

Buckwheat Lesson

Goals

Students will...

- Increase their familiarity with buckwheat and ployes.
- Eat buckwheat when it is offered to them.
- Increase their awareness of the environmental benefits of composting.
- Increase their understanding of nutrition.



Objectives

Students will be able to...

- a. Explain what part of a plant buckwheat comes from
- b. Explain the origin of buckwheat and find it on a world map
- c. Explain the climate requirements for growing buckwheat
- d. Locate where buckwheat is grown in Maine
- e. Create meal plans for one day that include a variety of protein
- f. Write a paragraph with appropriate punctuation and capitalization
- g. Participate in composting activities

Lesson Activities

- Review points about safety, sanitation, and cooperation
- Introduce buckwheat
- Background information on buckwheat
- Lessons from the Farm
- Cook buckwheat ployes
(Form groups of 4 to 6 students)
- Do compost activity while food is cooking
(See compost lesson for mini-lessons)
- Eat
- Wrap-up
- Distribute copies of recipe and challenge sheets to students
- Clean-up

Other Buckwheat Activities

Nutrition science lesson: How your body uses protein

Global and regional mapping

Writing ideas

Buckwheat Fact Sheet

Buckwheat Student Activity Sheet

Background Information on Buckwheat



Did you know that...?

Buckwheat is an herb

Buckwheat, despite popular belief, is not a cereal grain. It is a shallow rooted herb that grows rapidly to a height of 2-4 feet and produces many branches with heart-shaped leaves and small, white clusters of flowers from a single stem. Rhubarb is a member of the buckwheat family. Even though buckwheat is a true herb, it is planted and harvested as a cereal grain. The plant produces black triangular seeds that are processed into buckwheat flour, much the way wheat flour is processed. The flour that is produced contains carbohydrates in the form of starch, and some fat and protein that our body uses for nutrients.

Buckwheat grows well in cool, moist climates, and on poor soils. In fact, where there is good soil and a warmer, more favorable climate, the plant does not produce as much grain (seeds). About 2/3 of all buckwheat is grown for animal feed (livestock and poultry), while some is plowed under to improve soil (adding organic matter to enrich soil). For human consumption, the seed hull is removed and the flour is used mainly for pancake mixes (poyes) and buckwheat noodles. Farina (coarser particles) can be used for breakfast food, soups and gravies. The seed hulls are also used as fuel, livestock bedding, and for packing material. Buckwheat flowers contain a rich store of nectar, and are often visited by bees. Honey gathered from buckwheat is one of the best-known kinds.

Buckwheat is grown in Maine

Buckwheat is sometimes used as a rotation crop on Maine potato farms, primarily in Aroostook County. Crop rotation is the practice of alternating crops in one location from one year to another. This practice helps to prevent soil-borne diseases that can harm a crop and prevent growth. Crop rotation also helps enrich the soil through the addition of organic matter and nitrogen from plant residues plowed into the soil. In Maine, buckwheat is harvested and used as a grain for animal feed and to enrich soil. It is planted in the spring and harvested in mid to late summer.

Background Information continued



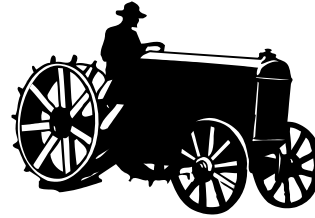
Buckwheat is produced mainly in North America and Europe, but nowhere is it a major crop. The major buckwheat producing countries are Russia, France, Poland and Canada. In the United States, New York, Pennsylvania, Michigan and Minnesota are the major producers.

Buckwheat was once considered a weed

Cultivated buckwheat was derived from wild buckwheat that was considered a weed. A variety of this plant that preferred warm climates was grown in the Old World. The cold tolerant, wild variety called “tatar” invaded fields as a nuisance weed. As farmers migrated north and into the mountains, they took their seeds with them (contaminated with tatar weed seeds). Because of the more favorable cooler climate and poorer soil conditions present in the north, tatar did better than the original species. This “weed” was eventually grown as the crop of choice in temperate climates.

Buckwheat is native to central Asia, and has been cultivated in China, Turkey and Russia since the 10th century. It was not introduced into Europe and North America until centuries later.

Lessons from the Farm - Buckwheat



There are two types of buckwheat that farmers can grow to make flour. One type is the Japanese buckwheat and the other is the silver-skinned buckwheat, also known as the common buckwheat. The silver-skinned buckwheat is a type of buckwheat that is grown only in the area of northern Maine and New Brunswick.

The buckwheat (grain) is usually planted in the middle of June. After the grain is planted, not much has to be done to it until it is ready to harvest. The buckwheat plant grows to between two and three feet tall. The grain on the stalks starts out as green in color and slowly turns dark brown or burgundy. Harvest begins in the first part of September. Once the buckwheat is harvested with a grain combine, the grain is dried to remove a lot of the excess moisture. This process is done so that buckwheat will store well over the winter months. Since the moisture is removed, the buckwheat can last for a few years in a grain tank.

When the farmers need buckwheat flour to make their ployes mix, they take some of the buckwheat grain to a flourmill. This is where the grain is passed through two sets of large, fast turning wheels that turn against each other. After the hulls, which are the coating of the grain, are sifted out, they have buckwheat flour. This flour is then mixed with white flour, baking powder and salt to create the delicious ployes. The ployes are like a pancake mix.

Ployes can be used as an elegant crepe, a hearty breakfast pancake/waffle, or as a flat bread, buttered and rolled. It's as versatile as any bread and enjoyed with any meal. From appetizers to main courses, to desserts and snacks, they keep finding new ways to make meals interesting. Enjoy your ployes experience.

Materials and Preparation

Food needed buckwheat ployes (for 4 groups)

8 cups buckwheat flour

8 cups white flour

2 Tbs. + 2 tsp. baking powder

Salt

1 stick butter (for topping)

1 jar jam or syrup (for topping)

Oil or cooking spray (to grease griddle)



Materials needed (for 4 groups)

4 griddles

4 large spoons

4 mixing bowls

4 spatulas

4 sets dry measuring cups

4 sets measuring spoons

Cleaning towels, napkins

Plastic forks and cups

Paper plates

Wax paper

Drinks for students

Compost bucket

Copy of recipe for each student

Copy of challenge sheet for each student

Copy of buckwheat fact sheet for each student

Copy of writing ideas sheet for each student

Materials and Preparation continued



Each station should have the following:

Food

1 cup white flour
1 cup buckwheat flour
1 tsp. baking powder
Pinch of salt
1 1/3 cups cold water
3/4 cup hot water
Butter for topping
Jelly or syrup for topping
Cooking spray

Materials

1 griddle
1 large spoon
1 spatula
1 set dry measuring cups
1 set measuring spoons
1 mixing bowl
Plastic forks and cups
Cleaning towel
Copy of recipe

Use Maine ingredients whenever available.

Classroom Recipe for Buckwheat Ployes

Ingredients:

1 cup white flour
1 cup buckwheat flour
1 tsp. baking powder
Pinch of salt
Approximately 1 1/3 cups cold water
Approximately 3/4 cup hot water



Use Maine ingredients whenever possible.

Student Cooking Activities

Note: This recipe requires the use of griddles.

Combine and mix dry ingredients in large mixing bowl.
Add cold water until mixture is thick--like cake batter.
Add hot water until batter is thin.
Heat and grease griddle.
Cook on medium heat until top of ploye is dry (ployes do not need to be flipped).
Spread butter, jelly or syrup, roll up ploye and eat as finger food.

Yield: 6 ployes

Nutrition Science Lesson – Buckwheat

How your body uses protein

Buckwheat is a very good source of protein, but what is protein and why do we need it?

Protein is a compound made up of carbon, oxygen, hydrogen, and nitrogen, which is arranged in strands called amino acids. Amino acids are the building blocks of proteins. There are about 20 kinds of amino acids. Our bodies can make only some of these amino acids, therefore it is important to eat a variety of foods that will supply us all with the amino acids. Buckwheat contains lysine, which is an amino acid that our bodies cannot make, so we need to get it in food like ployes. Protein is very important for us to live. Below is a list of things protein is needed for in our bodies.

- P:** Pigments - Proteins are needed to make pigments that determine what color your hair, eyes and skin will be.
- R:** Red blood cells - Protein is needed to make red blood cells and to replace other cells.
- O:** Organize - Proteins organize into hormones that are like little messengers in your body that give your body instructions to do a task, such as to run faster.
- T:** Tendons - Protein is needed to build tendons, muscles, skin and bones.
- E:** Energy - Protein can provide energy if your body needs it.
- I:** Immune system-Proteins build antibodies, which help protect you from getting sick.
- N:** New tissues - Protein is needed to build new cells and tissues that get worn out after awhile, like hair and skin.

Good food sources for protein come from all of the groups in the food pyramid. Bread, buckwheat pancakes, bagels, milk and cheese, meat, chicken, fish, beans, nuts, broccoli, corn, and avocados are all excellent food sources of protein.

Buckwheat Student Activity Sheet

Name _____

Protein Power!

Create well balanced menus for one day. Include different types of protein for each meal.



BREAKFAST

LUNCH

DINNER

Global and Regional Mapping

Buckwheat

World Map



Discuss with students the origin of buckwheat. Have them find it on the map.

Buckwheat ----- central Asia (shores of the Caspian Sea) (100°, 40°)

Local Harvest Calendar

Have students determine where they think buckwheat is grown in Maine (generally Aroostook County).

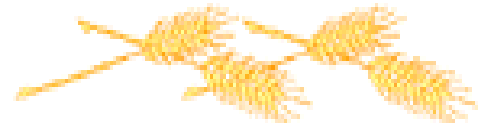
Discuss when buckwheat is harvested here in Maine (September).

Discuss with students methods of storing buckwheat through the winter months (Once dried, the seeds can be stored for years).

Discuss the optimal climate for growing buckwheat (cool, moist climate).

Date _____ Name _____

Buckwheat Fact Sheet



1. What part of the plant does buckwheat come from?
2. Where did buckwheat originally come from?
3. In what season does buckwheat grow best?
4. Where in Maine is buckwheat grown?

Writing Ideas – Buckwheat



1. What did you like or dislike about this lesson?
2. Write a paragraph that includes at least three of the facts that you have learned about buckwheat.
4. Cook the buckwheat recipe for your family or friends. What did they think? Did they like it? Were they surprised?
5. Come up with your own ideas

Buckwheat Challenge Sheet

I agree to try buckwheat the next time it is served to me in the cafeteria or at home.

I agree to eat buckwheat	I did it! I ate buckwheat!