

AUGUST 1979

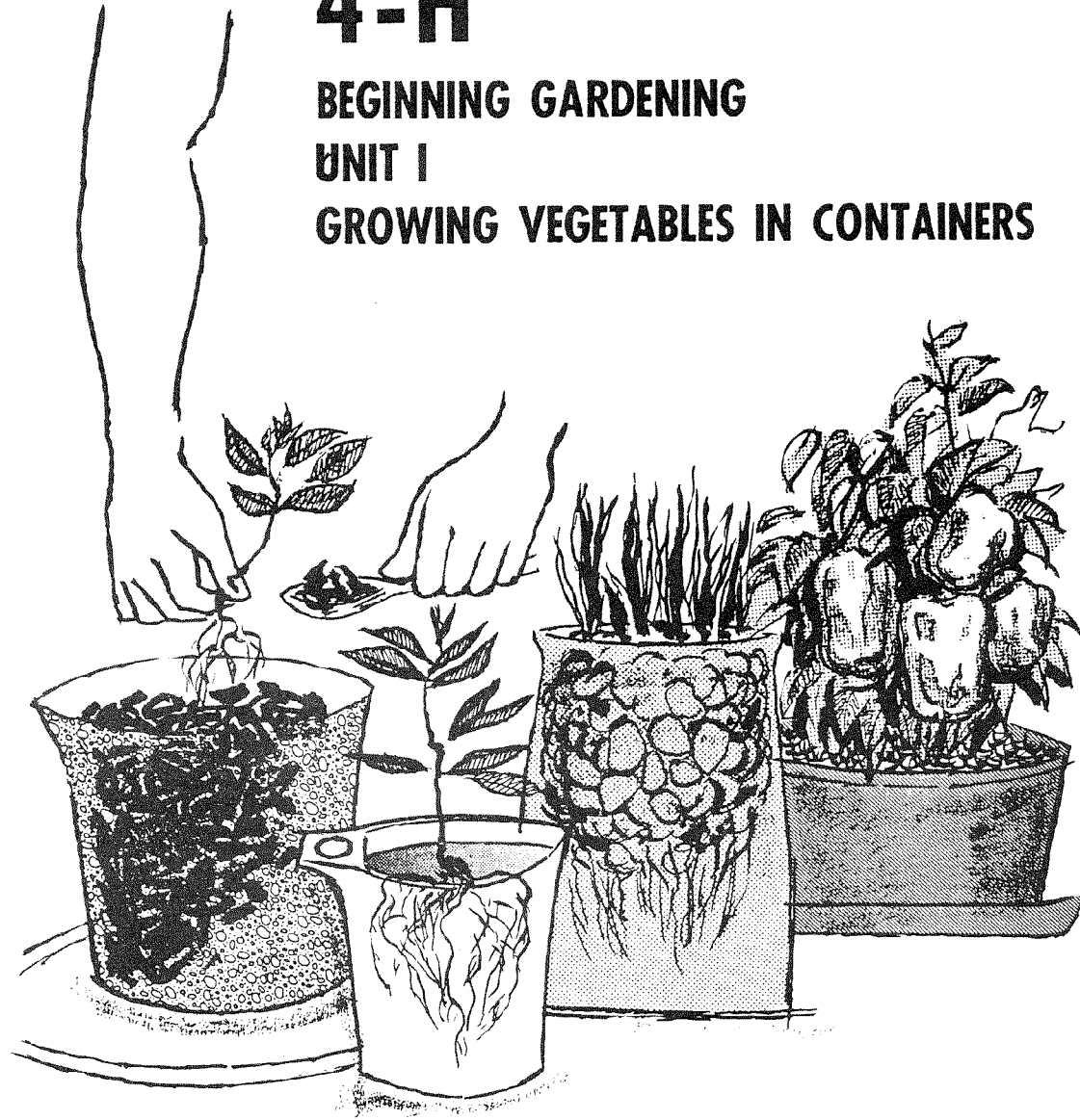
4-H 131

4-H

BEGINNING GARDENING

UNIT I

GROWING VEGETABLES IN CONTAINERS



This book belongs to:

Name _____

Address _____

Parent's Name _____

Name of Club _____

Table of Contents

	<i>Page</i>
Requirements of the Project	3
Choice A—Single Plant Containers	4
Choice B—Water Culture	5
Choice C—Strawberry Barrel	6
Activities for You	7
4-H Garden Record	9-10
Garden References	11

4-H BEGINNING GARDENING

offers you 4 CHOICES ° ° °

- ° Plant Science Experiments
- ° Vegetable Gardening
- ° Vegetable Identification Workbook
- ° Growing Vegetables in Containers

AUGUST, 1979

Prepared by: James M. Stephens, Assistant Vegetable Crops Specialist, Florida Cooperative Extension Service, University of Florida, Gainesville.

Revised by: Susan D. Gray, Assistant in Vegetable Crops, Florida Cooperative Extension Service, University of Florida, Gainesville.

GROWING VEGETABLES IN CONTAINERS

BEGINNING GARDENING

UNIT I

This is another gardening project which you may take even though you do not have a large space for a vegetable garden. Growing vegetables in containers is a way to have your own garden fresh vegetables without the garden. And, you will learn many things about plants and how they grow.

Many kinds of containers might be used — bushel baskets, hampers, drums, gallon cans, or others. Your “soil” might not be soil at all, but something like sawdust, woodshavings, pebbles, or even water. Growing plants in these kinds of artificial “soils” is usually called soilless culture or hydroponics. You will find that there is not much difference in the way plants grow in soil and without soil.

Requirements of the Project Area

There are several methods of growing plants in containers. Three of them have been outlined for you to choose from in this project area. They are: 1) strawberry barrel; 2) single plant con-

tainers, and 3) water culture. You may select any one of these three ways to grow your vegetables.

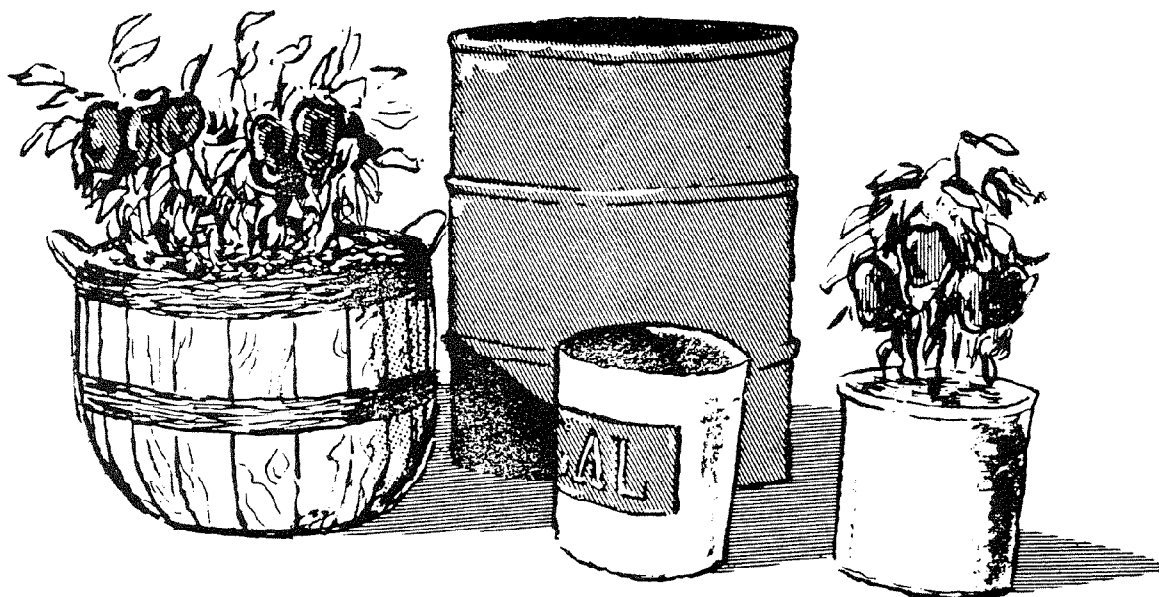
You must fill out the record pages and answer the questions about how you grew your vegetables.

Other Beginning Gardening Projects

You can learn about vegetables and even grow your own by taking the **BEGINNING GARDENING PROJECT**, though your yard may not be large enough for a garden.

Growing Vegetables In Containers is one of four areas you may select in the **Beginning Gardening (Unit 1)** project. The four areas are: (1) Plant Science Experiments, (2) Growing Vegetables in Containers, (3) Vegetable Identification Workbook, and (4) Vegetable Gardening. There is a separate booklet for each area.

You may choose at least one of the four areas. If you complete one area one year, you may wish to do another area the next year. You should be **9 to 12 years old to do this project.**



Choice A - Single Plant Containers

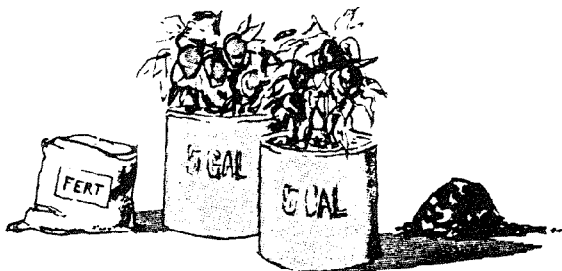
With this system you will use a separate container for growing each plant. You must have at least 10 containers to complete this project. Most any container that will hold a foot or more of sawdust will do. The best ones are bushel baskets, hampers, or 5-gallon cans,

Punch holes in the bottom to allow good drainage. Fill the containers with wood shavings, sawdust, or other well-rotted plant material such as leaves. You may even use sandy garden soil, although it is not as good as sawdust because of diseases and nematodes which may be in the soil.

Vegetables that may be transplanted are best to grow in container culture. Choose vegetables like tomatoes, peppers, eggplant, and lettuce. You should germinate the seed in a seed-bed or plant-box. Then, when the little plants are about 4 inches high, they should be set in the containers. Usually, one plant in each container is best.

Cucumbers and pole beans are also good vegetables to grow in containers. They produce a lot from a single vine and may be grown in a small space when supported on a pole or trellis. These two should be started by planting seed directly in the containers.

Most vegetables need a lot of sunlight. Place your containers in an open, sunny area. Leave enough space between them so you can walk around them while attending to them. Remember, containers resting on the lawn will kill the grass beneath, so place them where this will not happen.



Fertilization

The plants must absorb certain minerals through their roots to survive. Some are needed in fairly large amounts, such as nitrogen, potassium, phosphorus, and calcium. These must be added as fertilizer. Others also are needed, but in such small amounts that they are contained as impurities in the fertilizer.

The easiest way to add fertilizer to plants in individual container culture is by preparing a



nutrient solution and "slopping" or pouring it over the sawdust or shavings.

The nutrient solution (water containing fertilizer) should be added to the container about once a day. It not only feeds the plants, but keeps them watered, too.

If you use transplants, start using the nutrient solution the day you set them out. If you plant seeds, use only plain water to keep the sawdust moist until the seeds germinate and the little plants come up. Then start using the nutrient solution.

Once each week, it is a good idea to wash all the old fertilizer out of the sawdust by running water from a garden hose through it for several minutes. Too much fertilizer will injure plants. Then again start daily additions of nutrient solution to the containers.

How to make the Nutrient Solution

There are many good fertilizer mixtures for nutrient solutions for sale. You may want to buy and use one of them. If so, follow the directions on the label.

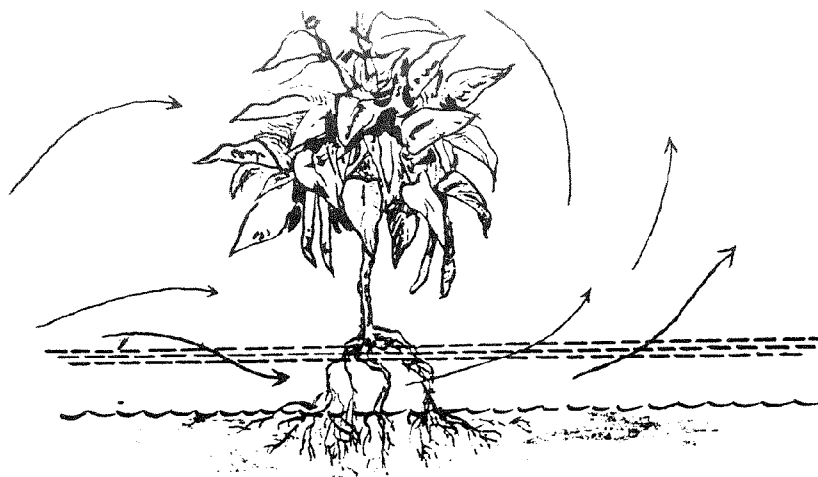
If you wish to make your own, you may do so by dissolving 2 cups of common fertilizer, such as 6-6-6, 6-8-6, or 8-8-8, in one gallon of tap water. (In addition, a better solution would contain, 6 tablespoonfuls of epsom salts, one-half teaspoonful of iron chelate, and 4 tablespoonfuls of calcium chloride. But, if you cannot get these materials, make your solution without them.)

This is your **Base Solution**. From it you will make up the solution (Growing Solution) which will actually be poured around the plants.

To make your Growing Solution, first shake the Base Solution well. Then, mix 2 tablespoonfuls of the Base Solution to a gallon of water. Once a day, apply enough of this Growing Solution to wet the shavings to the bottom of the container.

Reporting

Don't forget to fill in the report section in the back of this booklet.



Aeration

Choice B - Water Culture

Should you choose this activity for your Beginning Gardening Project, you will need to grow at least ten vegetable plants by the water culture method. You may use a separate container for each plant, or one big container for all your plants. Again, you must complete the record page and answer the questions asked about water culture.

In a water culture method, the vegetable plant is grown in a container of nutrient solution. The stem and upper parts of the plant are held above the solution while the roots are growing down in the solution.

There are at least two problems with this system. First, you must find a way to suspend the plant above the water and keep it anchored upright. And next, an air (oxygen) supply must be provided the roots of the plant in the water.

There are many kinds of containers that you might use. You might use a cement or wooden trough, glass jars, earthenware crocks, or metal containers. Of course, they all must be leak-proof. Glass containers should be painted dark to keep sunlight from making chemical changes in the solution. Leave a narrow strip down the side unpainted so the level of the solution can be checked. Metal containers should be well-painted on the inside with an asphalt-base paint to avoid corrosion.

Containers should be fairly shallow, about six inches deep, and narrow, less than three feet wide.

You will need a "platform" for planting into and supporting the plants as they grow. This is sometimes called a "litter bearer." It is made up of a chicken wire or hardware cloth base on which is placed about three inches of wood shavings, excelsior, or similar material called litter. The metal wire should be painted with asphalt based paint. It should completely cover the container.

Aeration.—Plant roots must have oxygen to

live. You must provide some way to supply it. One way is to leave enough air space between the platform and the solution. Then you need an opening from this space to the outside air. You can try propping up the platform a little to let air in. This may not be enough air for some plants. You may have to use an aquarium air pump.

Starting the System.—After you have selected your containers and located them in a sunny or well-lighted place, fill them with your nutrient solution. You may use either a purchased, ready-mixed solution (follow the label directions), or the home-made Growing Solution described under **Single Plant Container Culture**. If you become interested in this type of gardening, you may use more elaborate solutions in a later 4-H project.

Try Tomatoes and Lettuce

Place the litter on the platform and keep it moistened. Transplanting into the litter is the best way to get plants started. Work the roots through the support netting into the nutrient solution. Then, build up the litter around it for support. Such plants as tomatoes and lettuce transplant easily, and are suggested for you to try your first time.

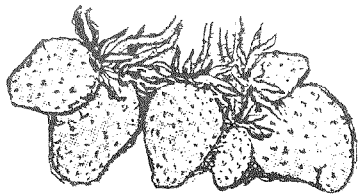
Seeds also may be planted in the litter. Cucumbers may be started in this way. When the little plant starts to grow, you must keep the nutrient solution close enough to the platform so that the roots can reach it, yet still leave a small air space.

Change Solution Periodically

Empty your tanks every two weeks and renew the solution. While doing this, do not let the roots dry out. You might want to do this on a cloudy day to keep the roots from drying.

Reporting

Be sure to complete the report section in the back of this booklet.



Strawberries

Choice C - Strawberry Barrel

Would you like to grow your own strawberries, but you feel that you do not have enough available space? Then why not use the space-saving Barrel Method. Each year, about 50 pints of strawberries may be obtained from one 55 gallon barrel (drum) on which 40 to 50 plants may be grown.

For this project, you may use any size container that will hold at least 10 strawberry plants.

Materials Needed to Get Started

- 1) **Barrels or drums.** — commonly found are 30 gallon and 55 gallon sizes, either metal or wood.
- 2) **Pipe section.** — about 30 inches of gutter or stove pipe (3-4" diameter) is needed for watering and feeding.
- 3) **Coarse gravel.** — enough small pebbles to cover the bottom of the barrel up to 2 inches will be needed for good drainage.
- 4) **Hole puncher.** — some means of cutting holes or slits in the sides and bottom of the barrel will be required, such as an axe or chisel. Your Dad may volunteer to cut them for you with his acetylene torch.
- 5) **Good garden soil.** — should be fumigated for best results. Do not use peat or muck.
- 6) **Coarse sand.** — to fill watering pipe.
- 7) **Fertilizer.** — 4-8-8 or 6-8-8 is best.
- 8) **Strawberry plants.** — Florida Ninety or Florida Belle variety.

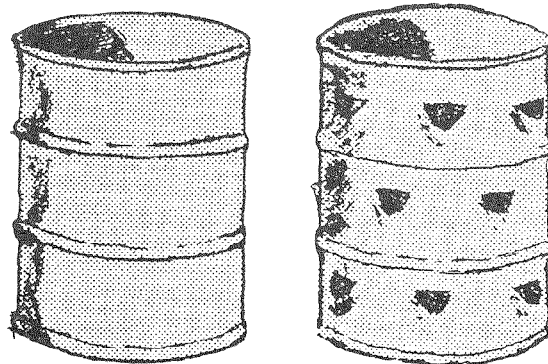
What to Do

1) Prepare barrel by cutting out top and thoroughly washing to remove any material that may injure plants. It is optional whether the bottom is cut out or left intact. If not removed, four or five holes should be made in the bottom for drainage.

2) Cut holes or slits into the side of the barrel to receive the plants. Holes may be easily cut using an acetylene torch. If an axe or chisel is used, the holes are much easier to cut if the barrel is filled with soil. Holes or slits should be about

3 inches long; then the top of each slit should be pushed in to form a cup.

Holes should be placed 8 inches apart around the barrel, and 8 inches apart up and down the barrel. Each hole should be placed diagonally to those above and below it. Holes should be 8 inches

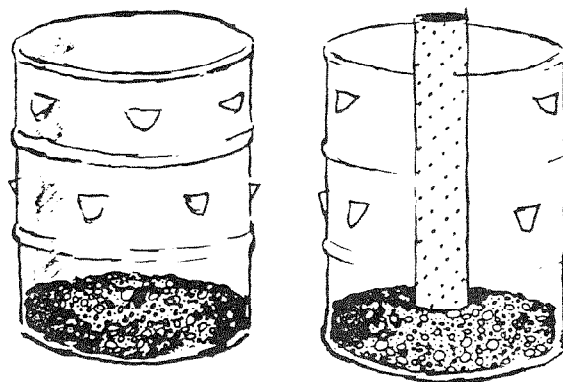


from the bottom of the barrel and 5 inches or so from the top.

3) Prepare the soil for use by thoroughly mixing one pound ($\frac{2}{3}$ quart) of 4-8-8 or 6-8-8 analysis fertilizer into 55 gallons of soil. Or, for other size containers, use 1 ounce of fertilizer for every 3 pounds of soil.

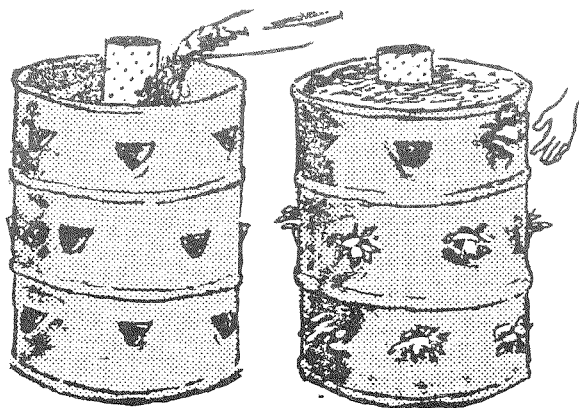
4) Fill the bottom two inches of the barrel with coarse gravel.

5) Punch holes (nail-size) in the sides of the pipe; distribute them over the entire surface of the pipe to allow even watering throughout the barrel. Place the section of pipe into the center of the barrel; it should be standing upright with one



end resting on the gravel. Fill the pipe with coarse sand.

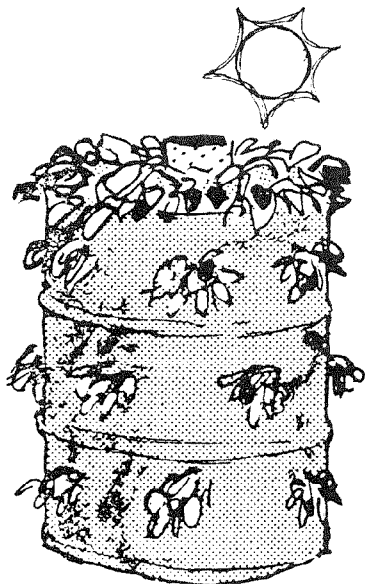
6) Shovel in garden soil onto the coarse gravel and around the pipe, until the level of the first or bottom row of holes has been reached. Firm the soil.



7) Set the strawberry plants into the bottom row of holes. Spread the roots in a fan-shape fashion onto the soil and cover to hold in place. **Be careful not to cover the crown (bud) of plant.** Then shovel in soil up to the next row of holes. At this point it might be desirable to lightly sprinkle the soil with water. Set plants and repeat the soil-filling, watering, and plant-setting until the top row of holes is set. Then add soil to within 1 inch of the barrel top. Set plants on top about 8 inches apart around the pipe. It is best to set plants during a cloudy day or late in the afternoon so that plants have time to become established before being placed in hot sun.

For maximum production, strawberries should be planted (set) from mid-September in North Florida through mid-November in South Florida. These planting dates should be observed since our strawberry varieties require cool temperatures and short days for fruiting. Fruit production becomes quite reduced as soon as temperatures rise to around 80°F. in early summer.

8) The barrel should be placed so that plants will get full sunlight. Water will probably be needed about twice weekly and should be added by pouring into the pipe. In the spring, if additional fertilizer is needed, $\frac{1}{2}$ cup of the same fertilizer can be dissolved in a gallon of water and poured in the center pipe. Then pour in about 2 gallons of water to distribute the fertilizer.



9) The barrel should be emptied each year, fresh soil added, and new plants set into the barrel if you plan to keep this barrel after your project year.

Reporting

A report section is included in the back of this booklet. Be sure to fill in all the blanks as completely as you can.

Unit 1—Beginning Gardening Activities

Those of you who are taking this Beginning Gardening Project should also take part in one or more of the following activities. They are fun to do and will help you get a lot more from your project.

1. **Vegetable Demonstrations.** — You should participate in a demonstration once a year. If you have ever shown anyone how to make a kite or mix a spray solution, you have given a demonstration. In a vegetable demonstration you show how while you tell about some gardening practice.

There is a 4-H pamphlet which you can get that tells how to prepare a demonstration. It is called "4-H Horticulture Demonstrations." Ask your leader for a copy.

2. **Horticulture Judging.** — This activity is in the form of a contest. By competing in it, you will learn about kinds and varieties of vegetables, and how to pick the good ones from the bad ones. You might have a chance to be in a club or county contest and test your knowledge of these things. Any of you taking any part of Beginning Gardening may participate in vegetable judging.

Get a copy of "4-H Horticultural Judging, Grading, and Identification Manual" to find out more about this contest.

3. **Exhibiting.** — At every opportunity you have, such as at a fair, you should be proud to show others the produce that you have grown. When you show others how well you have done, they may benefit by trying to do as well.

To find out how your vegetables should be exhibited, review the 4-H circular called "Exhibiting and Judging Vegetables."

4. **Tours.** — Visit the gardens of your neighbors and of other members of your club. Field trips into farming areas are fun and educational. Group trips through local market places to see how produce is sold will be very worthwhile.

4-H GARDEN RECORD

For Year 19...

My Year in Beginning Gardening

UNIT I, — GROWING VEGETABLES IN CONTAINERS

My name is _____ My parents are _____

My address is _____
(Street or Route) (Town) (County)

I am _____ years old. I am in the _____ grade. This is my _____ year in 4-H work.

Now there are several questions for you to answer. But, first draw a sketch of your vegetable growing system in the space below. Or, you may attach a picture of the system here. Show your containers, how many, and kinds of plants.

Print name & address in

Questions About Your Vegetable Growing Method

What **Container Culture** method did you use?

How many containers did you have? Describe them.

What material did you use as your "soil"?

What vegetables did you grow?

When did you plant?

Did you set transplants or plant seed?

What fertilizer did you use?

How often did you apply it?

Did you have any problems with your fertilizer solution? What were the problems?

What insects bothered your plants?

What diseases bothered your plants?

How did you control them?

How many vegetables did you harvest?

Did they look and taste as good as most vegetables you have eaten grown in a garden?

Did you sell any of your vegetables?

Do you consider your method successful? In a few words, tell what were the most important things you learned by taking this project.

Cut here to hand in

1
2
3
4
5
6
7
8
9
10

1. This document is 4HGRM02 of the Florida 4-H Youth Development Program, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Produced August 1979, revised May 1996, Reviewed June 2002.
2. James M. Stephens, Assistant Vegetable Crops Specialist, Florida Cooperative Extension Service, University of Florida, Gainesville. Susan D. Gray, Assistant in Vegetable Crops, Florida Cooperative Extension Service, University of Florida, Gainesville.



COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF FLORIDA, INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES, Christine Taylor Waddill, Director, in cooperation with the United States Department of Agriculture, publishes this information to further the purpose of the May 8 and June 30, 1914 Acts of Congress; and is authorized to provide research, educational information and other services only to individuals and institutions that function without regard to race, color, age, sex, handicap or national origin. The information in this publication is available in alternate formats. Single copies of extension publications (excluding 4-H and youth publications) are available free to Florida residents from county extension offices. Information on copies for out-of-state purchase is available from Publications Distribution Center, University of Florida, PO Box 110011, Gainesville, FL 32611-0011.