(s).
3. 12 pounds cooked roast beef = _____ ounces = _____ 3-ounce servings.
4. _____ cup of chickpeas or baked beans = 3 ounce-equivalents.
5. At least half of our grains should be whole grains, so if we eat 5 ounces of grain today, how many ounces should be whole grains? _____



Try this tasty recipe to get your fill of vegetables.



Colorful Veggie Kabobs

NDSU Extension

Ingredients

- 2 medium zucchini, cut into 1-inch pieces
- 1 large onion, cut into ½-inch-thick pieces
- 1 green bell pepper, cut into 1-inch strips
- 1 yellow bell pepper, cut into 1-inch strips
- 1 small pkg. cherry tomatoes
- ½ lb. mushrooms, quartered
- ⅓ c. oil-based salad dressing, such as Italian

Directions

If using bamboo skewers, soak them in water for two hours prior to using (to reduce charring). Thread vegetables alternately on skewers. Brush generously with salad dressing. Grill for three minutes; turn vegetables over, brushing with extra salad dressing. Grill for another three to four minutes until done.

Not able to go outside? Try broiling the kabobs. Place an oiled pan with kabobs about 6 inches from the top of the preheated oven. Turn over once and cook until golden brown (about six minutes).

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Specialty Crop Fruits and Vegetables

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Teacher Guide/Answer Key

Overview: Fruits and Vegetables in the Agriculture Cycle

North Dakota farmers grow many types of fruits and vegetables. Farmers are the start of the process that brings fruits and vegetables to our plates. Fruits and vegetables take a journey through the agriculture cycle, which consists of production, processing, distribution and consumption. Without any one of these steps, we would not have the local, fresh fruits and vegetables on our plate that help us stay healthy.

Fruits and Vegetables in North Dakota

People in North Dakota can grow many different fruits and vegetables. Some North Dakotans grow them in gardens right in their own yard, while farmers grow other fruits and vegetables in larger quantities in fields.

Some vegetables grown in large quantities in North Dakota include potatoes and edible beans. In 2011 alone, 84,000 acres of potatoes were planted, and in 2013, almost 60,000 acres of edible beans were planted. An acre is almost the size of a football field, so you can imagine how many potatoes and beans that is!



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Answers to What can be grown in North Dakota?

Pineapple

Sweet corn

Avocado

Onions

Apples

Potatoes

Oranges

Cabbage

Tomatoes

Kiwi

Strawberries

Squash

Beans

Pomegranate

Classifications

Fruits and vegetables can be classified into groups based on what part of the plant we eat. Fruits and vegetables can be broken into six main groups: roots, stems, flowers, fruits, leaves and seeds. Can you match the definition to the correct group?

A. Roots **B.** Stems **C.** Flowers **D.** Fruits **E.** Leaves **F.** Seeds

A Grow underground to collect nutrients and water for the plant; also hold the plant in the ground. Examples: radish, carrot, potato

C Brightly colored to attract bees to the plant so that buds can grow into fruits. Example: broccoli

D Grow from the flowers that are on plants and produce seeds. Examples: squash, strawberry, tomato, pumpkin

F When given the correct environment, will grow into a new plant. Example: corn

E Used to collect light that helps the plant produce food for itself. Examples: lettuce, spinach

B Support the plant so that it can stand; also contain inner systems to transport nutrients around the plant. Example: celery

Idea: Have a variety of fruits and vegetables for students to try. (Note: Remember to consider food allergies.) As students try each fruit or vegetable, have them determine if it is a fruit or vegetable, what part of the plant it is from and what color group it fits into.

Production

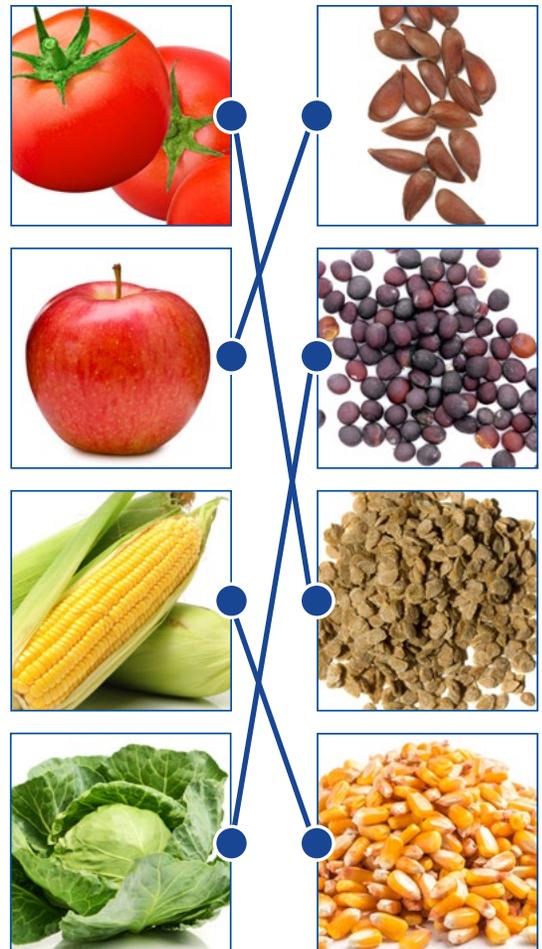
Production is the process of making or growing something. In the agriculture cycle, production refers to the growing of crops such as fruits and vegetables. The production step is the first step in the cycle. Without this step, no product would be available to go through the rest of the cycle.

Fruits and vegetables start out as seeds. From there, they grow into plants or trees that produce the fruits and vegetables we eat.

Idea: Provide seeds for vegetables such as peas, beans or tomatoes for students and allow them to plant the seeds. Have a discussion about how easy planting seeds is to produce food for themselves, and talk about how these plants can grow in small spaces such as a pot.

Idea: Plant Science — Use the plants that students are growing or bring in plants and talk about the conditions that plants need to grow, such as proper light, nutrients in the soil and water.

Answers to **Match the fruits and vegetables below with their seeds.**



Processing

Fruits and vegetables are naturally perishable foods, which means they spoil or go bad in a short amount of time. However we have multiple ways that help us keep fruits and veggies longer. These may take place at businesses or in your own kitchen. Some examples of processing include canning and freezing.

Answers for **Name some fruit and vegetable products that have been processed.**

jelly/jam, tomato sauce, pickles, raisins, banana chips, apple sauce

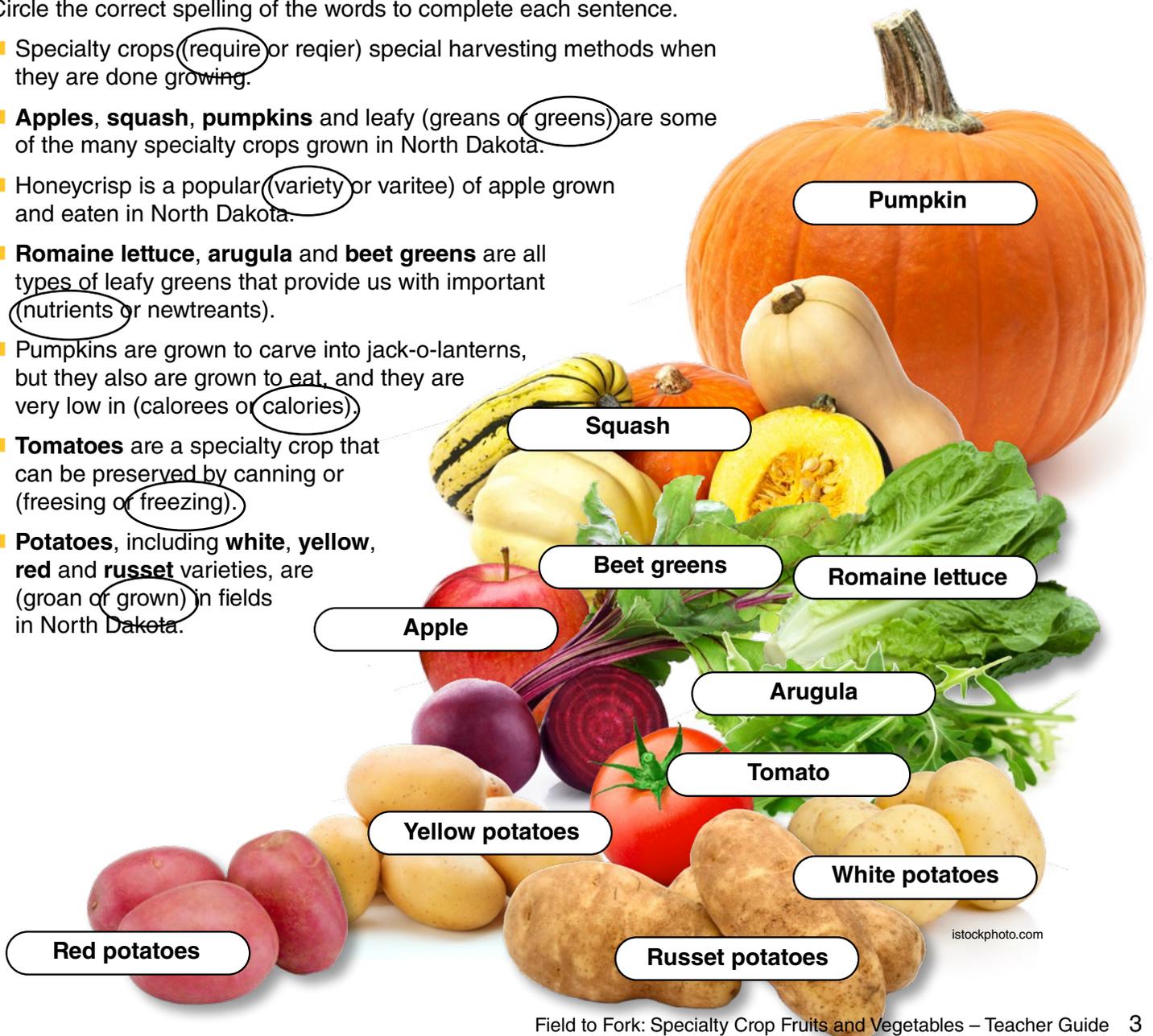
Processing fruits and vegetables also plays a role on the nutritional value of the food. Depending on what is being processed, the nutritional value may be decreased or even enhanced by the processing step.

Idea: As a class, set aside time to allow students to “process” their own food. This may be a beneficial time to discuss the nutrient retention in the specific food that you will be processing. Decide on a type of processing that you feel comfortable with and that you feel students can do. Some ideas are using applesauce to make fruit leather or making banana chips.

Specialty Crops

Circle the correct spelling of the words to complete each sentence.

- Specialty crops (require or reqier) special harvesting methods when they are done growing.
- Apples, squash, pumpkins and leafy (greans or greens) are some of the many specialty crops grown in North Dakota.
- Honeycrisp is a popular (variety or varitee) of apple grown and eaten in North Dakota.
- Romaine lettuce, arugula and beet greens are all types of leafy greens that provide us with important (nutrients or newtreants).
- Pumpkins are grown to carve into jack-o-lanterns, but they also are grown to eat, and they are very low in (calorees or calories).
- Tomatoes are a specialty crop that can be preserved by canning or (freeing or freezing).
- Potatoes, including white, yellow, red and russet varieties, are (groan or grown) in fields in North Dakota.



Distribution

The distribution of fruits and vegetables can be as simple as picking vegetables from a garden and giving them to neighbors, or as complicated as using a semi-truck or ship to transport them to other states or countries. Just like we send our fruits and vegetables to other places, we must import some fruits and vegetables, or get them from other places. Below are a few fruits or vegetables and the countries that we get them from:

1. Pineapple – Costa Rica
2. Bananas – Guatemala
3. Lemons – Columbia
4. Avocados – Mexico

Can you name some reasons why we would have to get fruits or vegetables from places other than North Dakota?

Idea: Have students work in pairs and pick a country from around the world. Provide an outline of facts about that country you would like them to know and then have pairs present. Some possible questions are:

- What types of fruits and vegetables are grown in this country?
- What foods are typically eaten in this country?
- Compare/contrast food and agriculture in this country and the U.S.
- How does this country distribute its food?



Consumption

The last step of the agriculture cycle is perhaps the tastiest. After the production, processing and distribution of fruits and vegetables, they end up on our plate. By adding fruits and vegetables to our plates, we add very valuable and needed nutrition.

Handling fruits and vegetables safely is important because, just like other raw foods, they can cause food poisoning. You can take simple steps to prevent harmful bacteria from growing in fruits and vegetables. Follow the simple steps below to keep your fruits and vegetables safe to eat:

- Do not eat damaged/bruised areas.
- Rinse under water and use a vegetable brush if needed.
- Keep separated from raw meats.
- Chill after the fruit/vegetable has been cut.
- Wash hands and surfaces that fruit and vegetables touch.

Nutrition – Answers

Test your knowledge of fruit and vegetable nutrition by answering these true or false questions:

- T** or **F** Fruits contain vitamin C.
- T** or **F** Cooking vegetables causes the nutrients to be “cooked away.”
- T** or **F** Eating whole fruit provides you with fiber.
- T** or **F** A diet high in fruits can cause many health problems.
- T** or **F** Carrots get their orange color from vitamin K.
- T** or **F** We are supposed to eat a variety of colors of fruits and vegetables each day.

Idea: Food Safety – Give students the following scenarios and allow them to figure out *what steps were taken or missed* to keep fruits and vegetables safe to eat.

- Maria got home after school and realized that *she still had apple slices leftover from breakfast sitting on the counter*. She decided the apple slices would be a good after-school snack even though the pieces had turned slightly brown.
– Maria didn’t refrigerate cut fruit.
- Ben had just finished preparing chicken breasts to go in the oven for dinner. He also decided that he should cut up some carrots to cook for a side. He realized that the *cutting board still had some chicken juices on it, so he decided to get a clean cutting board and knife out to use for his carrots*.
– Ben avoided cross-contamination.

Answers to MyPlate Math

Use your knowledge or explore the MyPlate website to complete the following math problems:

1. 12 baby carrots + 1 large sweet potato + 1 large green pepper = 3 cups of vegetables according to MyPlate.
2. One glass of milk + 2 cups of cottage cheese + 1 cup of yogurt = 3 servings of dairy. 1 MyPlate serving of cottage cheese = 2 cup(s).
3. 12 pounds cooked roast beef = 192 ounces = 64 3-ounce servings.
4. 3/4 cup of chickpeas or baked beans = 3 ounce-equivalent.
5. At least $\frac{1}{2}$ of our grains should be whole grains, so if we eat 5 ounces of grain today, how many ounces should be whole grains? 2 ½ ounces

MyPlate

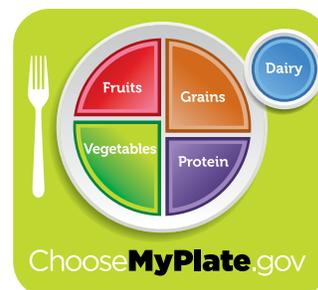
MyPlate, created by the U.S. Department of Agriculture, shares valuable information about the amount and types of food that are needed in our diet to meet our nutrition needs. About half our plates should consist of fruits and vegetables. The other parts of MyPlate are grains, protein and dairy. Can you label the plate correctly?

- Four- to 13-year-olds should eat 2 cups of vegetables a day, and 1½ cups of fruit.
- People over the age of 13 should eat 2½ to 3½ cups of vegetables daily and from 1½ to 2 cups of fruit.
- The recommendation is that daily, a person should eat three servings of dairy.
- The recommendation is that individuals consume 5 to 8 ounces of grain and 5 to 6½ ounces of protein each day, depending on a person’s age.

Idea: As a class, write down a “healthful” meal and a “less healthful” meal on the board. Have the students categorize each item into an area of MyPlate, if possible. Have them also estimate the calorie counts of each item, using the internet or any available resources. After this, calculate the calorie count for each meal and compare. Discuss why the healthful meal is better, and how it best fits with MyPlate and nutritional recommendations. Example meals:

Healthful: milk, rice, apple, cooked carrots and chicken breast

Less healthful: pop, doughnut, fries, chicken nuggets with ranch dressing



Try this tasty
recipe to get
your fill of
vegetables.



Colorful Veggie Kabobs

NDSU Extension

Ingredients

- 2 medium zucchini, cut into 1-inch pieces
- 1 large onion, cut into ½-inch-thick pieces
- 1 green bell pepper, cut into 1-inch strips
- 1 yellow bell pepper, cut into 1-inch strips
- 1 small pkg. cherry tomatoes
- ½ lb. mushrooms, quartered
- ⅓ c. oil-based salad dressing, such as Italian

Directions

If using bamboo skewers, soak them in water for two hours prior to using (to reduce charring). Thread vegetables alternately on skewers. Brush generously with salad dressing. Grill for three minutes; turn vegetables over, brushing with extra salad dressing. Grill for another three to four minutes until done.

Not able to go outside? Try broiling the kabobs. Place an oiled pan with kabobs about 6 inches from the top of the preheated oven. Turn over once and cook until golden brown (about six minutes).

See the NDSU Extension website for more recipe ideas:

www.ag.ndsu.edu/fieldtofork

January 2024

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Radish



Cauliflower

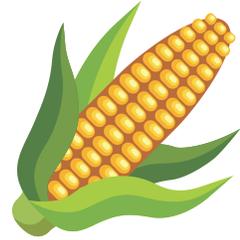


Cabbage

Carrot

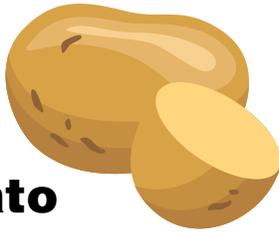


Squash



Corn

Potato

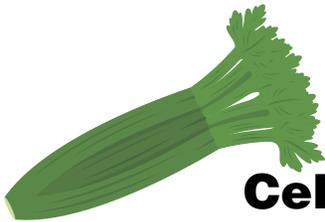


Strawberry



Peas

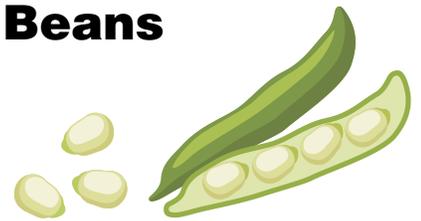
Celery



Cucumber



Beans



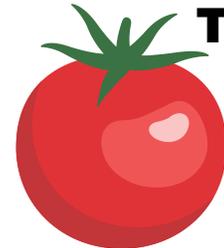
Asparagus



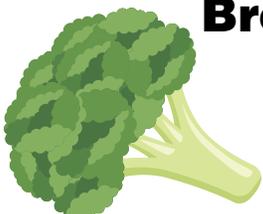
Lettuce



Tomato



Broccoli



Spinach



Pumpkin



Roots

Grow underground to collect nutrients and water for the plant; they also hold the plant in the ground

Match 'em Up

Stems

Support the plant so that it stands; also have an inner system that helps transport nutrients throughout the plant

Match 'em Up

Flowers

Often brightly colored to attract bees to the plant so that it can produce fruits

Match 'em Up

Fruits

Grow from flowers on the plant and contains the seed

Match 'em Up

Leaves

Collect light for the plant and helps produce food for the plant

Match 'em Up

Seeds

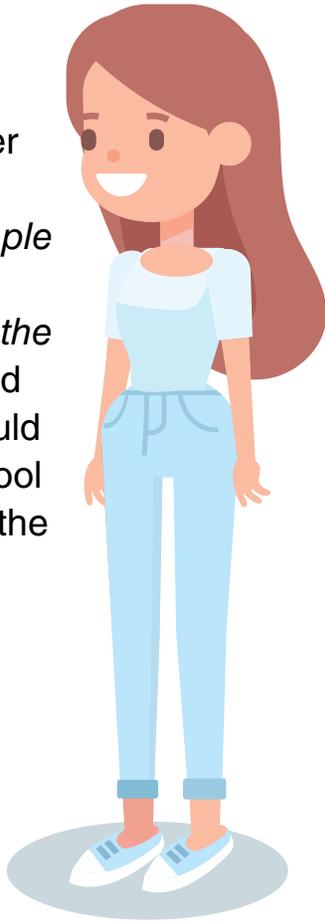
Part of the plant that may be used to grow a new plant under the right conditions

Match 'em Up

Maria got home after school and realized that *she still had apple slices leftover from breakfast sitting on the counter*. She decided the apple slices would be a good after-school snack even though the pieces had turned slightly brown.

Discuss.

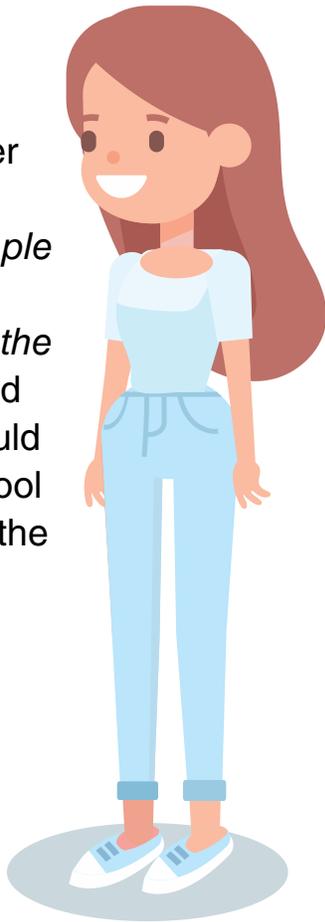
Food Safety



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Discuss.

Food Safety



Food Safety

Ben had just finished preparing chicken breasts to go in the oven for dinner. He also decided that he should cut up some carrots to cook for a side. He realized that the *cutting board still had some chicken juices on it*, so he decided to *get a clean cutting board and knife out to use for his carrots*.

Discuss.

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Discuss.



Oranges



Around the U.S.

Potatoes



Around the U.S.

Cabbages



Around the U.S.

Corn



Around the U.S.

Avocados



Around the U.S.

Blueberries



Around the U.S.

Strawberries



Around the U.S.

Cranberries



Around the U.S.

Pineapples



Around the U.S.

Apples



Around the U.S.

Peaches



Around the U.S.

Beans



Around the U.S.

Florida

Around the U.S.

Idaho

Around the U.S.

Alaska

Around the U.S.

Iowa

Around the U.S.

California

Around the U.S.

Maine

Around the U.S.

Delaware

Around the U.S.

Massachusetts

Around the U.S.

Hawaii

Around the U.S.

Minnesota

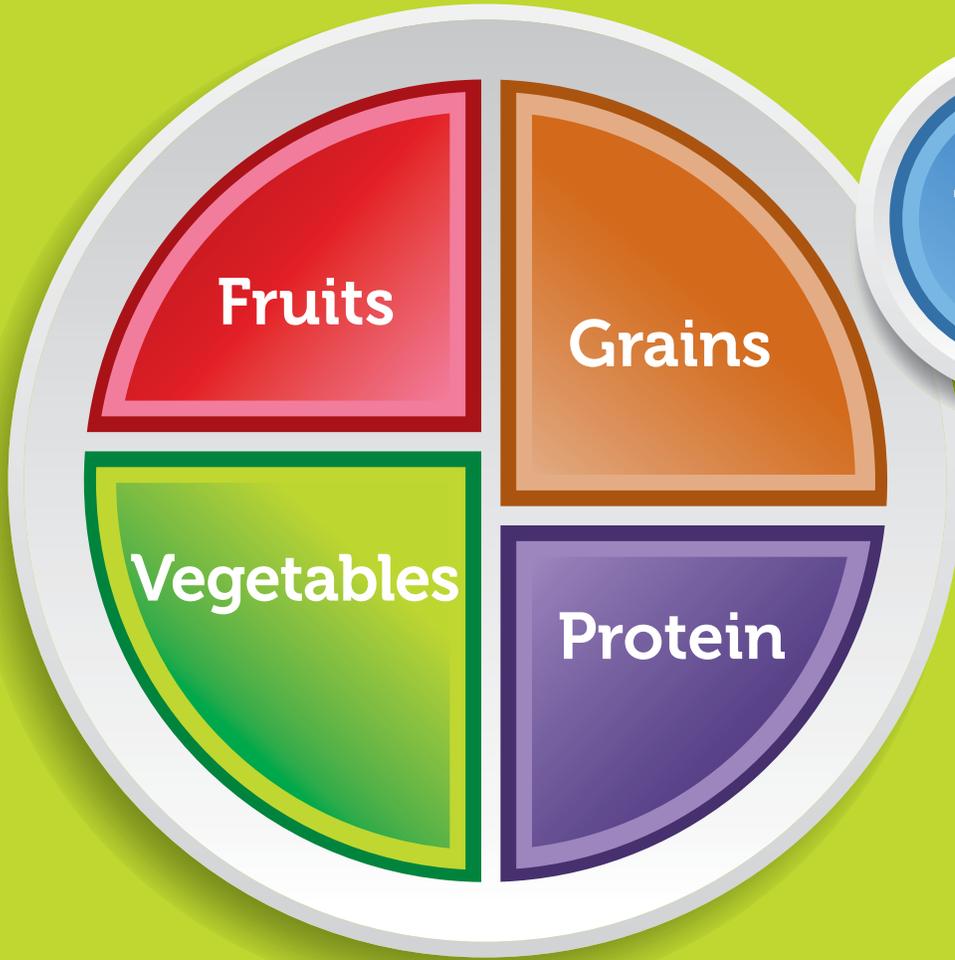
Around the U.S.

Georgia

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