



PINTO BEANS FROM THE FARM

Overview

Pinto beans are not well known as a Kansas specialty crop. Kansas producers grow most of the pinto beans purchased and used the school lunch program. Pinto beans are a low cost source of protein, fiber and B vitamins. Pinto bean producers from Kansas farm in the NW part of the state, however, the largest dry bean consumption is located in the SW part of the United States and Mexico.

Objective

1. The student will identify the nutritional importance to beans in a healthy diet.

Background Information

Pinto beans are in the legume family. Legumes have the unique ability to take nitrogen from the air and fix it using rhizobia bacteria that are located in nodules or bumps on it's roots. Thus so it provides nitrogen to the growing plant. Basically the bacteria change the nitrogen in the air into a form of nitrogen that the plants can use as a nutrient. Legumes help build up the nutrition in the soil by moving nitrogen from the air into the soil so it's available for plant nutrition. Bean plants are known as producers since they use the process of photosynthesis to create their own food.

Legumes are also know as a producer in the food web since they can produce their own food through the process of photosynthesis.

Suggested Grade Level:

3rd-4th

Time:

50 minutes

Subjects:

Science

Math

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Vocabulary:

Amino Acid: Building block of proteins

Chlorophyll: Green material in chloroplasts that is needed for plants to make food using photosynthesis

Consumer: An organism requiring complex organic compounds for food, which are obtained by preying on other organisms or by eating particles of organic matter

Crop Rotation: The successive planting of different crops on the same land to improve soil fertility and help control insects and diseases.

Element: One of the known chemical substances that cannot be broken down further without changing its chemical properties

Enzymes: Protein that controls chemical activities

Essential Amino Acid: Nine amino acids (of 20) that the body needs but cannot make itself (lysine, leucine, isoleucine, valine, tryptophan, phenylalanine, threonine, histidine and methionine)

Legumes: Group of plants that includes beans and peas

Macromolecule: Large molecules containing many atoms

Molecule: Smallest particle of a substance that retains all the properties of the substance and is composed of one or more atoms

Monomer: Small chemical unit that makes up a macromolecule

Nitrates: A form of nitrogen that can be absorbed from soil by plant roots

Nitrogen: An element that makes up nearly 80% of the air by volume and is in all proteins and used in a wide variety of important substances including ammonia and fertilizers.

Osmosis: Movement of water through a membrane: moves from greatest concentration to least concentration.

Photosynthesis: Chemical process in which a plant cell uses energy from sunlight along with carbon dioxide and water to produce food (glucose) and oxygen

Producer: Any organism such as a plant that is able to make food through photosynthesis or chemosynthesis

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Materials

- 1 pound dry pinto beans
- Container of water large enough to cover the pound of beans
- 2-qt saucepan with lid
- Stove or hot plate
- Blender
- Skillet
- 2 Tbsp lard
- Wooden spoon
- Seasonings such as salt, garlic
- Tortillas
- Shredded cheese for topping

Procedures

1. Soak 1 pound of dry pinto beans in water overnight.
2. Rinse beans from soaking water; drain and put in a 2 qt. saucepan. Add water to cover beans. Put lid on and simmer on stove until tender- approximately 1 ½ hours.
3. Drain beans and blend, a portion at a time, in the blender until smooth. If too thick add a little water.
4. Prepare skillet for frying by adding 2 Tbs. lard to skillet. Add blended beans and simmer in skillet, stirring gently. Add seasonings such as salt, garlic powder to taste.
5. They are ready to be put in tortillas for burritos or to be eaten as a side dish. You can also top with shredded cheese.

Conclusion Questions

1. When your body digests the proteins found in the beans, what will it be used for in your body?
Hair, muscles, pigments, fingernails, enzymes (the chemicals that cause chemical reactions.)
2. What makes this a healthy dish?
The protein from the beans and cheese. The students might also notice the grain from the tortilla. Also the fiber, vitamins, and minerals supplied by the beans.
3. Is there anything unhealthy in it? If so, how could you modify the recipe?
There is some fat in the lard and cheese; to modify use an oil or hydrogenated oil (Crisco) and low-fat cheese.