

NORTH DAKOTA

Ag Mag

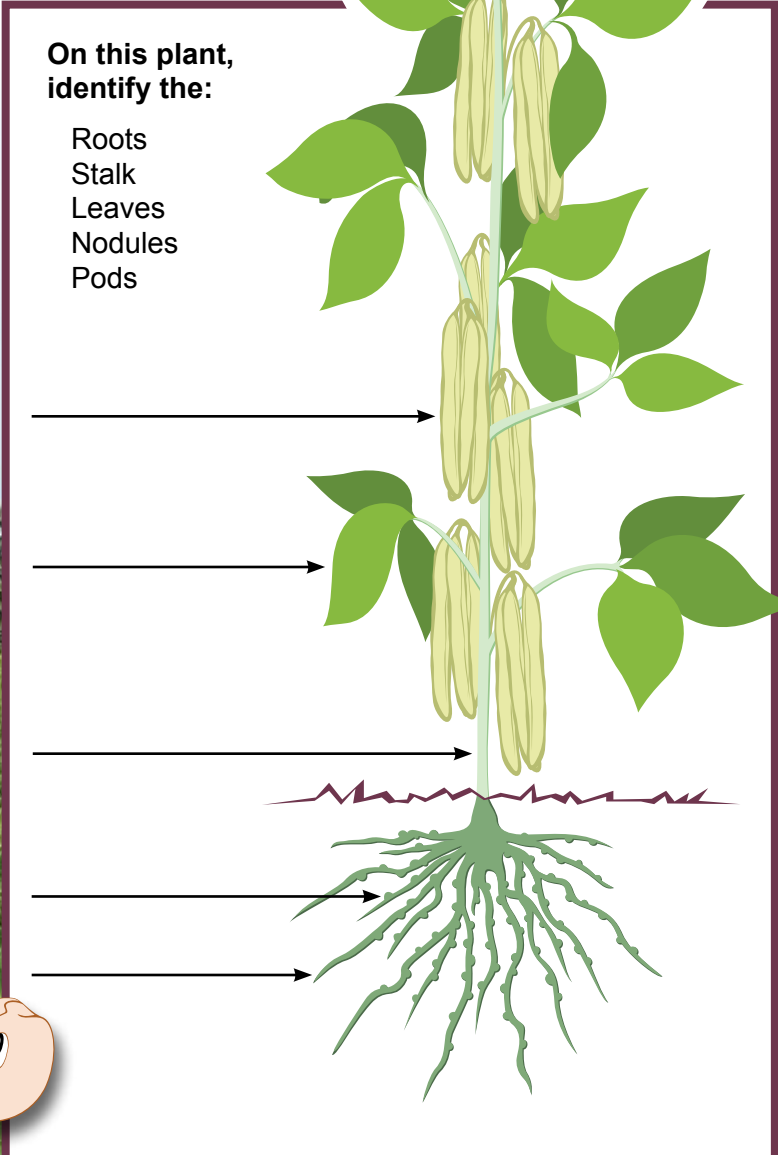
A Magazine about Agriculture for North Dakota Students



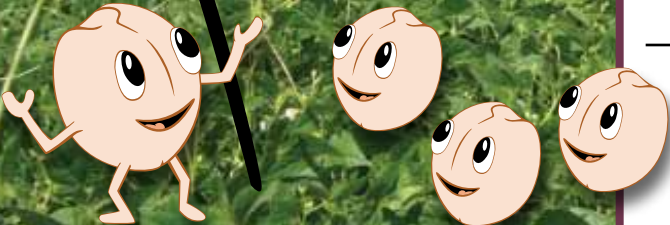
PULSE CROPS AND DRY EDIBLE BEANS

Legumes are plants that have bumps (called nodules) on their roots. The nodules contain bacteria that can “catch” nitrogen gas from the air pores in the soil and transform the gas into a form the plant can use. Nitrogen is a nutrient all plants need to grow.

Pulse crops and dry edible beans are two kinds of legumes. Let's learn about them.



North Dakota ranks #1 among the states in production of dry edible beans, dry peas and lentils.



PRODUCTION

Pulse crops are legumes that grow for one year (so they are called annuals) and are harvested for the dry grain or seed inside the pod.

“Pulse” comes from a Latin word that means “thick soup.”

North Dakota produces three major kinds of pulse crops:

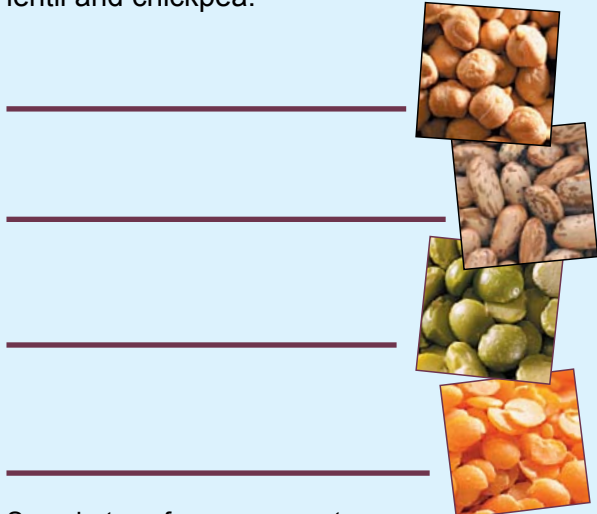
Dry peas – Sweet peas are the small, round green vegetable you probably often eat. They are harvested when they’re still immature and soft. Dry peas become hard, mature seeds inside the plant’s pod. These green or yellow dry peas are usually split and soaked for faster cooking in soups and stews.

Lentils – The size and appearance of lentils varies depending on the class, but they can have different colors, such as red, green or yellow. Lentils are used primarily in soups and stews, but also in casseroles, side dishes, baked goods and salads.

Chickpeas – You may know these as garbanzo beans. They’re ground and made into hummus, a Middle Eastern dip, or cooked for use in salads and soups.

Name That Crop

Beans are usually kidney-shaped or oval, while peas are round. Lentils are shaped like a lens, and chickpeas look like the beak of a baby chick. From the descriptions, identify the bean, pea, lentil and chickpea.



See photos of more crops at www.northern-crops.com/crops/crops.htm

The Nine Classes of Dry Beans

Circle the correctly spelled word in each sentence.



Pinto Bean – was the (1. *first* or *furst*) bean planted in North Dakota about 50 years ago. This bean is medium-sized with small brown spots. It is used in (2. *Mexicun* or *Mexican*) foods like burritos and (3. *tacoos* or *tacos*).



Small Red Bean – is just that – a small, dark red bean that is used in a (4. *variety* or *variaty*) of soups.



Black Bean – is medium-sized and often called a (5. *turtle* or *turtel*) bean.



Great Northern Bean – is a medium-sized, white (6. *oval* or *ovel*) bean that is used in soups and stews.



Pink Bean – is a small, (7. *pail* or *pale*) pink bean that turns reddish-brown when cooked.



Navy Bean – is a small, white bean used in (8. *soops* or *soups*) or baked bean dishes.



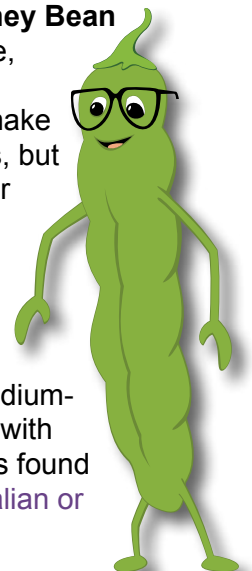
Light Red Kidney Bean – is a large, kidney-shaped bean used in (9. *chilly* or *chili*).



Dark Red Kidney Bean – also is a large, kidney-shaped bean used to make chili and salads, but is a darker color than the Light Red Kidney Bean.



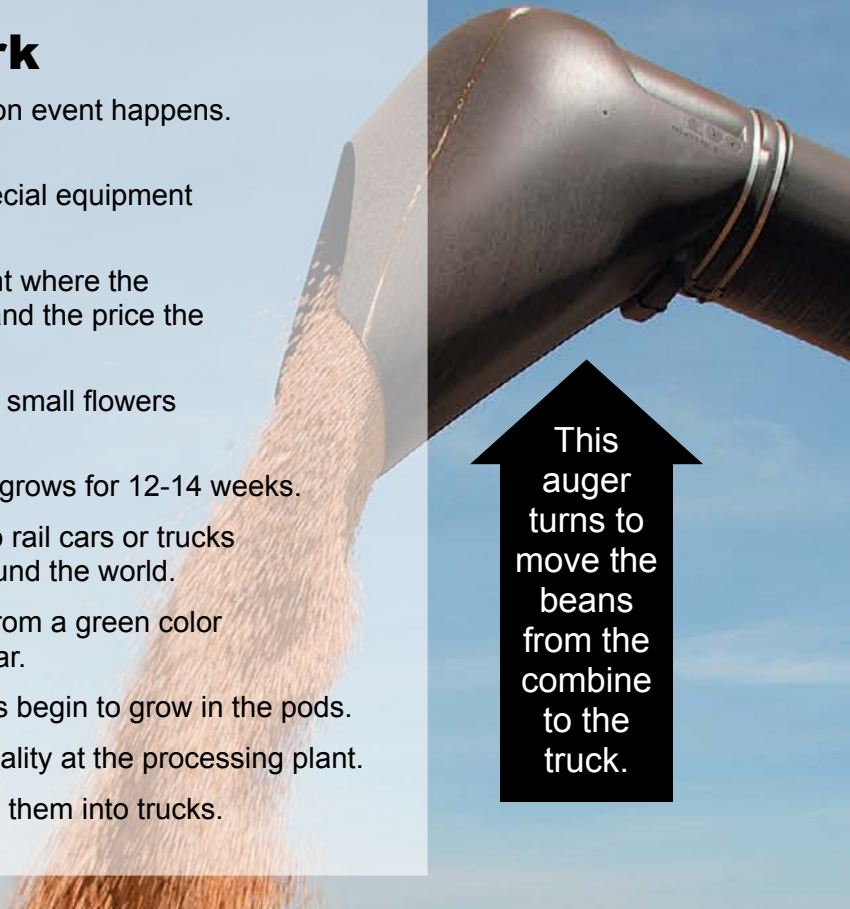
Cranberry Bean – is a medium-sized tan bean with red spots that is found in some (10. *Italian* or *italian*) foods.



From the Field to the Fork

Determine the order in which each bean production event happens. Label them 1-9.

- ___ The farmer plants the bean seed using special equipment called a drill or row planter.
- ___ Trucks take the beans to a processing plant where the beans are tested to determine the quality and the price the farmer receives.
- ___ When the plant has grown to its full height, small flowers begin to develop on the plant.
- ___ With soil, sunlight and rain, the bean plant grows for 12-14 weeks.
- ___ The beans are bagged and transferred into rail cars or trucks and sent to canners and packagers all around the world.
- ___ The bean plant, including the pods, turns from a green color to yellow, indicating that harvest time is near.
- ___ The flowers turn into pods, and bean seeds begin to grow in the pods.
- ___ The beans are sorted by color, size and quality at the processing plant.
- ___ The farmer harvests the beans and augers them into trucks.



This auger turns to move the beans from the combine to the truck.

U.S. Pulse Production

Nearly all U.S. dry peas, lentils and chickpeas are grown in **Idaho, Washington, Oregon, Montana, North Dakota, South Dakota, Nebraska** and **Wyoming**.

U.S. Bean Production

North Dakota and **Minnesota** grow about half of the U.S. beans with **Michigan, Nebraska, Idaho, California, Washington, Colorado** and **Wyoming** also leading producers.

On the U.S. map, write the abbreviations of the states printed in bold that produce the most dry peas, lentils, chickpeas and beans.



Food from Way Back

Some archeologists think pulse crops have been grown for more than 20,000 years. Lentils, peas and chickpeas were found in pyramids in **Egypt** that were built more than 4,000 years ago. Peas more than 11,000 years old were found in caves in **Thailand**.

Growing beans for food dates back to 7,000 years ago in **Mexico** and **Peru**. Aztec and Mayan tribes in Mexico planted small-seeded beans, while tribes in Peru planted large-seeded beans. As Indian groups explored, migrated and traded with other tribes, many types of beans and native farming practices spread over North America and South America.

When explorers from **Portugal** and **Spain** arrived at America, Indian tribes already were planting beans. Early explorers shared American beans around the world, and soon beans were popular in Europe, Africa and Asia.



U.S. Bean and Pulse Exports

The **United States** is one of the leading producers of dry beans, along with **Brazil, India, China, Myanmar, Mexico** and **Argentina**.

About 20 percent of the beans produced in the U.S. are exported to other countries. Major importers of U.S. beans are:

Mexico	Canada	Cuba	Angola	United Kingdom
Haiti	Japan	Iraq	Guatemala	Dominican Republic

About 75 percent of dry peas and lentils grown in the U.S. are exported to other countries. **India**, the **Philippines** and **Cuba** buy most of the dry peas, and **Spain, Peru** and **Mexico** buy most of the lentils. **Spain** buys most of the chickpeas.

Where in the World
On the world map, color each country that's printed in bold in Food from Way Back and U.S. Bean and Pulse Exports.

Import means to bring goods into a country from abroad for sale.
Export means to send goods to another country for sale.

PROCESSING

Canned vs. Dry

Pulse crops and beans can be purchased dry in a bag or already cooked and preserved in a can. The dry products cook faster if soaked first. Dry peas and lentils need to be soaked in twice as much water as their volume. Dry beans need to soak in three times as much water as their volume.

1. Kenyon's recipe calls for $1\frac{1}{2}$ cups of lentils. How much water should he soak them in?

2. One cup of dry peas makes two cups of cooked peas. How many cups of dry peas should Sadie start with to have 6 cups of cooked peas?

3. A can of light red kidney beans is 16 ounces, and Omar's chili recipe calls for 40 ounces. How many cans does he need?

4. Emily's hummus recipe calls for 3 cups of chickpeas. The label says each can contains about $1\frac{1}{2}$ cups. How many cans does she need to make the hummus? _____



The Many Uses of Peas

Even though peas are eaten in soups, casseroles and other dishes, they also are used as an ingredient in several other products. Circle what you think can be made with dry peas.

Baby Food

Cookies

Bird Food

Flour

Chips

Livestock Feed

Bread

Soft Drinks

Fuel

Pasta

Pet Food



DISTRIBUTION

Career Corner

Jennifer Tesch – Marketing/Sales Director
SK Food International, Fargo, North Dakota

Use these words to fill in the blanks: contract, harvest, domestic, farmers, specifications, organic, educate, buy, traced



Jennifer Tesch travels all over the world to sell the crops U.S. farmers grow.

“I travel overseas as well as attend trade shows to _____ people in those countries about our products,” says Jennifer. “I also oversee our _____ and overseas marketing, such as advertising and public relations.”

SK Food International is an import/export trading company, which means they _____ crops like soybeans, dry beans and peas and sell them to countries such as Japan, Taiwan, China, the Philippines, Singapore, Malaysia, Australia, New Zealand, Canada, Austria, Switzerland, Germany, France, Italy, Poland, Sweden, Norway, Denmark and the Netherlands.

A farmer signs a _____, or an agreement, with the company that says the farmer will deliver a certain amount of a particular quality of crop to SK Food International after it is harvested.

“After farmers _____ their crop, they haul it to our processing plant where we clean and process the crop to our customer’s _____,” says Jennifer. “The product is then packed in bulk or bags and shipped all over the world.”

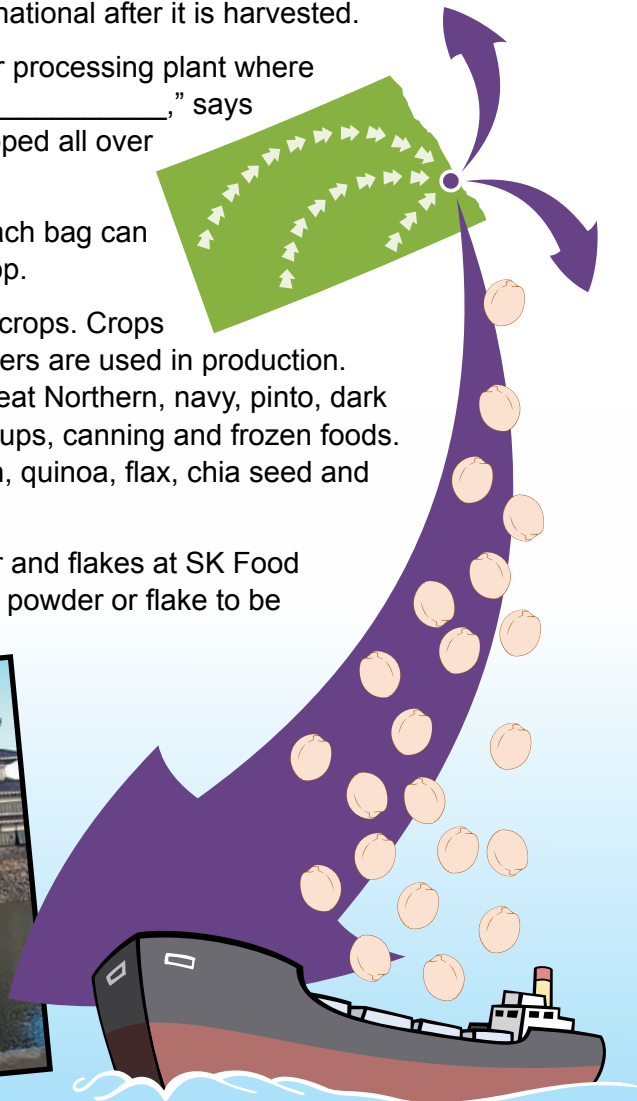
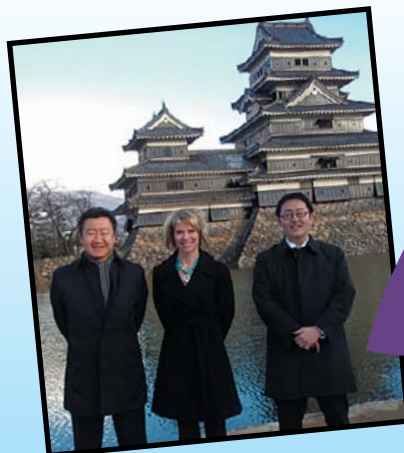
All the products are labeled as identity preserved, meaning each bag can be _____ back to the farmer who planted that crop.

The company also supplies many kinds of _____ crops. Crops are classified as organic when no chemicals or artificial fertilizers are used in production. SK Food International sells organic beans like black turtle, Great Northern, navy, pinto, dark red kidney, fava and azuki beans, and chickpeas for use in soups, canning and frozen foods. The company also markets specialty grains such as amaranth, quinoa, flax, chia seed and millet, plus vegetable oils.

Beans, peas and lentils also are made into precooked powder and flakes at SK Food International. The grains are ground, cooked and milled into a powder or flake to be used in bean dishes, dips, soups and other foods.

SK Food International works with more than 2,500

_____ throughout the U.S. Jennifer buys crops from these farmers and sells them to other countries so people all over the world can enjoy foods grown in North Dakota and across the country.



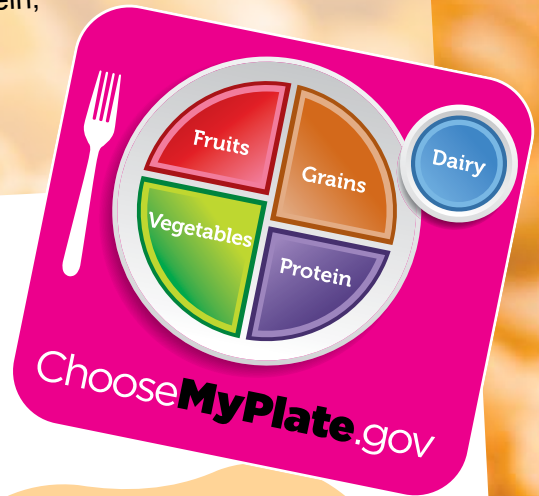
CONSUMPTION

Protein Food or Vegetable?

Although they are vegetables, dry peas and beans have so much protein, they also are included in the Protein Foods Group. Your skin, bones, and muscles need protein to grow and stay healthy.

Write **P** by the foods in the Protein Foods Group and **V** by foods in the Vegetables Group. Some may have both.

- | | | |
|---------------------------------------|--------------------------------------|-------------------------------------|
| <input type="checkbox"/> Cheese | <input type="checkbox"/> Bread | <input type="checkbox"/> Tomatoes |
| <input type="checkbox"/> Rice | <input type="checkbox"/> Potatoes | <input type="checkbox"/> Grapes |
| <input type="checkbox"/> Spaghetti | <input type="checkbox"/> Lentils | <input type="checkbox"/> Watermelon |
| <input type="checkbox"/> Chicken | <input type="checkbox"/> Pinto Beans | <input type="checkbox"/> Honey |
| <input type="checkbox"/> Yogurt | <input type="checkbox"/> Eggs | <input type="checkbox"/> Oats |
| <input type="checkbox"/> Wheat | <input type="checkbox"/> Broccoli | <input type="checkbox"/> Dry Peas |
| <input type="checkbox"/> Turtle Beans | <input type="checkbox"/> Carrots | <input type="checkbox"/> Fish |
| <input type="checkbox"/> Milk | <input type="checkbox"/> Cereal | |



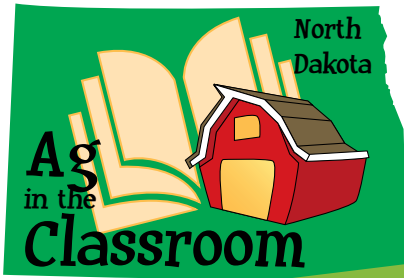
Nutrition experts recommend that kids your age eat 1 to 1½ cups of legumes per week.

Math Challenge

- Kayla wants to buy 2 pounds of black beans. The 1-pound bag costs \$1.75, and the 2-pound bag costs \$2.50. How much money will Kayla save by purchasing the 2-pound bag instead of two 1-pound bags? _____
- Kayla wants to make a big casserole with different kinds of beans. The sale at the grocery store is 3 cans for \$2.00. Kayla purchases 3 cans of pinto beans, 3 cans of kidney beans and 3 cans of navy beans. How much will Kayla pay for all 9 cans of beans? _____
- Kayla also decides to buy 3 cans of chickpeas. Each can costs \$.99. How much will Kayla pay for 3 cans of chickpeas? _____
- What will Kayla's total grocery store bill be for the black, pinto, kidney and navy beans, and chickpeas? _____
- Andrew's family is making a huge pot of bean soup for a get-together. How many cans of each bean does he need to make the soup in this proportion?

- | | |
|-----------------------------|------------|
| 1/6 pinto beans | _____ cans |
| 1/12 dark red kidney beans | _____ cans |
| 1/3 black beans | _____ cans |
| 1/4 navy beans | _____ cans |
| 1/12 great northern beans | _____ cans |
| 1/12 light red kidney beans | _____ cans |
| Total | 12 cans |





Take this issue of North Dakota Ag Mag home to share what you've learned about pulse crops and dry edible beans.

Thank you to the following for providing information for this issue of North Dakota Ag Mag:

Norharvest Bean Growers Association
www.norharvestbean.org

Northern Pulse Growers Association
www.northernpulse.com

USA Dry Pea and Lentil Council
www.pea-lentil.com

U.S. Dry Bean Council
www.usdrybeans.com

North Dakota State University
www.ag.ndsu.edu

N.D. Department of Agriculture
www.nd.gov/ndda

The North Dakota Ag Mag is a project of the North Dakota Agriculture in the Classroom Council, which is organized through the North Dakota Department of Agriculture.

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Ag Mag Production by North Dakota State University Agriculture Communication: Becky Koch, Editor; Emily Spickler, Writer; Steph Deitz and Ginger Deitz, Teacher Reviewers; Dave Haasser, Graphic Designer

