Lavender Essentially

Purpose: Through this hands-on lesson, students will explore different varieties of lavender, learn about the importance of pollinators in relation to lavender, and talk about ways farmers use lavender as a diversified crop. Grades 6-8

Estimated Time: Two 40-minute sessions

Materials needed:

Activity 1: Pollination Game

- Blow up beach balls
- Small post-it notes
- Pollinator profiles

Activity 2: Lavender lip balm

- Bees wax lip balm kit
- Lavender essential oil
- Slow cooker and glass jars or hot plate, saucepan, and glass jars

Vocabulary:

Agriculture: the science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products

Pollinate: to carry pollen from the anther to the stigma of a flower

Pollinator: agent that moves pollen resulting in the pollination of flowers

Diversification: secondary agricultural uses that re-allocate of some of a farm's productive resources, such as land, capital, farm equipment and paid labor into new activities.

Perennial: a plant that lives for more than one growing season

Variety: the state of being different; the absence of uniformity or sameness

Did you know?

- More than 100 U.S. grown crops rely on pollinators (1)
- Honeybees are America's primary commercial pollinator, although there are over 4,000 types of bees (1)
- Lavender, (genus *Lavandula*), biological classification of about 30 species of plants in the mint family (Lamiaceae) (2)
- Lavender is sometimes also used to flavor beverages and sweets and has many applications in herbal medicine. (2)

Background Agricultural Connection:

Virtually all of the world's seed plants need to be pollinated. This is just as true for cone-bearing plants, such as pine trees, as for the more colorful and familiar flowering plants. Pollen, looking like insignificant yellow dust, bears a plant's male sex cells and is a vital link in the reproductive cycle. Without pollinators, humans and all of earth's terrestrial ecosystems would not survive (3). Lavendar and bees are best friends! Bees particularly love the full bloom of lavender.

Pollination and Pollinators: A healthy ecosystem blossoms from strong pollination. Many foods depend on pollination, like apples, tomatoes, alfalfa, and lavender, to name a few. Pollination occurs when pollen from a flower's anthers (the male part of the plant) rubs or drops onto a pollinator. The pollinator then takes this pollen to another flower, where the pollen sticks to the stigma (the female part). The fertilized flower later yields fruit and seeds. Pollinators can be bees, beetles, butterflies, flies, hummingbirds, moths and even the wind. You can help pollination by creating a pollinator-friendly habitat. (9)

History of Lavender: Lavender is native to the Mediterranean region, the Arabian Peninsula, and Russia. In ancient Rome lavender was used to scent bathwater; the name lavender comes from the Latin verb "lavare" which means "to wash." (6) Essential oil of lavender has antiseptic and anti-inflammatory properties. It was used in hospitals during World War II to disinfect floors, walls, and other surfaces. (7)

Varieties of Lavender: (Limited list) (8)

Landscaping: Thumbelina Leigh, Munstead, Hidcote, Buena Vista, Folgate, Melissa, Edelweiss, Royal Velvet, Grosso, Provence

Dried Buds: Provence (L. x intermedia), Grosso (L. x intermedia), Royal Velvet (L. angustifolia), Buena Vista (L. angustifolia)

Culinary Buds: Provence (L. x intermedia), Royal Velvet (L. angustifolia), Betty's Blue (L. angustifolia), Melissa (L. angustifolia)

Crafting: Grosso, Folgate (L. angustifolia), Royal Velvet (L. angustifolia), Buena Vista (L. angustifolia)

Fresh Cut/You cut: Folgate, Buena Vista, Grosso

Essential Oil: Grosso (L. x intermedia), Royal Velvet (L. angustifolia), Super (L. x intermedia), Maillette (L. angustifolia)

Uses of Lavender (8): There are many uses for lavender! Each plant variety can be used for essential oils, cooking, dry buds, landscaping and crafting.

Essential Oil: Different varieties produce different quantities of oil. Some produce less oil, but have a softer, sweeter scent. Altitude, spring rains and summer heat can affect the oil production and quality of the oil from the variety you select. You may want to research what species and varieties are in demand before planting for essential oil production.

Culinary buds: The popularity of cooking with lavender has produced many delicious recipes using lavender. Buds are used in recipes, whole or ground, flavoring sugar, oils, butter, honey, or lavender extract. The angustifolias variety has taken the top spot for culinary lavenders. If you ask a dozen different people what their favorite culinary lavender is, you will get a dozen different answers. A good rule of thumb to follow is to taste the bud. If it tastes good to you, it will taste good in your recipe.

Dried buds: Most varieties will produce buds that can be harvested for sachets or products using buds, but some will have a stronger fragrance and have a darker colored bud. Some varieties are easier to "de-bud" than others.

Engage:

1. Ask students to brainstorm if they have seen honeybee hives near their homes. Allow students to offer their ideas using their background knowledge.
2. Ask students if they have seen hives on farms or farmland. Make a list of those types of farms on the board. Ask students why they think hives are being put on farms/ farmland.
3. Discuss with students if these farms only produce one crop. Conclude that many farms produce multiple crops or specialty products to diversify their operation. Explain to students that next they will be learning about the role of pollinators, business diversification, and exploring a diversified farm in New York State.

Explore and Explain:

Activity 1: What's the Buzz about pollinators?

Participants will then learn about different types of pollinators and their importance. They will then join in a pollination game that simulates how pollination works on a diversified farm. Start the activity by asking students to list different kinds of pollinators. Review the different kinds of pollinators using the pollinator profiles.

1. Have students stand up and get in a circle
2. Give each student a small sticky note. Explain to students that each sticky note represents a different vegetable or fruit producing plant.
3. When the ball (which represents a pollinator) is passed to a person, put on your pollen and throw the ball to someone else.
4. When the next person receives the ball, take off the pollen, put on your pollen. 4. Continue to see how many people get pollinated in 30 seconds.
5. Reflect on how many plants were pollinated and how the number might be increased.
6. Add several more beach balls to illustrate having more pollinators. What happens to the number of plants pollinated?
7. Take all the pollinators away. What does this represent?
8. During the next round, if you are not pollinated in 15 seconds sit down. What does this represent?
9. For the final round, one part of the group will be soybean plants. Soybeans are self-pollinating, so sticky notes will be on your back. When you receive the beach ball, reach with one hand to get one note of your back to add it to the ball. If the beach ball has a soybean pollen note on it, you can take it off.

Activity 2: Lavender Lip Balm

Next, we want participants to leave with a connection from the Ag Classroom store, by making their own diversified product combining beeswax and lavender.

1. Start by discussing with students about farm diversification. What does it mean? Why would a farm diversify?
2. Play the virtual field trip at Farmstead 1868: (LINK)
3. Gather students to begin making lip balm by following the instructions in the Beeswax Lip Balm Kit.

Evaluate:

After conducting these activities, review and summarize the following key concepts:

- A healthy ecosystem blossoms from strong pollination.
- There are many kinds of pollinators (butterflies, hummingbirds, flies).
- Many farms diversify by creating and selling new products.
- Lavender has many different uses (essential oils, culinary, crafting).

Agricultural Literacy Outcomes:

1. Agriculture and the Environment Outcomes- Pollination
    a. Recognize the factors of an agricultural system which determine its sustainability (T1.6-8)
2. Food, Health, and Lifestyle Outcomes- Diversification
    a. . Identify sources of agricultural products that provide food, fuel, clothing, shelter, medical, and other non-food products for their community, state, and/or nation (T3.6-8)
3. Science, Technology, Engineering, & Mathematics Outcomes- Pollination
    a. Explain the harmful and beneficial impacts of various organisms related to agricultural production and processing (e.g., harmful bacteria/beneficial bacteria, harmful/beneficial insects) and the technology developed to influence these organisms (T4.6-8)

Sources:

1. **https://www.usda.gov/sites/default/files/documents/pollinator-week-factsheet-06.25.2020.pdf**
2. **https://www.britannica.com/plant/lavender**
3. **https://www.fs.usda.gov/managing-land/wildflowers/pollinators/importance#:~:text=Without%20pollinators%2C%20the%20human%20race,80%25%20require%20pollination%20by%20animals.**
4. **https://grownextgen.org/media/pages/curriculum/living-the-hive-life/support-your-local-bee-life/ab1c78b576-1714675495/beach-ball-bee-pollination-game.pdf**
5. **https://www.calacademy.org/educators/lesson-plans/flowers-seeking-pollinators**
6. **https://dsps.lib.uiowa.edu/roots/english-lavender/**
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8. **https://www.uslavender.org/index.php?option=com_content&view=article&id=73:lavender-varieties&catid=24:lavender-101&Itemid=138**
9. **https://gardens.si.edu/gardens/pollinator-garden/why-what-when-where-who-how-pollination/#:~:text=Pollination%20is%20an%20essential%20part,later%20yields%20fruit%20and%20seeds.**