

Blueberry Farmer

By Lorry Brooks

Grade Level

9-12

Subjects

Biology, Health, General Science

Standards

For science standards the students will apply the processes and applications of scientific inquiry; investigate, design and conduct repeatable investigations; develop local knowledge and interact with the environment to contribute to scientific knowledge.

For health standards the student will acquire the understanding of how the human body is affected by eating habits and environmental conditions; use their knowledge and skill to promote the well being of the family.

Resources

- GBG Note No. 27, “Horticulture in Alaska’s Great Interior” by Dr. Patricia s. Halloway
- GBG Note no. 35, “Antioxidants in Alaska Wild Berries” by Patricia s. Halloway, Roxie Dinstel and Roseann Leiner
- GBG Note No. 34, “How to Germinate Seeds of Alaska Wild Blueberries and Lingonberries (Lowbush Cranberries)”
- “ Science in Your Shopping Cart”, High-Tech Food, Utah Agriculture in the Classroom, www.agclassroom.org/ut (pages 57-
- Additional resources “Understanding Biotechnology Multimedia Presentation” free download from this website:
- http://www.agclassroom.org/teacher/understand_biotech.htm

Materials

frozen or fresh blueberries
small containers and flats
sphagnum peat moss
blender

paper towels
colander
freezer
refrigerator



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Vocabulary

genetic modification	biotechnology
selective breeding	genetic engineering
DNA	genomes
hybrid	resistant
allergen	cross-pollination
cold stratification	transgenic plants vs. transgenic animals
germination	antioxidants
phytochemicals	macular degeneration
diabetes	flavonoid
anthocyanins	ORAC
seed extraction	

Background

Many people today are willing to pay for organic, nutritious foods that have not been altered genetically or enhanced chemically. Although many foods have been altered to hopefully alleviate allergic reactions, often as not some of these have caused even more severe reactions than expected. This genetic engineering has also caused a rise in food costs since this technology is expensive. People fear that pest-resistant crops may be harmful to beneficial insects as well as pests. There are many other factors that concern the consumer, so a “natural” food source has become a luxury.

Alaska berries rank high worldwide for their nutritional value. Our high and low bush cranberries far outrank all other berries in antioxidants, making them one of the most nutritious berries in the world. Blueberries are one of the most popular types of berries in the U.S. and the Alaska blueberry is superior to those growing in the Lower 48. All of these aforementioned facts make growing blueberries in Alaska a very practical idea. Yet there are a limited number of blueberry patches in our state and once discovered, the locations are kept a secret. We want enough berries to keep us and our families supplied through the year.

The purpose of this lesson plan is to find the most successful procedure for growing blueberries in our own yards.

Reading and Discussion

Students will read the article on High Tech Food. We will discuss the information and go over the vocabulary. Students will look up other articles on the various technologies mentioned in the article.

We will then read the GBG Note No. 27 and discuss the material covered there. This will be followed by reading and scrutiny of the graphs in the GBG notes of Antioxidants in Alaska Wild Berries. In the classroom will be field books that identify, describe and have pictures of the various berries mentioned in this article. Hopefully this will teach the students to appreciate the wealth of nutrition in Alaska berries.

Students will then perform the following procedures to see if we can successfully grow blueberries as a farm crop.



Procedure

1. Students will be divided into three groups. Each group will be given a copy of GBG Notes No. 34. All groups will participate in the Seed Extraction part of the procedure.
2. The first seed extraction will be done in the fall. These seeds will then be put in flats of peat and put outside, making sure to keep the peat moist until freezing occurs.
3. The second seed extraction will take place in February. Since these seeds will have been in a frozen state for longer than a month, cold stratification will take about 120 days. Seeds will be removed at different intervals from the refrigerator to determine which is the ideal time for stratification. Each team will keep records.
 - A. Each team will use the paper towel method described, making sure that the towel stays moist through the whole process.
 - B. Each team will then use the peat moss method.
4. Once the seeds germinate and seedlings have sprouted, students will find an area that maintains a temperature of about 60-65 degrees and supply a grow light for the plants. Students must check the acidity of the peat to make sure the bedding does not become alkaline.
5. Once weather permits transplant the plants and the peat moss outside to different locations. Students will vary the soil and sun exposure to determine which area is the most suitable.
6. Results will be recorded and students will publish their conclusions.

This lesson was prepared as part of the Alaska Agriculture in the Classroom Educator Institute. For more information, visit www.agclassroom.org/ak.