Alabama 4-H Grows

Alabama Cooperative Extension System

Garden Project

Bonnie PLANTS

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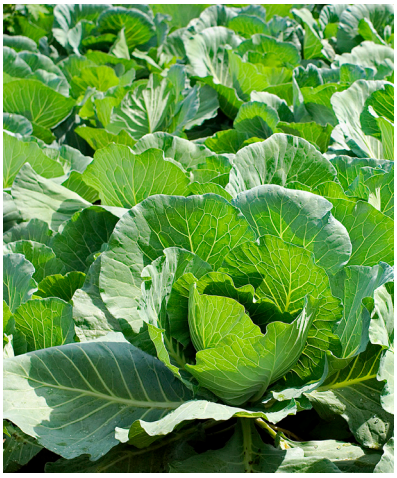
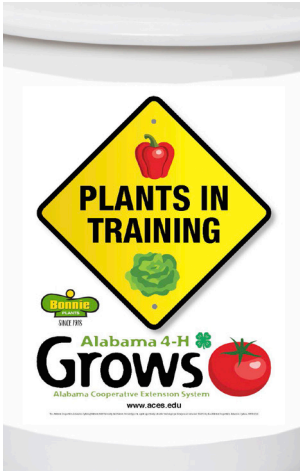
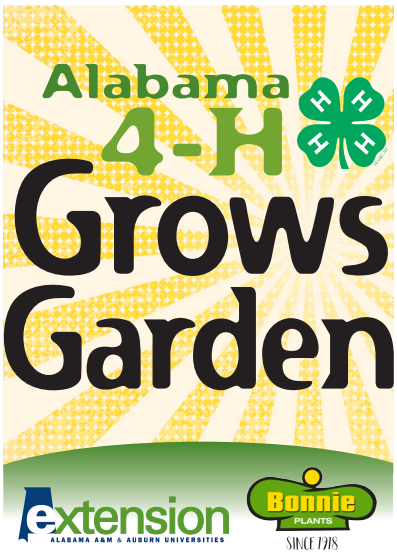
What Is Alabama 4-H Grows?

The Alabama 4-H Grows Garden Project gives youth an array of both summer and fall gardening experiences through the planting and care of their own edible gardens. Depending on a youth's participation tier (explained in detail on pages 3 and 4), the experience will include planting seeds or transplants, harvesting, marketing, distribution, and consumption. The project also includes donating produce that is grown to a local food bank or similar organization. Participants in this program will do the following:

- Learn to prepare a garden area, including soil testing
- Use the USDA Plant Hardiness Zone Map to help plan the garden planting
- Learn to successfully grow a variety of vegetables
- Develop journaling and record-keeping skills
- Grow produce for consumption by others
- Celebrate the pride of accomplishment and learning
- Visit the 4-H Grows website at www.aces.edu/blog/topics/4h/alabama-4-h-grows/







Who Can Participate?

The Alabama 4-H Grows Garden Project is available to any youth age 9 through 18 as of January 1 of the project year. Enrollment in 4-H is required before enrollment in the project.

Explanation of Project

The Alabama 4-H Grows Garden Project is an exciting hands-on, project-based approach to youth gardens. This program encourages and provides gardening experiences for youth with or without horticulture experience and in any geographic or socio-economic setting. Through this program, youth from both rural and urban settings can participate in hands-on gardening experiences that directly engage them in gardening education, while helping them learn about the business of agriculture through entrepreneurial experiences. Each of the three program tiers will encourage production at a volume commensurate with the overall purpose of that tier. When a young person selects the tier at which to participate, he or she will receive specific expectations and learning outcomes before enrolling as a participant.

Youth who are participating in the program will grow produce for home or public consumption. They will learn about plant propagation, plant growth and development, consumer and food sciences, marketing, basic input/output accounting, and other related topics through a multidisciplinary educational approach. Science, Technology, Engineering, and Math (STEM) concepts are incorporated into the program by having participants design and construct garden beds and plan garden layouts to maximize gardening space for the best yield potential. SOW, the mobile app sponsored by Alabama Extension, as well as online videos and up-to-date emails will be used to communicate gardening information pertinent to the successful completion of the project.

Alabama 4-H Grows Garden Project Tiers

To participate in the Alabama 4-H Grows Garden Project, each young person will choose the season (summer or fall) and the tier at which he or she would like to participate, sign up in 4HOnline, and pay the necessary participation fee (if applicable). Each tier will include a specific list of objectives that each participant must fulfill. Once they have successfully completed all of the required tasks, they will be eligible for a 4-H Grows Certificate of Completion to celebrate their accomplishments. Successful completion of the program will be based on the specific requirements outlined in each tier. These may include keeping a project journal, taking weekly photos, recording vegetable production and consumption, and distributing vegetables.

Tier I (Production & Consumption) is a beginning gardening experience that ties outcomes to broad and basic gardening concepts. When a youth enrolls in this tier, he or she will use three 5-gallon buckets or similar-size containers and soil to plant their three plants. The summer project will include three Bonnie Plant varieties—Green Griller Zucchini, Sweet & Neat Tomato, and the Bonnie Green Bell Pepper—or comparable plants. The fall project will include Green Magic Broccoli, Georgia Collard, and White Hybrid Cauliflower or comparable plants. Tier 1 will focus on learning to garden and on incorporating fresh vegetables into family meals.

*The garden area for Tier 1 will be three 5-gallon buckets or similar-size containers.

Tier II (Purpose: Consumption, Production, and Community) is an intermediate gardening experience that helps promote production and the comparison of multiple varieties and numbers of plants. In addition, participants will learn to incorporate fresh vegetables into family meals and ways to preserve vegetables for later use. A community component may be included so youth can share a percentage of their produce with the community. The summer project will include the following plants: tomato (3), bell pepper (2), banana pepper (2), jalapeño pepper (2), zucchini (2), yellow squash (2), or comparable plants. The fall project will include broccoli (3), collards (3), cauliflower (2), buttercrunch lettuce (6), spinach (6), or comparable plants.

*The garden area for Tier II needs to be approximately 40 square feet (4' x 10" and not included with the project).

Tier III (Purpose: Consumption, Production, Marketing, and Community) is an advanced gardening experience that promotes the production and comparison of multiple varieties and number of plants. Participants will learn how to incorporate fresh vegetables into family meals and how to preserve vegetables for later use. Tier III will also introduce young people to the concept of forming a business; creating a business model; and marketing and selling produce to the community through outlets such as a local farmers market, roadside stand, or other means. Youth may also support the local community by donating a portion of their produce to a local group. Participants may choose to grow an assortment of produce or a specific vegetable with the goal of having enough to sell at market. A summer garden could include the following plants: tomato (6); cherry tomato (2); basil, oregano, and onion (3); bell peppers (4); banana peppers (2); jalapeño pepper; and seed packets of zucchini, yellow squash, and cucumber, or comparable plants. A fall garden could include broccoli (6), collards (6), cauliflower (4), buttercrunch lettuce (12), spinach (12), or comparable plants.

*The garden area for Tier III needs to be approximately 80 square feet (2' to 4' x 10" and not included with the project).

Tier IV (Purpose: Consumption, Production, and Learn & Serve) is an advanced gardening experience that promotes production while supporting the community by donating at least 50 percent of the produce grown to a local food bank, church feeding program, or other group or organization. The garden for this project may include a variety of different produce or focus on producing a specific type of produce such as growing collards in the fall.

*The garden area for Tier IV needs to be at least 48 square feet (4' x 12') or larger in size.

Participation in Alabama 4-H Grows

To participate, youth should enroll in the program and decide whether they are signing up for the summer project or the fall project. Youth may sign up to do both the summer and fall projects as they will not overlap. Participation in the project may be done individually or as a club or group. Participants will grow different types of plants during each project season. Project specifics will be communicated to the youth through the county 4-H program.

Garden Project

- Three 5-gallon buckets or similar-size containers and soil
- Hand trowel
- Garden hose or watering can
- Daily gardening journal

Gardening Supplies for Tier II Garden Project

- Tier II will require construction of a raised bed garden or access to a garden area that provides at least 40 square feet of garden area
- Soil test (suggested, but optional)
- Garden tools such as hand trowel, hoe, and shovel
- Garden hose or watering can
- Daily gardening journal

Gardening Supplies for Tier III Garden Project

- Tier III will require construction of a raised bed garden or access to a garden area that provides at least 80 square feet of garden area
- Soil test (suggested, but optional)
- A way to work up soil if using a garden area
- Hand trowel and garden tools
- Garden hose and sprinkler

Gardening Supplies for Tier IV Garden Project

- Tier IV needs a gardening area that provides at least 48 square feet or more of gardening space
- Soil test (suggested, but optional)
- A way to work up soil
- Hand trowel and garden tools
- Garden hose and sprinkler
- Daily gardening journal

Basic Gardening Information

Selecting Your Garden Location

If you are participating in the Tier I project, you will have very limited preparation. Make sure you select a location that has enough room for the three 5-gallon buckets and that receives 6 to 8 hours of sunlight per day. Because these gardens are located in buckets, it is possible to move them during the day to increase the amount of sunlight they receive, but this also increases your labor. Because you will be using prepared soil for the buckets, you will not need to conduct a soil test. You will also need to think about your location as it pertains to public access. If you do not have a secure area, then you may want to move your bucket gardens each evening to protect them from damage.

If you are participating in Tier II or Tier III, you will need to prepare your garden area in advance so you will have time to either build your raised bed gardens or till the garden area. If you build an in-ground garden using the local soil, you should conduct a soil test. Contact your county Extension office for information on raised bed gardens and taking soil tests.

If you choose to construct a raised bed garden and use prepared garden soil or follow the soil directions in the raised bed publication, you should be able to skip the soil test the first year. When selecting the garden area, make sure the entire area gets 6 to 8 hours of sunlight per day. With many garden locations, you will need to look at surrounding trees and buildings because an area that is in full sun during the summer may be partially shaded during the fall or spring, depending on the proximity of the object and the shadow it casts as the earth rotates.

Watering

The amount of water a garden needs depends partly on the type of soil and the amount of organic material found in the garden area. The typical garden needs from 1" to 1½" of water (either rain or irrigation) per week. If the garden contains a lot of sand and organic material or it is raised, you may need to increase the amount of water that you give it as it will drain and dry out faster. It is helpful to place a rain gauge in the garden so you can tell exactly how much rain the garden received. If you find that the garden only received a ¼" and no more rain is expected for a few days, you may want to water it more to reach the 1" amount. This will help keep the rain from being just a surface watering, which does not encourage deep roots. You may also want to use a garden moisture tester to measure the moisture of the soil at a depth that is more beneficial to the plants.

If you need to irrigate the garden, the best time is early in the morning from 6 a.m. to 8 a.m. This allows the water to soak in and reach the plant roots before the heat of the day, and it reduces evaporation. It will also allow the plants to dry out and, therefore, help prevent disease that thrives in a moist environment. The second best time for watering is late in the afternoon or early evening when there is still enough time for the leaves to dry before evening. This will also give the plants all evening to take up the water through their roots and get ready for the next day. Be careful not to overwater as plants will drown. The symptoms, such as yellowing of plants and wilting, can mimic being too dry, so check the moisture of the soil before adding water if the plant looks stressed.

Mulching

Mulching is something that you can do to help plants use less water, slowly release nutrients into the soil, and help control weeds. If you decide to mulch your garden, a good recommendation is to place a layer of newspaper around the plants, covering the open garden soil in a solid layer of paper. Spread a good compost layer or layer of wheat straw or leaves to a depth of 2" over the top of the paper and around the plants. This layer will reduce evaporation and keep plant roots a little cooler during the heat of the day. At the end of the gardening project, work the mulch into the soil as it adds organic material for future plants to use. Avoid using wood chips, bark, pine straw, or other coarse material because they take a long time to decompose and may even steal nutrients from the soil as they decompose.

Fertilizing

For the plants in a garden to grow to their fullest potential, they need to receive the right nutrients throughout the growing season. The mineral nutrients needed in the largest quantities are macronutrients and consist of nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), and sulfur (S). The first three minerals (N-P-K) are listed on each fertilizer bag as the percentage found in the mixture. For example, 31-3-10 means 31 percent of the bag is nitrogen, 3 percent is phosphorus, and 10 percent is potassium.

Plants also need micronutrients such as iron (Fe), manganese (Mn), boron (B), zinc (Zn), copper (Cu), molybdenum (Mo), chlorine (Cl), and nickel (Ni). The bag label should give you the percentage of each mineral found in the fertilizer mixture. If a participant uses a garden spot in the yard or uses a raised bed garden area, then a soil test may be necessary to make sure that the plants receive the correct nutrients. This is important regardless of whether you use synthetic fertilizer or stay completely organic. Alabama Extension provides instructions on how to take a soil test and understand the report. Contact your county Extension office for details.

Common Garden Diseases

Several diseases may show up in the garden. Following are brief descriptions of some of the common diseases that may develop in your garden. These diseases and how to prevent or treat them will be covered through timely information provided to participants during the project.

Tomato plant affected by curly top virus. (Photo credit: Howard F. Schwartz, Colorado State University, Bugwood.org.)

Blossom end rot on maturing fruit. (Photo credit: Brenda Kennedy, University of Kentucky, Bugwood.org.)

Blossom end rot is a serious disorder that affects tomatoes, peppers, eggplants, and summer squash. It appears as a dry, sunken decay that develops at the blossom end (bottom) of the fruit. It especially affects the first fruit of the season. Blossom end rot is a physiologic disorder associated with a lack of calcium and is treatable.

Downy mildew is caused by a fungal organism and is most destructive to cucurbits (cucumber, squash, pumpkin, and related plants). It first appears as pale green areas on the upper leaf surfaces. They will change to yellow angular spots followed by a fine white-to-grayish downy growth on the lower leaf surface. Infected leaves usually die and will eventually kill the entire plant.

Curly top virus causes tomato plants as well as peppers and beans to wilt. This common virus mimics symptoms of moisture stress such as curling leaves. Besides curling, the leaves will also thicken and become stiff. The leaves may remain green or turn yellow with purple veins. This virus spreads from plant to plant through a leafhopper insect. There is no treatment once the plant is infected; therefore, removing the infected plant is the only way to, hopefully, keep the virus from spreading.

Powdery mildew is a common disease that affects many types of plants. The disease shows up as a powdery white-to-gray fungal growth on leaves and stems. Warm temperatures and shady conditions encourage the fungus to grow and spread. It can normally be controlled with good gardening practices such as leaving air space around plants, having well-drained soil, and watering plants in the morning so the sun can dry the plant through the day.

Fusarium and verticullium wilts affect tomatoes, potatoes, peppers, and eggplants. They usually enter the plant through young roots and then attack the water-conducting vessels of the roots and stems. As the vessels become plugged and collapse, the water supply to the leaves is blocked, causing them to wilt. At first, it will appear by causing the plants to wilt on sunny days and recover at night. Over time, the plant may die or at least produce poor-quality fruit. Newer varieties of tomato plants may be resistant to these wilts, but heirloom tomatoes are normally not resistant.

Root rot affects a variety of garden plants and is a fungi found in the soil. If the garden area becomes waterlogged or drought conditions exist, both of these can weaken plant roots, causing them to be susceptible to root rot. It will first show up as dull foliage color, sometimes turning yellow or wilting before the plant dies. The best remedy is to make sure the soil drains well.

Insects and Other Garden Pests

Insects in the garden are natural. You should ask yourself if the insect is beneficial to the garden or will it damage my plants. Following is a brief description of some of the most common pest insects as well as those that are helpful to you around the garden. Detailed information on how to prevent or treat pest insects will be covered through timely information provided to participants during the project. For more helpful information, contact your county Extension office.

Aphids are tiny, pear-shaped insects that suck sap from a variety of plants. They may cause plant foliage to distort and leaves to drop. Their feeding may also spread diseases to other plants. The waste, called *honeydew,* that the aphids excrete supports sooty mold growth, causing plants to lose foliage. Two valuable natural controls are ladybugs and lacewing insects. They can be removed using a strong spray of water. For heavy infestations, apply insecticidal soap.

Caterpillars are the larval stage of butterflies and moths. They have only one job to do while in the larval stage and that is to eat! As garden pests, most of the caterpillars that cause problems are the larval stage of moths. Some of the more common garden pest caterpillars are tomato hornworms, cabbage loopers, cutworm, and imported cabbageworm. They can be controlled by handpicking them off of the plants and dropping them in a bucket of soapy water or by just stepping on them. This takes time and, if you have a heavy infestation, it may take too long because they can destroy a plant quickly. Another method of control is to cover your garden with an insect barrier fabric. This is a better option in the fall as most of the plants are grown for their leaves, flowers, or roots and not for fruit requiring pollination.

Other control options include organic methods such as using *Bacillus thuringiensis* (called *Bt*), a bacterial disease that only controls caterpillars. You can also use a pyrethrin-based insecticide or neem oil.

Beetles come in many species with some being plant specific while others are generalist. Some of the common beetles that are garden pests include Mexican bean beetle, flea beetle, Japanese beetle, cucumber beetle, and squash bug beetle. Specific control for the various beetles will be addressed through timely information sent to participants and through Extension publications and other resources.

Extension Assistance: Master Gardener Helpline (1-877-ALA-Grow)

Through this toll-free helpline, participants as well as the general public can be connected to a knowledgeable team of Master Gardeners who can help answer questions. Armed with research and Alabama Extension resources, these volunteers will also contact specialists to find the answers you need to help your garden grow.

Keeping a Gardening Journal

To document participation in the Alabama 4-H Grows Garden Project, each youth is required to keep a gardening journal. Depending on the participation tier, different kinds of documentation will be required.

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