What's In The Garden?

4-H Supplemental Lessons

Frederick County 4-H Youth Development
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What's In A Garden?

Bingo / Vocabulary Words (K - 1st grade)

1. Apple
2. Lettuce
3. Carrot
4. Broccoli
5. Blueberries
6. Celery
7. Tomatoes
8. Cucumbers
9. Onions
10. Potatoes
11. Corn
12. Pumpkins
13. Sun
14. Water
15. Air
16. Roots
17. Seeds
18. Leaves
19. Soil
20. Bees
21. Birds
22. Flowers
23. Beneficial Insects – Lady Bugs
24. Non Beneficial Insects – Beetles
Bingo / Vocabulary Words (2nd – 4th grade)

1. Nutritious – proving nourishment to a high degree
2. Crop – any plant whose product is harvested by a human at some point in its growth cycle
3. Munching – to chew food with visible jaw movements and sometimes a crunching noise
4. Stalk – the supportive part of the plant
5. Versatile – able to be used in many ways
6. Bulb – an underground plant storage part from which a new plant grows
7. Vine – a plant that supports itself by climbing or creeping along a surface
8. Pollination – transfer of pollen from the male part of a plant to the female part to fertilize it
9. Pollinator – an animal or insect that transfers pollen grains
10. Germination – when the seed coat breaks open
11. Root – takes in water and minerals from the soil for food
12. Seeds – come in all different shapes, sizes and colors
13. Bees – insects that transfer pollen from one plant to another
14. Nectar – sweet juice found in flowers
15. Flower – seed grows inside this part of the plant
16. Garden – where the seeds are planted
17. Leaves – make food for the plant
18. Cultivate – to grow plants or crops
19. Kernel – the part of the ear of corn in which we eat
20. Tassel – hold the pollen on a corn plant
21. Harvest – to pick a crop
22. Till – dig up, loosen the soil
23. Root Vegetable – a root in which we eat, ex. Carrot
24. Leaf Vegetable – a leaf in which we eat, ex. Lettuce
What's in the Garden? by Marianne Berkes
Dawn Publications 2013

Book Summary:
Good food doesn't come from a box on a grocery store shelf. Good food comes from a farm or garden bursting with life, color, sounds, smells, sunshine, moisture, birds, and bees! Healthy foods become much more interesting when children know their origin. What's in a Garden? shares a variety of rhyming riddles about healthy, tasty fruits and vegetables. Also, included and sometime hidden are some of the pollinators and pests in a garden. What's in a Garden? also provides a kid-friendly recipe for each fruit and vegetable.

Useful Props:
Depending on the time of the year, any fresh garden items that are mentioned in the book would make good visuals to use before, during, and after reading the book. Those mentioned are apples, lettuce, carrots, broccoli, blueberries, celery, tomatoes, cucumbers, onions, potatoes, corn, and pumpkins.
If possible, try to show students some of the various types of each item. For instance, if mom only buys bagged mini carrots, students may not know what a large carrot with its leafy top leaves really looks like. To expand student knowledge, consider sharing some of the varieties of apples - colors, lettuce - shapes/colors, tomatoes - shapes/ colors, cucumbers - seeds/seedless, onions - sizes and colors, and potatoes - sizes/colors.

Vocabulary:
• Nutritious – providing nourishment to a high degree
• Crop- any plant whose product is harvested by a human at some point in its growth cycle
• Munching – to chew food with visible jaw movements and sometimes a crunching noise
• Stalk – the supportive part of a plant
• Versatile – able to be used in many ways
• Bulb – an underground plant storage part from which a new plant grows
• Vine – a plant that supports itself by climbing or creeping along a surface
• Pollination – transfer of pollen from the male part of a plant to the female part to fertilize it
• Pollinator – an animal or insect that transfers pollen grains
Introduction: Begin the session by introducing the word AGRICULTURE.
Ask, “What do you think this word means?” Accept answers and guide toward the following definition. (Write on the board)

Agriculture
agri (means land) culture (means to grow) SO...
agri + culture = growing plants or raising livestock (farm animals) on the land

What are some animals that are raised on a farm? Accept suggestions.
What plants might a farmer grow? Accept suggestions.
Do you or anyone you know grow any fruits or vegetables in a home garden?

Sharing the book What’s in the Garden?

Explain that today’s book is written in the form of riddles. Have students number their papers from 1-12 or use the What’s in the Garden? riddle worksheet (#1) provided. After the volunteer reads each riddle page, students write down their guess. Turn to the next page for the answer. If students are correct, they put a check next to the answer. They can also check whether or not they have ever eaten the vegetable or fruit mentioned. Following the reading of the book, students can create their own riddle about a fruit or vegetable not mentioned in the book and share it with the class.

Additional sharing the book options: Select one or more as time permits.

1. Sort the Vegetables – Run a copy of the Sort the Vegetables worksheet (#2) for each student or pair of students. Review each picture and the color of each vegetable with students. Remember that some students may never have seen/eaten the vegetable or know what it looks like in its natural state. Students color and cut apart the pictures and then sort them any way they wish. (Some may sort according to color, ones they eat, part of the plant, etc.) Have them share their “sort” with a partner and see if the partner can guess how they sorted. There is no right or wrong way.

2. Parts of a Plant We Eat
Draw a simple plant diagram on the board and label each part – leaves, flower, fruit, stem, seed, and roots.
Following the “sorting” activity have students discuss the various foods on the Sort the Vegetables worksheet and decide which parts we eat - leaves, flower, fruit, stem, seed, and roots.
3. Can You Make Your Own Plant Parts Salad?
   Provide each student with the Can You Make Your Own Plant’s Part Salad? worksheet (#3) or have them draw a large salad bowl on a piece of paper. Students use the veggies cut out from the “Sort the Vegetables” sheet (or draw their own) to make a salad that contains each of the following plant parts: stem, leaf, flower, fruit, seeds, and root. Students label each vegetable with the plant part’s name.

4. Pollinators Needed (see information sheet #4)
   About 75% of the food we eat depends upon pollination. In addition to the foods the book mentions that grow in the garden, many of the pages have birds and/or insects on them. Some of these creatures are pollinators and very beneficial while others are pests. Share the book a second time with the students having them identify some of the animals/insects on each page. Share how some of them are beneficial and others are pests. See the Pollinators/Pests page for additional information. You do not need to share all, just highlight some such as worms, ladybugs, aphids, and bees.

5. Be a Rainbow Eater!
   Students are encouraged to eat a variety of different colored fruits and vegetables. Using the Be a Rainbow Eater! worksheet (#5) provided, students color in the rainbow according to the directions and then fill in the spaces with as many fruits and vegetables as they can think of that come in that color. Names can be repeated such as apples for red, yellow, and green. Younger children can be shown a color and then suggest which fruits and vegetables come in that color.

6. Is It a Fruit or a Vegetable?
   This activity is probably best used with grades 3 and 4. Using the Is It a Fruit or Vegetable? worksheet (#6), students first sort the pictures according to what they think. Then provide the following information and have them resort the pictures so that the sort matches each of the following descriptions.

   Botanically, a fruit is the part of a plant that develops from a flower and produces seeds. Many plant parts we eat and call vegetables are really “fruits”.
Sort One – Part of the Plant
- A true vegetable is the food product that comes from any part of the plant other than the flower. So, roots such as carrots and radishes, and leaves such as cabbage and lettuce, are true vegetables. If you cut produce open and it contains seeds inside such as a tomato, squash, or cucumber – then it is a fruit. If there are no seeds – then it is a vegetable.

Sort Two – When It Is Eaten
- Sometimes we call produce a fruit or vegetable by the time the item is to be eaten. Vegetables are usually thought to be eaten with the main meal, while fruits, which may be sweeter, may be eaten as a dessert.

Sort Three – Annual or Perennial
- A third way of deciding whether produce is a fruit or vegetable is by examining how and where it is grown. Vegetables are usually annuals (they live one season and need to be replanted each year) and they are planted in rows in a field. Fruits, on the other hand, are grown and produced over many years (they are perennials and grow from one year to the next) and may be found on bushes, vines, or trees.

There are exceptions to this way of classification. The classification of these fruits and vegetables may cause some disagreement; but, there is one thing that is always agreed upon – they contain many healthy vitamins and minerals – and should be eaten every day!
Ask students which way they think is the best way to classify fruits and vegetables and encourage them to be able to support their decision.

7. Taste Test Party – if permitted by school
   Nothing culminates a lesson better than eating! If the teacher approves, bring in a sampling of veggies and dips for the students to enjoy. This can be as simple or as elaborate as you want.

Closure
1. Review with students the meaning of the word AGRICULTURE.
2. Where can we get our fruits and vegetables? (farm, Farmers’ Market, grocery store, our own garden)
3. Why is it important to eat lots of fruits and vegetables? (keeps us healthy with vitamins and minerals they provide)
**Sort the Vegetables**

Have you ever eaten one of these vegetables? Color each vegetable. Cut them apart. Think of a way to sort them. Share your VEGETABLE SORT with your partner. Can your partner figure out your sorting method? Can you figure out how your partner sorted the vegetables? Work with your partner to see if you can come up with another way to sort these "veggies."

<table>
<thead>
<tr>
<th>Spinach</th>
<th>Radishes</th>
<th>Lettuce</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Spinach" /></td>
<td><img src="image2.png" alt="Radishes" /></td>
<td><img src="image3.png" alt="Lettuce" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carrots</th>
<th>Beets</th>
<th>Peas</th>
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<tbody>
<tr>
<td><img src="image4.png" alt="Carrots" /></td>
<td><img src="image5.png" alt="Beets" /></td>
<td><img src="image6.png" alt="Peas" /></td>
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</tbody>
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<tr>
<th>Cucumber</th>
<th>Corn</th>
<th>Broccoli</th>
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<tbody>
<tr>
<td><img src="image7.png" alt="Cucumber" /></td>
<td><img src="image8.png" alt="Corn" /></td>
<td><img src="image9.png" alt="Broccoli" /></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Celery</th>
<th>Cauliflower</th>
<th>Tomato</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image10.png" alt="Celery" /></td>
<td><img src="image11.png" alt="Cauliflower" /></td>
<td><img src="image12.png" alt="Tomato" /></td>
</tr>
</tbody>
</table>
Can You Make Your Own Plant Part Salad?

Using the veggies you cut out from your "Vegetable Sort" make a salad that contains each of the following plant parts: stem, leaf, flower, fruit, and root. Label each vegetable with the plant part's name.

Name: _________________________
Pollinators or Pests?

About 75% of plants need pollinators to reproduce. The pollinators are usually bees, wasps, moths, butterflies, beetles, and birds. After reading the book for the first time, look again at each of the following pages with the students to discover which pages have pollinators on them. Since the pages are not numbered, the following list shows the riddle page with the birds, bugs, or animals illustrated.

- **Apple** riddle page ~ Wren
- **Lettuce** riddle page ~ Cottontail rabbits
- **Carrot** riddle page ~ Black swallowtail caterpillar
- **Broccoli** riddle page ~ Harlequin bugs and Cabbage white butterflies
- **Blueberry** riddle page ~ Mockingbird
- **Celery** riddle page ~ Robin, Worms and Slug
- **Tomato** riddle page ~ Ladybug/Lady beetles
- **Cucumber** riddle page ~ Bumblebee
- **Potato** riddle page ~ Spider and Potato beetles
- **Onion** riddle page ~ no pests or pollinators
- **Corn** riddle page ~ Crow and Bumblebees -
- **Squash** riddle page ~ Squash bug and Squash bee
- Last page ~ Green darner (dragonfly)

Following is some information about the pollinators/pests that could be shared with the students. Pick 3 or 4 of them and discuss how they are helpful or harmful to plants.

- **Black swallowtail caterpillar** - Caterpillars forage heavily on their host plants, but they also serve as a food source for songbirds and other wildlife. After their metamorphosis into butterflies, they become pollinators, which is important because one-third of the world’s cultivated crops depend upon the work of pollinators like butterflies and bees.

- **Harlequin bugs** - Harlequin bugs suck fluids from plant tissue. They leave yellow or white blotches on areas of leaves where they have been feeding; heavy infestations can cause plants to wilt, turn brown, and die.

- **Cabbage white butterflies** - Cabbage white larvae, called cabbage worms, are green with five lengthwise yellow stripes, and are covered with short fine hairs. After hatching, larvae feed on the underside of their host plant’s leaves during their first week, and feed from the topside during their second week. Cabbage worms grow to three-quarters of an inch long and molt five times before entering their pupal stage. Crops are unmarketable after a cabbage worm infestation. Adult cabbage white butterflies pollinate plants as they feed on nectar from many flowers, including dandelions, red clover, asters, mint and strawberries.

- **Worms** - Worms are some of a garden’s best friends. They tunnel through the soil allowing water and air to get to the roots. They also leave behind castings which provide nutrients for the plant.
- **Slugs** are one of the most destructive and difficult pests to control. Seedlings of many vegetables and flowers are favored foods and high populations of slugs can cause difficulties in establishing a crop. Slugs also feed on many fruits and vegetables prior to harvest. This pre-harvest feeding results in wounds that allow various fungi and bacteria to enter and spoil the crop.

- **Ladybugs also called lady beetles** are good insects. Not all lady beetles are females - lady beetle is just their name! They feed on many bad insects found on vegetables and flowers. Most adult lady beetles are red with black dots, but some are other colors. Lady beetles are colored brightly to warn birds or other animals that they taste bad. If you have ever held a lady beetle, sometimes they emit a yellow liquid from their body when they feel threatened. When a bird or insect eats a lady beetle, the lady beetle makes that same yellow liquid seep out of its body. That yellow liquid tastes bad to other animals and makes them sick. The lady beetle's bright red color helps remind the animal not to eat another lady beetle. Lady beetles are such good predators that garden stores sell them as a form of pest control! You can release them in the garden and landscape where they will eat other insects.

- **Aphids** - Aphids are a huge pest on roses, other flowers, vegetable gardens, shrubs and trees. If you find aphids in your garden, you probably have lady beetles too! Lady beetles love to eat aphids and can keep the aphids from ruining plants. Aphids are sap suckers. Their mouthparts are like a short tube or straw. They pierce their mouth into the plant and suck up all the juices. Plants have a lot of sugar in them, and aphids emit honeydew to get rid of the extra sugar their body does not need. The honeydew is emitted through two tubes on their abdomen. Too much honeydew attracts ants or can make mold grow on plants. Aphids can cause plant leaves to turn yellow and wilt. Too many aphids will kill a plant. Aphids are usually found on the underside of leaves and flowers. This is where they are most protected from the weather, sun, and predators.

- **Spider** - Spiders are the ultimate insect exterminators and work to keep the insect population in check by feeding on just about anything with more legs than you.

- **Green darner** (dragonfly) - Dragonflies love to eat insects.
The Foods We Eat Need Pollinators

All the foods listed below depend on bee pollinators. Are these foods part of your favorite meal or snack? Think back on what you ate for breakfast, lunch or dinner today. Were these some of the foods you enjoyed?

FRUIT CROPS:
* Apple
* Apricot
* Avocado
* Berry
  (blackberry, blueberry, cranberry, gooseberry, huckleberry, raspberry, strawberry)
* Cherry
* Citrus
  (grapefruit, lemon, mandarin)
* Currants
* Kiwi
* Litchi
* Mango
* Melons
  (cantaloupe, honeydew, watermelon)
* Peach
* Pears
* Plum

VEGETABLE CROPS:
* Artichoke
* Chinese cabbage
* Asparagus
* Dill
* Pumpkin
* Broccoli
* Eggplant
* Radish
* Brussel sprouts
* Garlic
* Rutabaga
* Cabbage
* Kale
* Carrots
* Kohlrabi
* Squash
* Cauliflower
* Leek
* Turnip
* Mustard
* Celery
* Onion
* Parsley
* Pepper
* Lima beans
* Collards
* Cucumber

HERBS/SPICES:
* Anise
* Allspice
* Chives
* Cinnamon
* Coriander
* Fennel
* Lavender
* Mint
* Mustard
* Nutmeg
* Oregano

NUT CROPS:
* Almond
* Coconut
* Cacao
* Coffee
* Cashew
* Chestnut
* Macadamia

OILSEED CROPS:
* Cotton
* Rape
* Safflower
* Soybeans
* Sunflower

From - Champaign-Urbana Pollinator Awareness Network
Be a Rainbow Eater!

Eat lots of different colored fruits and vegetables.

More Matters...
Fill your plate with fruits and vegetables!

Color the rainbow - red, orange, yellow, green, blue, or purple.
Write the names of fruits or vegetables in each space to match the color!

Date:

Name:
**Is It a Fruit or Vegetable?**

Cut out the two labels above and then cut apart the fruit and vegetable cards below. Sort the cards according to whether you think they are a fruit or a vegetable. Be ready to explain your choices.

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Vegetable</th>
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<tbody>
<tr>
<td>TOMATOES</td>
<td>LETTUCE</td>
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<td>CHERRY</td>
<td>PUMPKIN</td>
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<td>BLUEBERRIES</td>
<td>CARROT</td>
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<td>BEET</td>
<td>CABBAGE</td>
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<td>ONION</td>
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What's in the Garden? Riddle Sheet

Listen carefully to the book, What's in the Garden?
Record the answer to each riddle on the line provided.
If you guessed correctly, put a check box in the correct space.

<table>
<thead>
<tr>
<th>Riddle</th>
<th>My Guess</th>
<th>✔ if correct</th>
<th>✔ if you have ever eaten this food</th>
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Write your own riddle? Can someone guess the answer?

Name: ___________________________ Date: ___________________________