



DISCOVER



4-H JUNIOR GARDENER CLUBS



DISCOVER

4-H JUNIOR GARDENER CLUBS

Calee Lott | Allan Sulser | Stacey MacArthur
Utah State University Extension

Description

The Discover 4-H Clubs series guides new 4-H volunteer leaders through the process of starting a 4-H club or provides a guideline for seasoned volunteer leaders to try a new project area. Each guide outlines everything needed to organize a club and hold the first six club meetings related to a specific project area.

Purpose

The purpose is to create an environment for families to come together and participate in learning activities while spending time together as a multi-family club. Members will experiment with new 4-H project areas.

What is 4-H?

4-H is one of the largest youth development organizations in the United States. 4-H is found in almost every county across the nation and enjoys a partnership between the U. S. Department of Agriculture (USDA), the state land-grant universities (e.g., Utah State University), and local county governments.

4-H is about youth and adults working together as partners in designing and implementing club and individual plans for activities and events. Positive youth development is the primary goal of 4-H. The project area serves as the vehicle for members to learn and master project-specific skills while developing basic life skills. All projects support the ultimate goal for the 4-H member to develop positive personal assets needed to live successfully in a diverse and changing world.

Participation in 4-H has shown many positive outcomes for youth. Specifically, 4-H participants have higher participation in civic contribution, higher grades, increased healthy habits, and higher participation in science than other youth (Lerner et al., 2005).

Utah State University is committed to providing an environment free from harassment and other forms of illegal discrimination based on race, color, religion, sex, national origin, age (40 and older), disability, and veteran's status. USU's policy also prohibits discrimination on the basis of sexual orientation in employment and academic related practices and decisions. Utah State University employees and participants cannot, because of race, color, religion, sex, national origin, age, disability, or veteran's status, refuse to hire; discharge; promote; demote; terminate; discriminate in compensation; or discriminate regarding terms, privileges, or conditions of employment, against any person otherwise qualified. Employees and participants also cannot discriminate in the classroom, residence halls, or in on/off campus, USU-sponsored events and activities. This publication is issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Kenneth L. White, Vice President for Extension and Agriculture, Utah State University.



Utah 4-H

4-H is the youth development program of Utah State University Extension and has more than 90,000 youth participants and 8,600 adult volunteers. Each county (Daggett is covered by Uintah County) has a Utah State University Extension office that administers the 4-H program.

The 4-H Motto

"To Make the Best Better!"

The 4-H Pledge

I pledge: My HEAD to clearer thinking, my HEART to greater loyalty, my HANDS to larger service and my HEALTH to better living, for my club, my community, my country, and my world.

4-H Clubs

What is a 4-H Club? The club is the basic unit and foundation of 4-H. An organized club meets regularly (once a month, twice a month, weekly, etc.) under the guidance of one or more volunteer leaders, elects its own officers, plans its own program, and participates in a variety of activities. Clubs may choose to meet during the school year, only for the summer, or both.

Club Enrollment

Enroll your club with your local Extension office. Each member will need to complete a Club/member Enrollment form, Medical History form, and a Code of Conduct/Photo Release form (print these from the www.utah4h.org website or get them from the county Extension office).

Elect Club Officers

Elect club officers during one of your first club meetings. Depending on how many youth are in your club, you can decide how many officers you would like. This will typically include a president, vice president, pledge leader, and secretary. Other possible officers or committees are: song leader, activity facilitator, clean-up supervisor, recreation chair, scrapbook coordinator, contact committee (email, phone, etc.), field trip committee, club photographer, etc. Pairing older members with younger members as Sr. and Jr. officers may be an effective strategy to involve a greater number of youth in leadership roles and reinforce the leadership experience for both ages. Your club may decide the duration of officers 6 months, 1 year, etc.



A Typical Club Meeting

Follow this outline for each club meeting:

- Call to order—president
- Pledge of Allegiance and 4-H Pledge—pledge leader (arranges for club members to give pledges)
- Song—song leader (leads or arranges for club member to lead)
- Roll call—secretary (may use an icebreaker or get acquainted type of roll call to get the meeting started)
- Minutes of the last meeting—secretary
- Business/Announcements—vice president
- Club Activity—arranged by activity facilitator and includes project, lesson, service, etc. These are outlined by project area in the following pages.
- Refreshments—arranged by refreshment coordinator
- Clean Up—led by clean-up supervisor



Essential Elements of 4-H Youth Development

The essential elements are about healthy environments. Regardless of the project area, youth need to be in environments where the following elements are present in order to foster youth development.

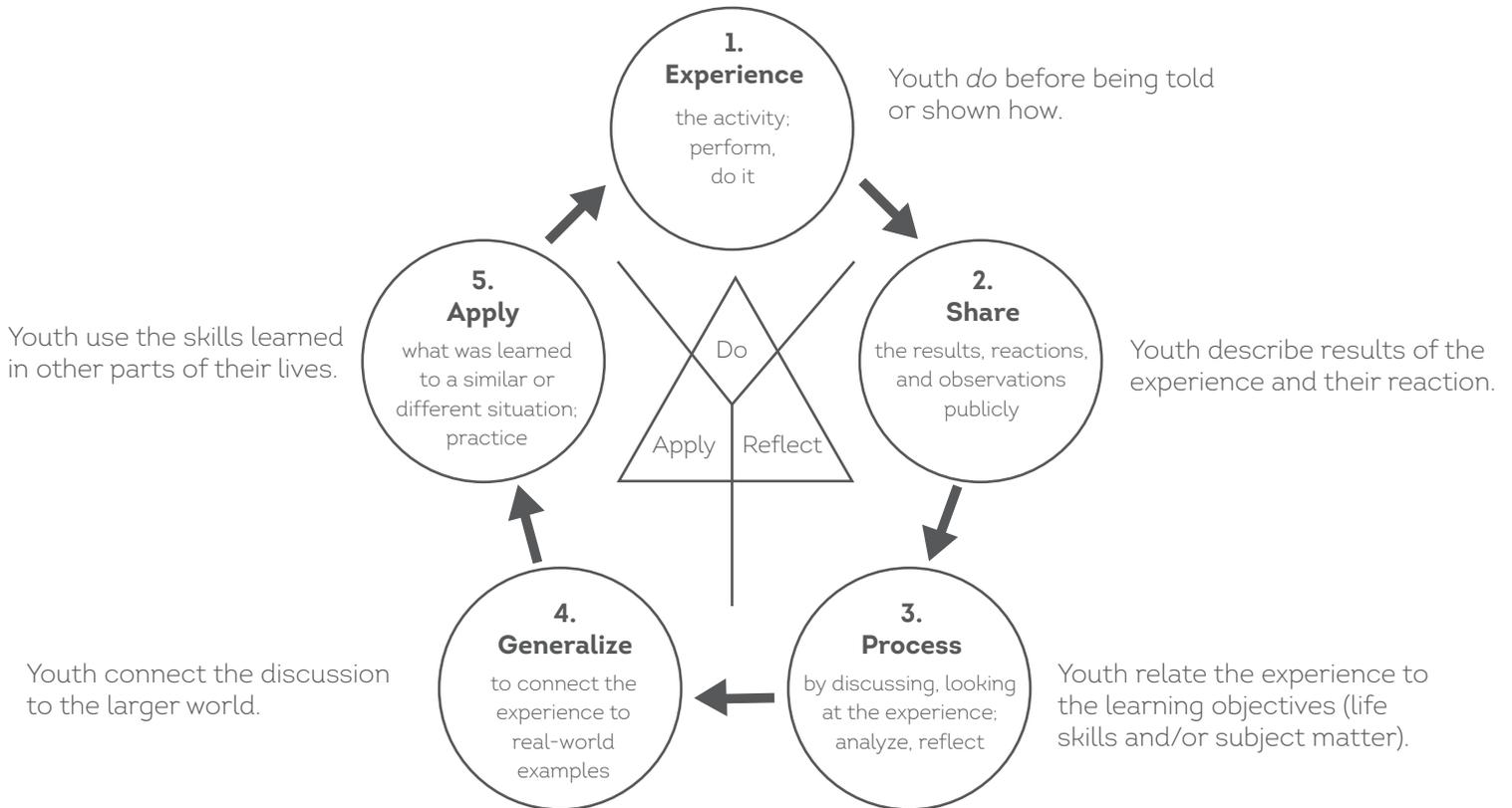
1. **Belonging:** a positive relationship with a caring adult; an inclusive and safe environment.
2. **Mastery:** engagement in learning, opportunity for mastery.
3. **Independence:** opportunity to see oneself as an active participant in the future, opportunity to make choices.
4. **Generosity:** opportunity to value and practice service to others.

(Information retrieved from: <http://www.4-h.org/resource-library/professional-development-learning/4-h-youth-development/youth-development/essential-elements/>)



4-H “Learning by Doing” Learning Approach

The Do, Reflect, Apply learning approach allows youth to experience the learning process with minimal guidance from adults. This allows for discovery by youth that may not take place with exact instructions.



4-H Mission Mandates

The mission of 4-H is to provide meaningful opportunities for youth and adults to work together to create sustainable community change. This is accomplished within three primary content areas, or mission mandates - citizenship, healthy living, and science. These mandates reiterate the founding purposes of Extension (e.g., community leadership, quality of life, and technology transfer) in the context of 21st century challenges and opportunities. (Information retrieved from: http://www.csrees.usda.gov/nea/family/res/pdfs/Mission_Mandates.pdf)

- Citizenship:** connecting youth to their community, community leaders, and their role in civic affairs. This may include: civic engagement, service, civic education, and leadership.
- Healthy Living:** promoting healthy living to youth and their families. This includes: nutrition, fitness, social-emotional health, injury prevention, and prevention of tobacco, alcohol, and other drug use.
- Science:** preparing youth for science, engineering, and technology education. The core areas include: animal science and agriculture, applied mathematics, consumer science, engineering, environmental science and natural resources, life science, and technology.

Getting Started

1. Recruit one to three other families to form a club with you.
 - a. Send 4-H registration form and medical/photo release form to each family (available at utah4h.org)
 - b. Distribute the Discover 4-H Clubs curriculum to each family
 - c. Decide on a club name
 - d. Choose how often your club will meet (e.g., monthly, bi-monthly, etc.)
2. Enroll as a 4-H volunteer at the local county Extension office (invite other parents to do the same)
3. Enroll your club at the local county Extension office
 - a. Sign up to receive the county 4-H newsletter from your county Extension office to stay informed about 4-H-related opportunities.
4. Identify which family/adult leader will be in charge of the first club meeting.
 - a. Set a date for your first club meeting and invite the other participants.
5. Hold the first club meeting (if this is a newly formed club).
 - a. See *A Typical Club Meeting* section above for a general outline.
 - i. Your activity for this first club meeting will be to elect club officers and to schedule the six project area club meetings outlined in the remainder of this guide. You may also complete a-d under #1 above.
 - b. At the end of the first club meeting, make a calendar outlining the adult leader in charge (in partnership with the club president) of each club meeting along with the dates, locations, and times of the remaining club meetings.
6. Hold the six project-specific club meetings outlined in this guide.
7. Continue with the same project area with the 4-H curriculum of your choice (can be obtained from the county Extension office) OR try another Discover 4-H Club project area.



Other Resources

Utah 4-H website: www.Utah4-h.org

National 4-H website: www.4-h.org

4-H volunteer training:

To set up login:

<http://utah4h.org/volunteers/training/>

To start modules: <http://4h.wsu.edu/volunteertraining/course.html>

(password = volunteer)

References

Information was taken from the Utah 4-H website (utah4h.org), the National 4-H Website (4h.org), the Utah Volunteer Handbook, or as otherwise noted.

Lerner, R., M. et al., (2005). Positive youth development, participation in community youth development programs, and community contributions of fifth grade adolescents: Findings from the first wave of the 4-H Study of Positive Youth Development. *Journal of Early Adolescence*, 25(1), 17-71.

We would love feedback or suggestions on this guide; please go to the following link to take a short survey:

Go to <https://goo.gl/WH8Rqk> or [Click here to give your feedback](#)

4-H JUNIOR GARDENER CLUB *Meetings*



Club Meeting 1

Basic Plant Science 2



Club Meeting 2

General Soils 5



Club Meeting 3

Planting Seeds/Propagation/Transplanting Basics 8



Club Meeting 4

Grow Boxes/Irrigation 11



Club Meeting 5

How Does Your Garden Grow? 14



Club Meeting 6

Plant Science Technology and Careers 16



Supplies

- Pictures of produce
- Stem sign
- Flower sign
- Root sign
- Seed sign
- Leaf sign
- A live plant with a flower and roots
- Paper plate
- Poster markers
- Flip chart

INTRODUCTION

This club involves fun, hands-on activities that teach basic plant science principles. Today, we will discover basic plant science.

PRIOR TO THE MEETING

- Print off pictures of carrots, potatoes, corn, squash, broccoli, celery, almonds, sunflower seeds, asparagus, spinach, lettuce, apples, mangoes, oranges, radishes, peas, cauliflower, raspberries, rice, green onions, tomatoes, beets, and any other produce images of your choosing.
- Hang up flower, root, seed, leaf, and stem sign-in separate places around the room.
- Purchase a live plant with a flower and roots.

DESCRIPTION

Time: 20 Minutes

Instructions:

1. Using produce images, instruct participants to classify the part of the plant that they eat. (i.e., stem, fruit, seeds, etc.) Tape or pin each of the different fruits and vegetables next to the sign of the plant part.

Activity #1

PLANT PARTS WE EAT



DESCRIPTION

Time: 15 minutes

Instructions:

1. Begin by taking the plant out of the container it came in.
2. Remove the soil from the roots.
3. Point out the different parts of the plant.
4. Explain the function of each part of the plant (refer to Appendix 1).
 - a. Roots – Gather Nutrients, absorb water, anchor plants, grow in the soil, store plant food.
 - b. Stem – Provides structure, moves nutrients to the different parts of the plants, connects with roots, supports the leaves.
 - c. Leaves – Absorb sunlight, may store food .
 - d. Flower – Contains reproductive organs.
 - e. Seeds – contain new plant life.
 - f. Fruit – Protects and helps develop the seed.

DESCRIPTION

Time: 15 minutes

Instructions:

1. After finishing the dissecting activity, ask the participants how a plant goes from a seed to a plant.
2. Using the image, in Appendix 2, replicate the image on a flip chart. Guide participants through each step one at a time.



Reflect & Apply

- Why is it important to know which parts of the plant we can eat, and which we cannot or should not eat?
- What are the four parts that make up the structure of a plant?
- What is the function of the Flower? Roots? Leaves? Stem? Seeds? Fruit?
- What are the five stages of a plant's life cycle? What happens at each stage?
- Why is the life cycle of a plant important to know to be a Junior Gardener?
- What did you learn today that will be helpful when you begin growing your own plants?
- How is developing your leadership style like a growing plant?

References:

Plant Life Cycle Image retrieved from

<https://s-media-cache-ak0.pinimg.com/originals/15/75/8d/15758d63dc228b48b7e48ad25f08d48e.jpg>

Structure and Function of Plants retrieved from

<https://s-media-cache-ak0.pinimg.com/originals/e4/20/c3/e420c31f915e2430e2bd86e6fa4a14bb.jpg>



Supplies

- Computer
- Internet access
- Projector
- Erosion and Soil YouTube video
- Instant chocolate pudding mix
- Vanilla wafers
- Milk
- Shaved coconut
- Green food coloring
- Butterscotch chips
- Clear cups
- Quart-sized Mason jar
- Water
- Golf ball
- Baseball
- Basketball
- Soil

INTRODUCTION

This club involves fun, hands-on activities that teach basic plant science principles. Today, we will discover general soils.

PRIOR TO THE MEETING

- Have the YouTube video for Activity 1 pulled up on the computer and ready to play on the projector.
- Have a quart-sized Mason jar

Activity #1

WHERE DOES THE SOIL GO?



DESCRIPTION

Time: 15 Minutes

Instructions:

1. Prior to beginning this activity, refer to steps 4 and 5 of Activity 3: Soil Texturing and Particle Size, then proceed to number 2 of activity 1.
2. Show the video to participants: Funcsciencedemos: Erosion and Soil
<https://www.youtube.com/watch?v=im4HVXMGI68>
3. Pause the video at precisely 1:37.
4. Follow step number 6 of Activity 3: Soil Texturing and Particle Size, then proceed to step 5 of Activity 1. Repeat the following question: Do you think the color of water will be different depending on the bottle water is poured into?
5. Continue watching the video
6. At the conclusion of the video, ask participants to discuss if their hypothesis was correct. Ask participants why they think the water was clearer in the grass cup vs. the dead leaves cup, vs. the soil only cup.



Activity #2

BUILDING SOIL HORIZONS



DESCRIPTION

Time: 15 minutes

Instructions:

1. Using Appendix: soil horizons as a reference, participants will create a soil horizon.
2. Instruct participants to put a vanilla wafer or two on the very base of the clear cup. This layer represents the R horizon, or bedrock
3. For the C horizon, instruct participants to break additional cookies into smaller pieces and place them on top of the R horizon.
4. The B horizon will be represented by the chocolate pudding. Spoon a layer of chocolate pudding on top of the C horizon.
5. The A horizon will be a combination of butterscotch chips and pudding. Add butterscotch chips for an additional layer.
6. For the O Horizon, or organic material, in a small bowl combine shaved coconut with 3-4 drops of green food coloring. Stir together. This will represent grass. Place the coconut on top of the butterscotch/ pudding layer. Enjoy.

Activity #3

SOIL TEXTURING AND PARTICLE SIZE



DESCRIPTION

Time: 20 minutes

Instructions:

1. Using the three different sized balls, discuss how each ball represents a different type of soil.
2. Explain how if sand were the size of a basketball, then silt would be the size of a baseball, and clay would be the size of a golf ball.
3. Fill quart jar and fill half full of soil. Wet the soil to a mud consistency, then jiggle the jar to settle the soil.
4. Mark the level of the soil with a marking pen or whiteout.
5. Add water to the top of the jar and shake vigorously until the soil is all mixed in the water.
6. Put the jar on the table and set a timer for 40 seconds. Mark the level of the settle portion of the soil that is the sand portion.
7. Wait 15 minutes and mark the level of the soil in the jar. The difference between the sand layer and the current settled layer is the silt portion.
8. The distance between the original measurement and the silt is the clay portion of the soil.
9. Calculate the percent of sand, silt and clay. Measure the depth of the soil by measuring the distance from the bottom to the first mark in inches, which is the sand fraction. The distance from the first mark to the second mark, is the silt fraction, and the distance from the bottom to the third mark is the sand plus silt plus clay fraction. Sometimes, when all the sand silt and clay have settled, the height of the soil is higher than when you marked the jar after making a mud solution. This can only be determined by letting the jar sit for several days. If you have the time to do this, then a more accurate calculation of percent sand, silt, and clay can be determined based on this new measured total height. Also, the percent of sand, silt, and clay is a volume percentage. The percent of sand is the depth of the sand divided by the depth of the total soil
10. The percent of silt is the depth of the silt divided by the depth of the total soil.
11. The percent of clay is 100 minus the percent of sand plus silt.
12. To determine the soil texture, knowing the percent sand silt and clay, use the soil Triangle in Appendix 4.



Reflect & Apply

- Why is the water clearer in the cup from the soil with grass growing than in the cup with bare ground?
- What was the soil type in Activity 3?
- Why is it important to understand soil horizons?
- What is the purpose of soil?
- Why is it important to know the texture of your soil?
- Do different plants grow better in different environments or comfort zones?
- Do you have a comfort zone like plants do? How would you describe your comfort zone?

References:

Water and Soil

Funsciencedemos: Erosion and Soil

<https://www.youtube.com/watch?v=im4HVXMGI68>

Soil Horizons

[http://almostunschoolers.](http://almostunschoolers.blogspot.com/2011/05/soil-horizon-pudding-parfait.html)

[blogspot.com/2011/05/soil-horizon-pudding-parfait.html](http://almostunschoolers.blogspot.com/2011/05/soil-horizon-pudding-parfait.html)

Soil Texture Analysis

<http://www.soils4kids.org/files/s4k/soil-texture-experiment.pdf>



Planting Seeds/Propagation/Transplanting Basics



Supplies

- Seed packets from Activity 3
- Small plastic cups
- Water
- Wandering Jew plant
- Spider plant with lots of starts (see Appendix)
- Egg cartons (approximately 12 cells/participant)
- Soil
- Plastic row tags
- Bean, corn, pea, tomato, and zucchini seeds
- Cookie sheet
- Pitcher
- Water

INTRODUCTION

This club involves fun, hands-on activities that teach basic plant science principles. Today, we will be discussing various methods of starting plants.

PRIOR TO THE MEETING

1. Purchase watermelon, corn, pea, tomato, and zucchini seeds, small plastic cups, plastic row tags, and potting soil.
2. Collect enough egg cartons so that each participant gets at least 12 cells
3. Find a Wandering Jew plant and a spider plant. The spider plant may be a little more difficult to find as it will need to have a number of starts (see Appendix 2 for clarification on what a reproductive state of a spider plant looks like).

Activity #1

SEED LABEL 101



DESCRIPTION

Time: 15 minutes

Instructions:

1. Divide participants into the same number of groups there are seed packets (i.e., 5 seed packets = 5 groups).
2. Instruct participants that they have 3 minutes to read the back of the seed packet. Tell them to look for information like amount of sunlight needed, number of growing days, etc.
3. Have participants report to the rest of the group what they learned from the seed packet.
4. As a group, discuss what was similar/different with each of the seed packets.



Activity #2

PROPAGATION



DESCRIPTION

Time: 10 minutes

Instructions:

1. Repeat the following to your group, "Now, we will be learning about propagation. Propagation is defined as 'the breeding of specimens of a plant or animal by natural processes from the parent stock.' Today we will be propagating a spider plant and a Wandering Jew. These plants are propagated a little differently."
2. Cut the spider plant spiderette (circled in blue in Appendix) just above the spiderette (indicated by the orange arrow). Spider plants are propagated through the process known as division.
3. Place the spiderettes in a cup of water so that the bottom of the spiderette is in water, but the leaves are not fully submerged.
4. Cut leaves off of the Wandering Jew plant, just above the node.
5. Place the Wandering Jew leaves in enough water so that the stem is in the water but the leaf is not fully submerged.
6. Plan on for 1-2 weeks for root growth to begin to take place.

Activity #3

SEEDING



DESCRIPTION

Time: 25 minutes

Instructions:

1. Give each participant five plastic tags and an egg carton.
2. Have participants write plant type, today's date, and their name on each of the tags.
3. Instruct participants to fill their egg cartons with soil.
4. Have participants label each row with their plastic tags. Then give them the right number of seeds for each row. If they need an extra tag, make sure they get one.
5. Help them understand how deep to plant each seed.
6. Put each participant's carton on a cookie sheet. Fill the bottom of the cookie sheet with water.



4-H Club Meeting 4



Grow Boxes/Irrigation



Supplies

- Propagation starts from Club Meeting 3
- 1 terra cotta plant per participant
- Potting soil
- Water
- 2 (1" wide x 18" long) pieces of wood per participant
- 2 (1" wide x 4" tall x 22" long) pieces of wood per participant
- 1 piece of wire mesh about 12" x 22" per participant
- Staple gun
- 8 1 1/2" screws
- Power drill
- 1/8" drill bit
- Enough shade cloth to cover bottom of grow box
- Variety of seeds
- Plastic garden tags
- Phillips screw drill bit
- Straws
- Tape
- Seedlings from Club Meeting 3
- 120 CC Syringe
- Penny nail

INTRODUCTION

This club involves fun, hands-on activities that teach basic plant science principles. Today, we will be building grow boxes and learning one method of irrigation.

PRIOR TO THE MEETING

- Pre-drill each piece of 22" wood using the 1/8" drill bit so that each piece has a total of four holes. Each 22" piece should look like this:



- Make sure your power drill is charged
- Pre-cut wire mesh
- Set out supplies for irrigation lab

Activity #1

TRANSPLANTING PROPAGATION STARTS



DESCRIPTION

Time: 10 minutes

Instructions:

1. During Club Meeting 3, we placed our propagation starts in water to start roots. As the participants can see, root hairs should have started to develop.
2. Have participants fill their terra cotta plants with potting soil
3. Have the number of Wandering Jew plants and spider plants written on a piece of paper (i.e. 5 Wandering Jew plants, 5 pieces of paper; 3 spider plants, 3 pieces of paper).
4. Have each participant draw a piece of paper. The piece of paper indicates which plant they will be propagating and which plant they will be taking home.
5. Show participants how to transplant each plant.
6. Instruct participants on how to transplant their plant.

Activity #2

BUILDING A GROW BOX



DESCRIPTION

Time: 15 Minutes

Instructions:

1. Give each participant 2 (1" x 4" x 22" and 1" x 4" x 18") pieces of wood, 1 wire mesh piece, and 8 screws.
2. Instruct each participant to use their screws to piece their boxes together. Connected, the boxes should make a rectangle so that the 18" pieces are perpendicular to the 22" pieces.
3. Help the participants staple their wire mesh to the bottom of their grow boxes.
4. Lay the shade cloth on the bottom of the box and fill the grow box with potting soil.
5. Using the seeds planted from Club Meeting 3, transplant the seeds into rows in your grow box.

Activity #3

DESIGNING AN IRRIGATION SYSTEM



DESCRIPTION

Time: 25 Minutes

1. Repeat the following instructions to your participants: "you have 15 minutes to construct an irrigation system using the supplies provided. Your goal is to make sure that each plant gets water in the most water-efficient way possible."
2. After 15 minutes, using the 120 CC syringe, add water to the irrigation system. Remove the irrigation system and evaluate if the crops were adequately watered.
3. Repeat the following instructions to the participants: "You will have 5 minutes to revise your design and test it again."
4. Re-evaluate the designs.



Reflect & Apply

- Why is it important to let the root hairs establish prior to propagating the house plants?
- What could be used to help the peas climb?
- What was the most important thing to consider when transplanting into your grow box?
- What was the most challenging aspect of designing your irrigation system?
- How could you replicate your irrigation system on a larger scale for a larger garden?

4-H Club Meeting 5

How Does Your Garden Grow?



Supplies

- 1 copy per participant of Master 5.1
https://naitcapi.usu.edu/media/uploads/2015/04/20/Master_5.1.pdf
- Pencils
- Crayons
- Markers
- Seed packets
- 2-4 copies per class of Master 5.2
https://naitc-api.usu.edu/media/uploads/2015/04/20/Master_5.2.pdf

INTRODUCTION

This club involves fun, hands-on activities that teach basic plant science principles. Today, we will be discussing how to plan a garden.

PRIOR TO THE MEETING

1. Figure out the last expected frost date in the spring and the earliest expected frost date in the fall for your area.

DESCRIPTION

Time: 50 minutes

Instructions:

1. Have participants list the things they need to know to help them plan a garden.
2. Provide participants with the first and last frost days. Have participant calculate the growing season for our area.
3. Have participants refer to the seed packets and identify if they would be able to grow that plant from seed or if they would need to lengthen their growing season.
4. Explain to participants that they are going to develop a plan for their garden. They will choose the seeds they want to plant and plan where things will grow in their garden. They can also indicate when they would like to plant. The pieces on 5.2 indicate the amount of space needed by each plant. Recommend that participants lay out their garden before gluing so they can make sure to use all of the space.
5. Have participants present their garden plans to the rest of the class. Allow participants to ask questions.

Activity #1 
PLANTING A GARDEN



Reflect & Apply

- List at least three ways that you thought about the environment when planning your garden.
- What are some things that might be wrong if your garden is not growing well? How would you fix those problem?
- Explain why fertilizers can be one way to help plants grow better.
- Why is it important to know the first and last frost dates?
- What are some methods that can be used to lengthen a growing season?
- Why is it important to know how much space a plant needs to grow?

References:

http://utah.agclassroom.org/matrix/lessonplan.cfm?lpid=206&state_only=UT&content=SCIENCE&search_term_lp=plants

4-H *Club Meeting 6*

Plant Science Technology and Careers



Supplies

- Ziploc bag
- Funnel
- Plastic cup
- 2 squares cheesecloth
- Graduated test tube
- Pipette
- 1,800 mL water
- 300 mL shampoo
- 6 tsp. salt
- 3 strawberries
- Isopropyl alcohol
- Whiteboard/flip chart
- Markers

INTRODUCTION

This club involves fun, hands-on activities that teach basic plant science principles. Today, we will be discussing Plant DNA and Career Opportunities.

PRIOR TO THE MEETING

1. Prepare DNA Extraction buffer (water, shampoo, salt).
2. On a flip chart, write all of the letters of the alphabet on a flipchart with enough space for participants to list careers.



DESCRIPTION

(Resource published by Sam Houston State University & National Agriculture in the Classroom)

Time: 30 Minutes

Instructions:

1. Divide the participants into groups of three.
2. Carefully remove most of the air from the Ziploc bag containing strawberries and 3 tbsp of DNA extraction solution, and seal the bag.
3. Gently mash the strawberries through the bag. Be careful not to break the bag, but mash the strawberry mix thoroughly.
4. Place the funnel in the plastic cup. It should sit on the rim of the cup.
5. Place the two squares of cheesecloth into the funnel, forming a liner for straining.
6. Carefully pour the strawberry mixture into the funnel, making sure to catch the solids with the cheesecloth. After filtering the mixture, remove the cheesecloth, and place it into the Ziploc bag for disposal.
7. Add 5 ml of the filtered strawberry extract to the graduated test tube using the funnel. Hold the tube near the top so the heat from your hand does not affect the extraction.
8. Remove the funnel, and use the pipette to forcefully add 3 ml of the isopropyl or rubbing alcohol to the test tube. Take care not to tilt or tip the test tube; do not mix the two liquids.
9. Observe the line between the strawberry mixture and the alcohol. You will notice a white, thread-like cloud appearing at this line. This is the strawberry DNA. The DNA will clump together and float to the top of the alcohol layer.
10. Holding the tube still, observe the tubes of others around you. Do you notice any differences?
11. Clean up! Dump the remaining strawberry solution where instructed, throw away the Ziploc bags, and collect the cups, test tubes, funnels, and pipettes so they can be cleaned and used again

DESCRIPTION

Time: 20 Minutes

Instructions:

1. Ask participants "Is it useful for scientists to be able to extract DNA from an organism?"
2. List their responses on the whiteboard/flip chart.
3. Using your flip chart with all the letters of the alphabet, instruct participants to list possible careers that start with each letter.



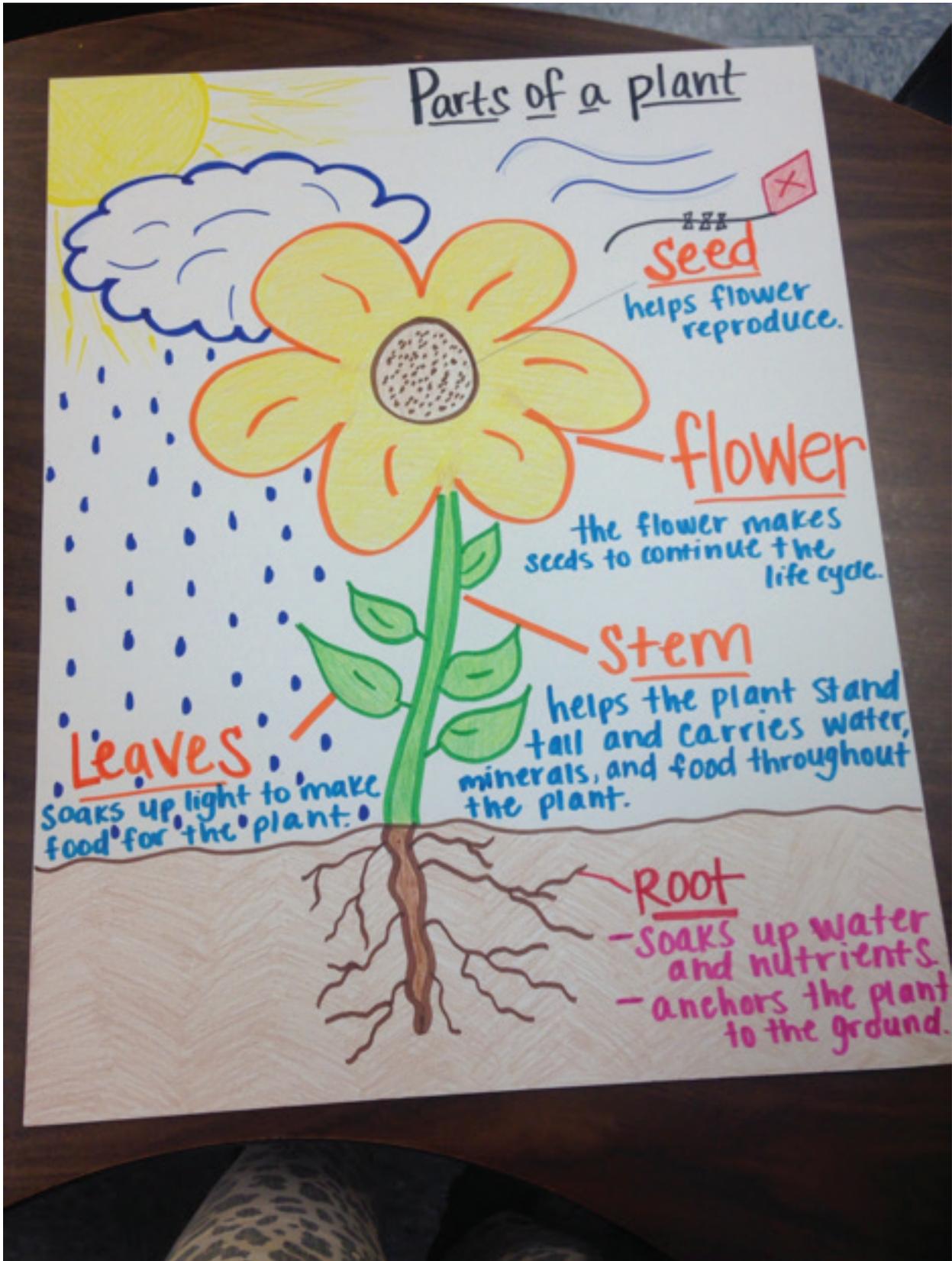
Reflect & Apply

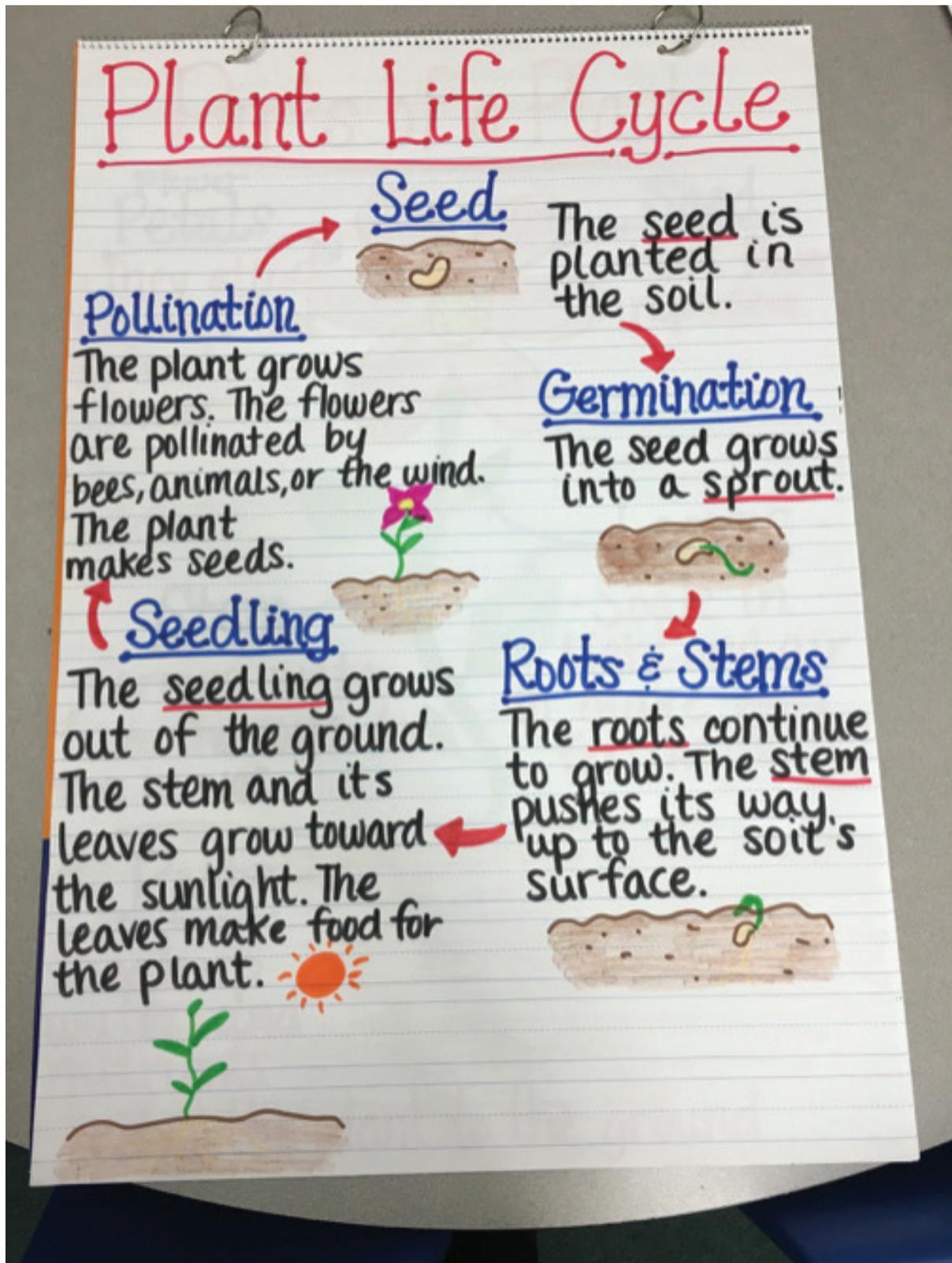
- Why did you have to mash the strawberries?
- What was the purpose of the salt in the DNA extracting solution?
- What was the purpose of the soap in the DNA extracting solution?
- What happened in the final step when you added alcohol to your strawberry extract?
- What did the DNA look like?
- Is there DNA in your food? How do you know?
- Why is it useful for scientists to be able to extract DNA from an organism?
- What do you want to be when you grow up?
- How can the skills learned through JMG help you prepare for your future career?

References:

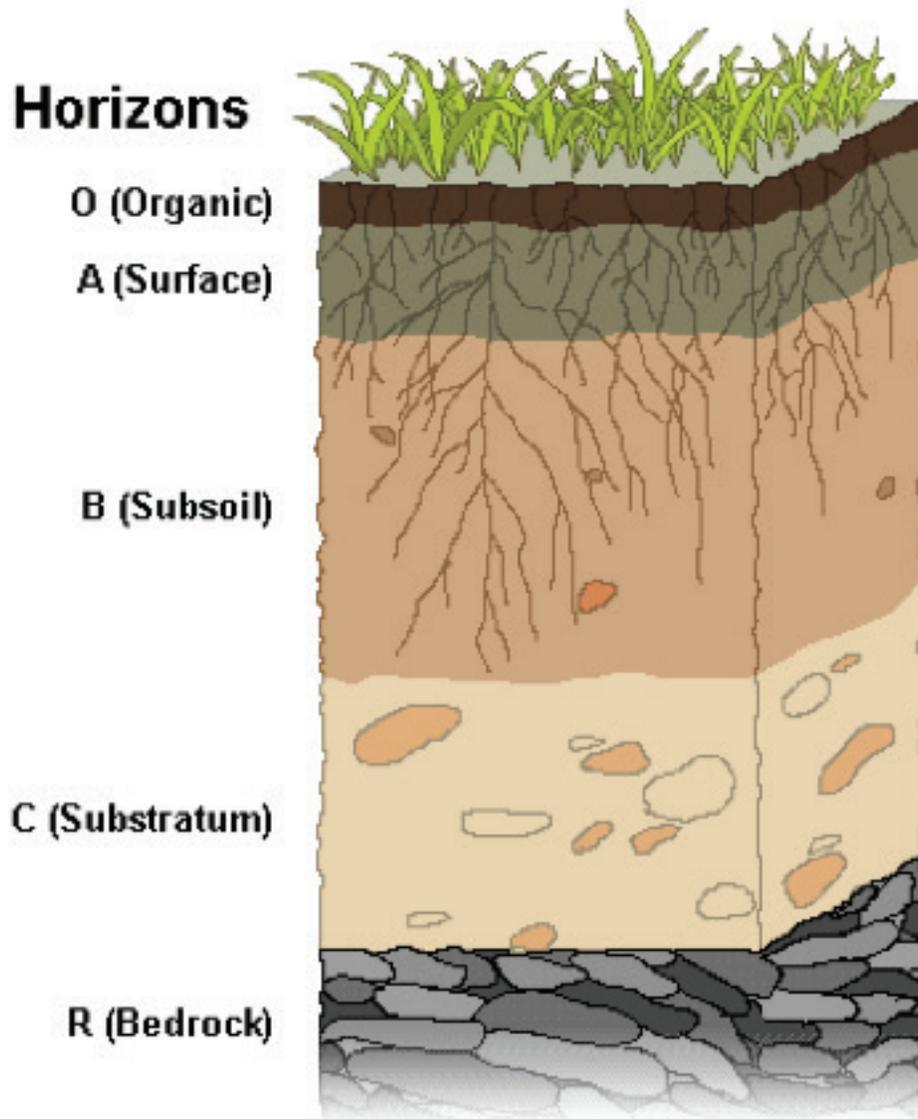
<https://naitc-api.usu.edu/media/uploads/2015/12/11/LabSheet.pdf>

http://www.shsu.edu/~agr_www/documents/DNALAB.pdf



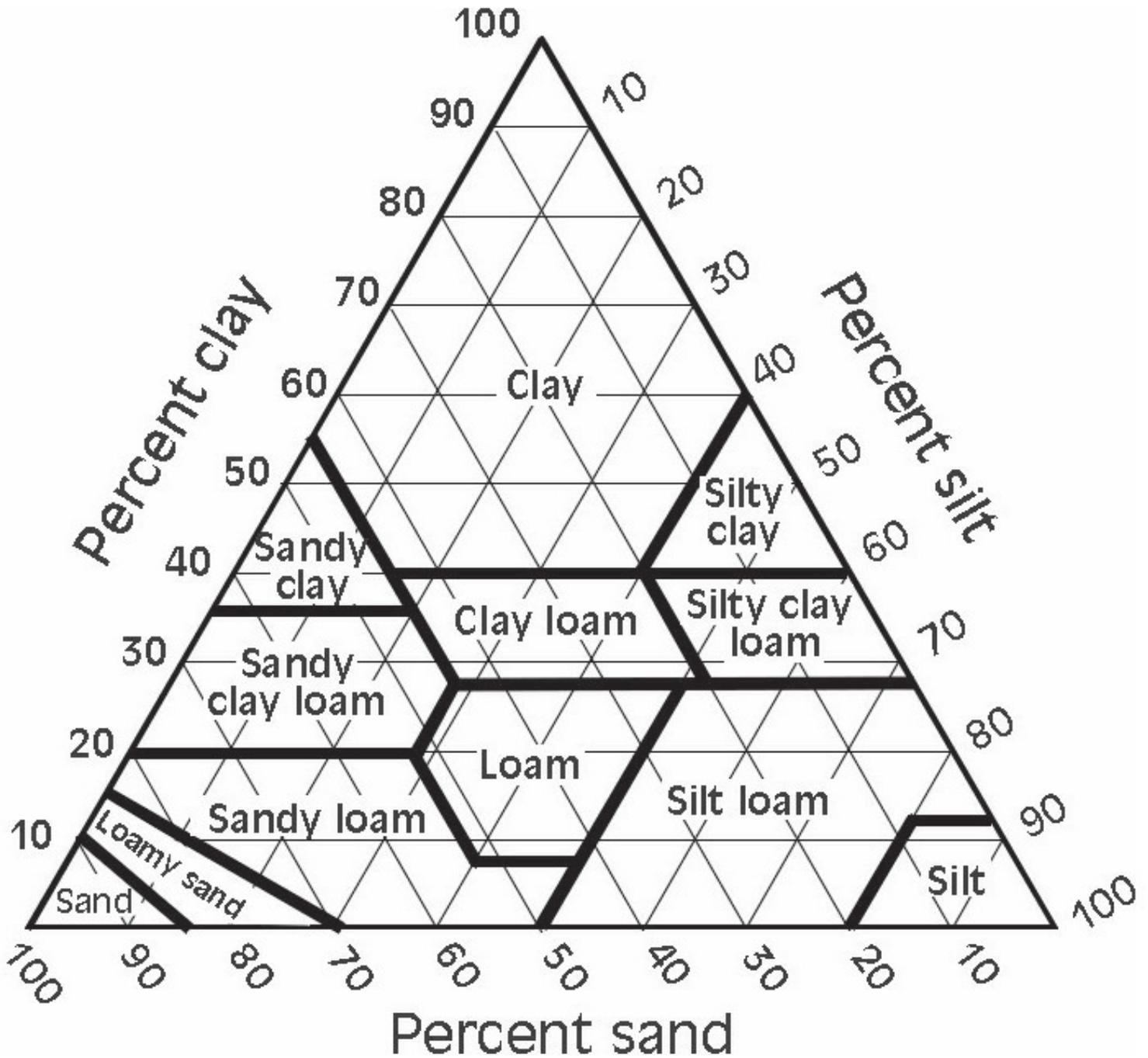


SOIL HORIZONS





SOIL TRIANGLE



SPIDER PLANT

The blue circles below indicate spider plants ready for propagation.





More to *Discover*

Congratulations on completing your Discover 4-H club meetings! Continue with additional curriculum in your current project area, or discover other 4-H project areas. Check out the following links for additional 4-H curriculum.

1. www.discover4h.org
2. <http://www.4-h.org/resource-library/curriculum/>
3. <http://utah4h.org/curriculum/>

Become a 4-H Member or Volunteer

To **register** your Utah club or individuals in your club visit and contact your County Extension Office

<http://utah4h.org/about/>

<http://utah4h.org/join/index>

For help registering in 4-H online visit:

<http://utah4h.org/staffresources/4honlinehelp>

Non-Utah residents, please contact your local 4-H office:

<http://www.4-h.org/get-involved/find-4-h-clubs-camps-programs/>



Stay *Connected*

Visit Your County Extension Office

Stay connected with 4-H activities and news through your county Extension office. Ask about volunteer opportunities and don't forget to register for your county newsletter. Find contact information for counties in Utah here:

<http://utah4h.org/events/index>

Enjoy the Fair!

Enter your project or create a new project for the county fair. Learn about your county fair and fair judging here:

<http://utah4h.org/events/index>



Participate in Local or State 4-H Activities, Programs, Contests or Camps

For Utah state events and programs visit:

<http://utah4h.org/events/index>

<http://utah4h.org/projects/>

For local Utah 4-H events and programs, visit your county Extension office.

<https://extension.usu.edu/locations>

Non-Utah residents, please contact your local 4-H office.

<http://www.4-h.org/get-involved/find-4-h-clubs-camps-programs/>



Discover *Service*

Become a 4-H Volunteer!

 <http://www.youtube.com/watch?v=UBemO5VSyK0>

 <http://www.youtube.com/watch?v=U8n4o9gHvAA>

To become a 4-H volunteer in Utah, visit us at:

<http://utah4h.org/join/becomevolunteer>

Serve Together as a 4-H Club or as an Individual 4-H Member

Use your skills, passions, and 4-H to better your community and world. You are needed! Look for opportunities to help in your area or participate in service programs that reach places throughout the world (religious groups, Red Cross, etc.).

Hold a Club Service Project

USU Collegiate 4-H Club hosted "The Gift of Giving" as a club activity. Club members assembled Christmas stockings filled with needed items for CAPSA (Community Abuse Prevention Services Agency).

<http://tinyurl.com/lu5n2nc>



Donate 4-H Projects

Look for hospitals, nursing homes, or other nonprofit organizations that will benefit from 4-H projects. Such projects include making quilts for CAPSA or Primary Children's Hospital, or making beanies for newborns. During Utah 4-H State Contests, 40 "smile bags" were sewn and donated to Operation Smile.

Partner with Local Businesses

92,000 pounds of processed lamb, beef, and pork were donated to the Utah Food Bank in 2013 by multiple companies.

<http://tinyurl.com/pu7lxyw>

Donate Money

Clubs or individuals can donate money gained from a 4-H project to a worthy cause. A nine-year-old 4-H member from Davis County donated her project money to help a three-year-old battle cancer.

<http://tinyurl.com/mqtfwxo>



Give Us Your *Feedback*

Help us improve Discover 4-H curriculum. We would love feedback or suggestions on this guide.

Please go to the following link to take a short survey:

[Click here to give your feedback](#)