Grapes are Divine

Grade Level: 2-3

Approximate Length of Activity: One class period

Objective

Teacher

1. Illustrate the production of grapes.
2. Explain the concept of genes.
3. Discuss the development of varieties.

Students

1. Know about the effect of genes on humans and plants.
2. Learn the definition of an adjective.
3. Describe traits that genes affect in grapes using adjectives.
4. Learn about grape production.

Michigan Content Standards: (Science) L.HE.E.1; S.RS.E.1; P.PM.02.12, S.RS.03.19; L.OL.E.4

Introduction

Genes are in every living organism. They determine characteristics about an organism such as color, height, and other characteristics! Every organism has between 50,000 and 100,000 genes. Genes are a segment of a DNA molecule found in a chromosome. They determine characteristics by influencing chemical and physical processes during growth and aging. Studying genetics is important in agriculture for crop and livestock improvements as well as in other areas.

The genes of plants determine their physical uniqueness; characteristics such as height, color, length of growth, productivity, etc. We are able to grow plants with particular characteristics through genetics. Gene banks are places where many varieties of seeds are preserved. These gene banks help researchers develop new varieties of plants and find improvements.

At one time, all red grapes had seeds. The Agricultural Research Service of the United States Department of Agriculture created a red seedless grape called the Flame Seedless. Recently, they have developed a black seedless grape called the Black Emerald.

Grapes are berries that grow on woody vines. They are a fruit and have high sugar content. They may be black, blue, golden, green, purple, red, or white. Grapes may be used by wineries, eaten fresh, dried into raisins, made into juice or jelly, or canned. Most of the grapes grown in the United States come from California. In 1997, 13,690,463,378 pounds of grapes were grown in the United States. Of those, 12,404,514,545 were grown in California. There are two types of grapes-European and North American. European grapes grow in areas with milder climates than the North American grapes.

Science

In the winter, 12 to 18 inch cuttings called canes are cut from grapevines. They are buried in moist sand and stored in a cool place until spring. In the spring, the cuttings are planted in a nursery. The cuttings are planted in the vineyard and approximately one year later they develop into vines. The third and fourth year, the grapevines produce a partial crop and afterwards they produce a full crop. Vines may grow 15 to 80 pounds of grapes each year for up to 100 years. Grapes that are eaten fresh are harvested by cutting each cluster by the main stem. Grapes used by wineries or dried for raisins are harvested by hand or machine.

Materials Needed

- Copies of "Grapes are Divine" worksheet
- Several varieties of grapes

Activity Outline

1. Show the students some grapes and talk about how they are grown.

2. Tell the students that scientists have been able to produce seedless grapes through technology.

3. Tell the students that each of them has genes that determine traits like their eye-color, hair color, height, and the ability to curl their tongues. Explain that plants, like grapes have genes too. When scientists find a trait they like, they use genetics to find out how to produce that trait.

4. Discuss adjectives, or words that describe nouns. Give an example of adjectives such as brown, ancient, furry, cold, etc.

5. Set the different types of grapes on a table.

6. Ask the students for a few sample adjectives that may describe a particular type of grape. Tell the students that farmers and scientists have put many years into the development of certain traits in foods such as grapes. Talk about the development of seedless grapes.

7. Give each student a "Grapes are Divine" worksheet. Tell them that they will look at, smell, touch and eat each type of grape and think of adjectives that describe them.

8. Compare the adjectives that students chose.

Discussion Questions

1. What do genes determine?

2. Did all of the grapes have seeds?

3. Why do researchers develop new varieties?

4. What other foods have a lot of varieties?

Related Activities

1.   Make grape juice in your classroom.

2.   Study the nutritional value of fruit and brainstorm a list of fruits.

3.   The lesson "Fresh from the Farm" located in the math section of this curriculum guide.

4.   The lesson "Be a Food Explorer" located in the health section of this curriculum guide.

5.   The lessons included in "The Farmer Grows a Rainbow" section located in the health section of this curriculum guide.

6.   The lesson "How to Pick the Best" located in the health section of this curriculum guide.

7.   The lesson "Fruit for Sale" located in the social studies section of this curriculum guide.

Resources

"The Grapes of Math: Mind-Stretching Math Riddles" by Greg Tang and Harry Briggs

Acknowledgement: Adapted from "Grapes are Divine" provided by Illinois Farm Bureau® Agriculture in the Classroom.

Name:_____

Grapes are Divine

Use adjectives to describe the smell, color, and taste of different grape varieties. (Examples: purple, sweet, small, etc.) Use "yes" or "no" to record if the grape variety has seeds.

Type of Grape	Smell	Taste	Color	Seeds (yes/no)