

VEGETABLE GARDENING

project manual and
suggested program
plans for leaders



Florida Cooperative Extension Service
Institute of Food and Agricultural Sciences
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Revised: March, 1981 - J. M. Stephens and S. D. Gray

THIS MANUAL IS FOR YOU - THE LEADER

The continued development of youth through 4-H club work depends largely on people like you who are deeply interested in today's youth. Encouragement and guidance from volunteer local leaders inspire young people to progress in the fundamental aims of 4-H club work. This manual will help you acquaint 4-H members with the problems and rewarding experiences resulting from a vegetable gardening endeavor. You will find aids for planning and conducting 4-H programs and many ideas for meetings, projects, visual presentations, talks, and activities.

THE 4-H VEGETABLE GARDENING PROGRAM
ENCOURAGES 4-H MEMBERS TO . . .

1. Develop leadership talents and to work toward achieving the broad objectives of character and effective citizenship.
2. Acquire the knowledge and develop the skills essential to the care and management of a well-planned garden.
3. Increase individual or family incomes by reducing the amount of food purchased.
4. Carry out a planned program of garden insect and disease management and control.
5. Learn to market garden produce in an economical manner.
6. Contribute to better family health by producing sufficient amounts of essential and nutritious vegetables for use throughout the year.
7. Acquire keener insight into nature; enjoy the satisfaction that comes from bringing plants into successful maturity; develop gardening as a hobby.

8. Help others understand gardening by giving demonstrations and preparing exhibits.
9. Learn kinds, varieties, and quality of vegetables, fruits, nuts, and ornamental plants through Horticulture Identification and Judging Events.
10. Become acquainted with possible careers in horticulture.

ADVANTAGES OF 4-H VEGETABLE PROJECT

A 4-H vegetable project can be tailored to what a member can do. A small garden containing only a few crops is not beyond even the youngest member's abilities. On the other hand, a multi-crop garden or a single commercial crop requires knowledge of many things and can be a real challenge to the older 4-H club member.

THE VEGETABLE GARDENING PROJECTS

According to age and experience, a Florida 4-H club member may enroll in one of two vegetable projects - Beginning Gardening or Advanced Vegetable Gardening - as part of the Horticultural Awards Program.

Beginning Gardening (Unit I)

The Beginning Gardening Project contains four parts: (1) Vegetable Gardening, (2) Plant Science Experiments, (3) Growing Vegetables in Containers, and (4) Vegetable Identification Workbook.

There is a separate booklet for each part. A 4-H member may choose one or more of the four parts. He or she should be 8 to 12 years old to do this project.

Part 1 - Vegetable Gardening -- Those taking this project should have their own plot, or care for part of the family

garden. The garden size will depend on the amount of space available and the individual's time available to tend it. For most beginning gardeners, at least 200 square feet of garden space is sufficient. More than 2,000 square feet is probably too much.

Members should plant crops that they like to eat and that grow easily; such as tomatoes, beans, radishes, beets, turnips, squash, peas, strawberries, lettuce, and sweet corn.

The garden's progress should be recorded in 4-H 132, "4-H Beginning Gardening, Unit I, Vegetable Gardening."

Part 2 - Plant Science Experiments -- This project is designed for 4-H members who do not have the time and space necessary to grow a garden. By taking it, they will study some important things about probably the most important life on earth - plants.

Five easy experiments are outlined to select from. Members must complete at least three of them, although all may be done if desired.

By following directions, members should have no trouble completing each experiment. The materials needed are simple and easy to find. It is possible to run all of them at the same time.

For each experiment, a report must be written. 4-H 130, "Beginning Gardening, Unit I, Plant Science Experiments," contains record pages.

Part 3 - Growing Vegetables in Containers -- This is another project which does not require a large amount of space.

Many kinds of containers could be used -- bushel baskets, hampers, drums, or gallon cans. The "soil" might not be soil at all, but a material such as sawdust, woodshavings, pebbles, or even water. Growing plants in these artificial "soils" or media is usually called soilless culture or hydroponics.

Three methods have been outlined for members to choose from in this project:(1) strawberry barrel, (2) single plant containers, and (3) water culture. Any one of these three may be selected to meet the project area requirements.

The record and instructions are included in 4-H Beginning Gardening, Unit 1, "Growing Vegetables in Containers," 4-H 131.

Part 4 - Vegetable Identification Workbook -- This area of project work fits the needs of both urban and rural youth. A workbook is needed, along with 4-H 133 pamphlet. The mimeographed workbook is entitled "4-H Vegetable Judging, Grading and Identification Workbook." It is about garden insects, diseases, weeds, vegetable varieties, seeds, nutrient deficiencies, and potato grade defects.

Requirements: There are about 150 empty spaces in the "4-H Vegetable Judging, Grading, and Identification Workbook." The enrollee must complete at least half of them by making drawings, pasting pictures, or taping actual specimens in the spaces provided. Then the record portion of the 4-H 133 must be completed.

Activities Related to the Beginning Gardening Project

These should include:

- Exhibits
- Demonstrations
- Identification Contests and Judging Contests (kinds of crops and selecting vegetables on a quality basis)
- Tours to other members' projects

Each project member should have:

- "Vegetable Gardening Guide" (Circular 104)
- "4-H Record" for project area taken (Example - 4-H 132)
- "Horticultural Demonstrations" (4-H 394)

In addition, a list of helpful references will be found in the back of this manual.

Advanced Gardening

1. Eligibility -- This project is open to all members who have had considerable experience growing vegetables or who have proven themselves capable of a more advanced project.
2. Land Needed -- The area of a multiple crop garden should not be less than 500 square feet. Where one crop is grown for a commercial purpose, enough land would be needed to provide a sizable output of the crop. For example, a good commercial tomato crop might require 1/10 of an acre, whereas a good equivalent watermelon project would require about 1/2 of an acre. Of course, a good hydroponic or container culture project would require only a minimum of space. A member should not use more space than can be properly cared for.
3. Crop Usage -- The garden vegetables may be used in the home as fresh, canned, frozen, or stored produce. Surpluses, or the entire crop, could be sold either to neighbors or at local stores, roadside stands, regular produce markets, processing plants, or cooperatives.
4. Progression -- The project should be planned with progression in mind. A member taking Advanced Gardening for the first time might select six to eight kinds of vegetables, while in successive years several other kinds and varieties or more difficult crops or practices might be added. Land area could also be enlarged.
5. Records -- Accurate records should be kept of all work done, expenses, and income in the 4-H Horticulture Recordbook, 4-H 332.
6. Related Activities -- In addition to the related activities mentioned under "Beginning Gardening," the member may participate in the activities of the National Junior Horticultural Association (NJHA).

Information concerning the NJHA may be obtained from either the county agent or the State NJHA Chairman (in Florida, an Extension Vegetable Crops Specialist acts as Chairman).

7. Publications Needed -- Each member should have:

- "Vegetable Gardening Guide" (Circ. 104)
- "4-H Vegetable Judging, Grading and Identification Workbook"
- "Growing Tomatoes in the Florida Vegetable Garden" (VC-8)
- "Vegetable Gardening in Florida" - State Department of Agriculture
- "Horticultural Demonstrations" (4-H 394)
- "4-H Horticulture Recordbook" (4-H 332)

SOME SUGGESTED PROGRAM OUTLINES FOR CLUB MEETINGS

ABOUT THE PROGRAMS

Although these outlines are numbered Program 1, Program 2, this does not mean that they must be used in this order.

Each meeting outline contains numerous things to do and things to teach. Don't think you have to do all of them at the any one meeting.

Program Number 1

GETTING ACQUAINTED

This means getting acquainted with one another, with the kinds of gardening projects available to members, and with some of the things members can do in each project.

Suggested Subjects and Activities

Have outlined on large wall charts the kinds of gardening projects members can take. Have on hand and

display the printed materials needed with each gardening project. Discuss the projects thoroughly so that everyone will have a clear picture of which project is best suited to their situation and needs.

Discuss: Space needed

1. A successful garden may be fitted into space available, large or small.
2. A small garden, well-planned and cared for, will mean greater success and satisfaction than a large garden that is neglected.

Discuss: Soil needed

1. Most soils can be used if properly prepared and managed.

Discuss: Garden location

1. The best location is near a water supply, and near the house; away from trees and shrubs which shade the crop and compete with it for water and nutrients.

Discuss: Time needed

1. Gardens should have regular care; small gardens take less time than large ones.
2. Soil preparation and planting takes the most time. After that a fair-sized garden can be cared for with about one-half hour's work daily.

Demonstrate/Exhibit: Tools needed

The following necessary tools should be either exhibited or pictured on posters.

- a. Essential tools for small gardens: hoe, rake, spade, two stakes, and cord.
- b. Additional tools which may be useful, especially for larger gardens: hand plow, garden tractor, trowel, hand duster, and/or pressure sprayer, yardstick, measuring cup, and watering can.

In addition, point out that a Commercial Vegetable Production project might require some of the mechanized equipment commonly used by commercial vegetable growers.

Program Number 2

PLANNING AND LAYING OUT A GARDEN

You should strive here to give the members some insight into the purpose and use of a garden plan, and how to lay out a simple garden by a given plan.

Suggested Subjects and Activities

Discuss: Why make a garden plan?

- (1) A good plan aids in selection of a suitable plot and helps to fully utilize the space available.
- (2) A good plan helps in properly placing crops within the garden.
- (3) A good plan tells the gardener how to rotate crops for easier management of insects and diseases.

Exhibit/Demonstrate: How to make a garden plan

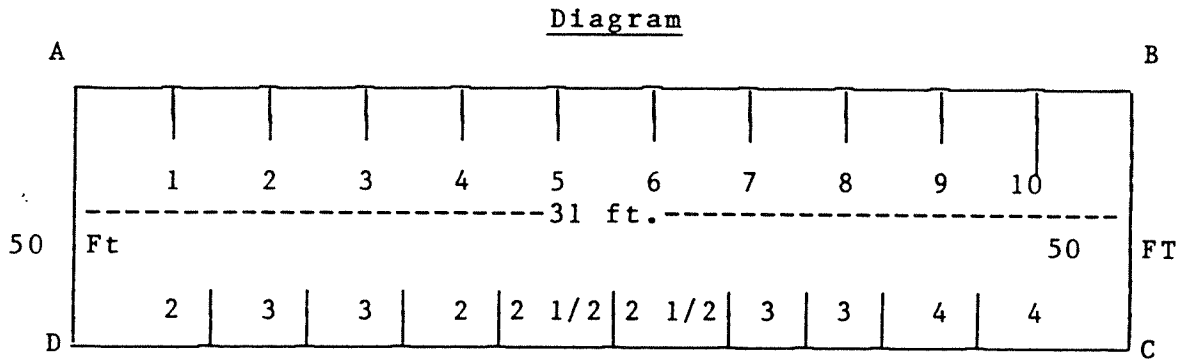
Either before or during the meeting, on cardboard or the blackboard, lay out and exhibit a plan for a small backyard garden. You may use the plan on page 11 or you may devise one of your own.

Exhibit/Demonstrate: How to lay out a garden on a plot of land

Take the group to a garden spot and show them how to lay out a garden by a plan. You will need:

- (1) Enlarged reproduction of a garden plan
- (2) Yardstick or tape measure
- (3) Small garden stakes (22)
- (4) Sturdy corner stakes (4)
- (5) Twine or cord (50 ft.)

The following directions and diagram suggest one way of laying out a garden. If the garden area is on a slope, lay out rows across the slope to reduce erosion.



Layout Plan for Garden

Directions

- (1) Establish the four corner stakes, measuring from A to B (31 ft.), from B to C (50 ft.), from C to D (31 ft.), from D to A (50 ft.).
- (2) Stretch a string between stakes A and B.
- (3) Starting at stake A, measure along the stretch line, putting in the garden stakes at the intervals shown in the diagram. Each stake marks the center of the row and should bear the number of that row.

- (4) Stretch a line between stake D and C. Insert the garden stakes along the line in the previous manner. These stakes should also bear the number of the row.

Before the next meeting:

Members should:

- (1) Make their garden plan.
- (2) Lay out their garden.

SUGGESTED 4-H GARDEN FOR NORTH FLORIDA

FALL

Row	Spacing in feet	Vegetable	Planting Date
1	3	Strawberry	Sept. - Oct.
2	2	Radish, Turnip, Mustard	Sept. - Dec.
3	2	Beans, Snap	Aug. - Sept.
4	4	Squash	Aug.
5	2	Carrots	Sept.
6	2	Onions	Sept.
7	2	Cabbage	Aug. - Nov.
8	3	Collards	Sept. - Nov.
9	3	Tomatoes	Sept. - Nov.
10	4		Aug.
	3		

30
feet
wide

30 feet long

SPRING

Row	Spacing in Feet	Vegetable	Planting Date
1	3	Strawberry	From Fall Planting
2	2	Radish, Turnip, Mustard	Jan. - Apr.
3	2	Beets	Jan. - Mar.
4	2	Carrots	Jan. - Mar.
5	2	Onions	Jan. - Mar.
6	2	Beans, Snap	Mar. - Apr.
7	3	Beans, Lima	Mar. - Apr.
8	4	Squash	Mar.
9	3	Collards	Feb. - Mar.
10	3	Cabbage	Jan. - Feb.
11	4	Potatoes, Irish	Jan. - Feb.
12	4	Tomatoes	Feb. - Apr.
13	4	Corn, Sweet	Mar. - Apr.
	2		

40
feet
wide

30 feet long

SUMMER

Row	Spacing in Feet	Vegetable	Planting Date
1	3	Spinach, Summer	May
2	3	Okra	May
3	3	Eggplant, Pepper	July
4	2-1/2	Peas, Southern	May
5	2 1/2	Peas, Southern	May
6	3	Beans, Lima	May - June
7	3	Collards	From Spring Planting
8	4	Potatoes, Sweet	May - June
9	4	Potatoes, Sweet	
10	4	Beans, Pole	May - June
	3		

35
feet
wide

30 feet long

Program Number 3

GROWING EARLY PLANTS FOR TRANSPLANTING

Members should grow plants to transplant in their garden even if there is another available source of plants. Growing transplants will enable them to learn many basic principles of plant science. In addition, it may lead to income from sale of plants.

Suggested Subjects And Activities

Discuss: Why transplant?

- (1) For early production.

Discuss: What vegetables may be transplanted?

- (1) Tomato, eggplant, pepper, lettuce, cabbage, collards, celery, broccoli, cauliflower, and certain others.

Discuss: When to start growing transplants?

- (1) Usually 4 to 6 weeks before plants are to be set in the field.
- (2) "Vegetable Gardening Guide" tells when to plant in field.

Exhibit/Demonstrate:

- (1) On a poster board, display packets of seed of the above vegetables.
- (2) Display the materials needed for growing plants for transplanting.
 - (a) Soil -- Use equal parts clean sand and good garden soil. Have some of the soil already sterilized for planting, and some unsterilized so you may demonstrate sterilization to the group

- (b) Seed
- (c) Thiram or Captan to use in treating seed
- (d) Containers such as wooden flats, metal pans, or milk cartons with a side cut out, etc. Containers should have holes in the bottom for rapid water drainage.
- (e) Drainage material such as gravel
- (f) Tools - straight edge, quarter-inch screen large enough for sifting sand, a dishpan to sterilize soil, and a trowel or spoon for stirring soil.

Demonstrate: Soil sterilization

- (1) Put 3 to 5 inches of the moist sand-soil mixture in a large pan and place it in an oven which has been preheated to 350° or 400°F. Let it "bake" for 1 hour, stirring once or twice, and allow to cool before using.

Demonstrate: Seed treatment

Put a pinch of fungicide (Thiram or Captan) about the size of a pea into the packet of seeds. Close tightly and shake the packet until seeds are dusted. Wear gloves or be sure to wash hands thoroughly after working with fungicides.

Demonstrate: Preparing seed box for planting

Arrange 1 to 2 inches of drainage materials in the bottom of the container then sift sand-soil mixture into the container, heaping it full. Scrape off any excess with a straight-edge and firm down with board.

Demonstrate: Seed sowing

- (1) Cover the seeds lightly, sifting over them a bit of the soil-sand mixture with the screen. Firm down the covering soil.
- (2) Water quite generously with a clothes sprinkler or a sprinkling can, or set planted container into a larger vessel containing 1 to 2 inches of water so that moisture will soak upward to the surface.

Discuss: Care of seed boxes

- (1) Cover boxes with a material such as cardboard or plastic wrap to prevent drying out.
- (2) Never let the soil get dry (water often, but allow for drainage).
- (3) When seedlings begin to show above the soil, take off the covering and put the container where plants can get plenty of light.
- (4) Keep plants cool (around 70°) so that they do not become tall, spindly, and weak.
- (5) Water the seedlings about every day.
- (6) When the plants have been up about a week, thin to one per every 2 to 3 inches.
- (7) When plants are 2 and 4 weeks old, add 2 tablespoons 6-8-8 fertilizer per gallon of water.
- (8) One week before transplanting, set the container in the sun and wind for gradually increasing periods of time to harden the plants.

Exhibit/Demonstrate: Transplanting into the garden

- (1) Show how to properly remove a seedling from the seed-bed and correctly transplant it.

Discuss:

- (1) Plants are usually ready for transplanting when they develop a couple of true leaves addition to the "seed" leaves that unfold as the seed sprouts.

- (2) Roots should be disturbed as little as possible.
- (3) It is a good idea to transplant on a cloudy day, or late in the evening. Generous watering at transplanting is necessary.
- (4) A starter solution will get plants off to a fast start. A good starter solution consists of 4 pounds of 6-8-6 or 6-8-8 fertilizer to 50 gallons of water (1 to 2 tablespoons per gallon). Be sure to mix the solution thoroughly.
- (5) It is a good idea to shade newly set plants for a day or two with small branches or palmetto fans.
- (6) A transplant may be protected from cutworms by placing a heavy paper collar around the plant and into the ground. A prepared bait containing diazinon is also effective. Baits should be applied at the rate given on the label. They should be applied in late afternoon.

Before the Next Meeting:

Members should:

- (1) Plant seed for transplants.

Program Number 4

SEEDS

Getting seed to grow is basic to successful gardening. Some familiarity with the common garden seed and some knowledge of how to treat them to make them grow will be helpful to 4-H gardeners.

Suggested Subjects and Activities

Discuss: What is a seed?

References:

1. 4-H 130, "Plant Science Experiment"
2. 4-H SI Series (20.1M - 20.80M and 20.0L -20.8L)
 - (1) A seed contains a tiny, immature plant which, under proper conditions, will grow into a mature plant.
 - (2) Seeds vary in size largely because of the amount of stored food for the tiny plant.
 - (3) Certain conditions are needed for seeds to begin to grow (germinate). These are moisture, air, warmth, and for some seeds, light. Emphasize that too much moisture in the soil will keep seeds from getting enough air (oxygen).

Exhibit/Demonstrate:

Show members how to observe the action of a seed during its germination. You may also want to construct a seed germinator a week in advance so that you can exhibit the germinated seed today.

1. Put a liner of blotting paper or paper towel around the inside of a straight-sided glass tumbler. Fill the center with sawdust or peat moss. Avoid packing the filling too much.
2. On one side of the tumbler, push three lima or snap bean seeds about an inch apart down between the paper and the glass until the seeds are 1 inch below the top of the paper.

3. On the other side of the tumbler, place five or six radish seeds in the same manner, except space only 1/2 inch apart.
4. Pour water into the glass to within 1 to 2 inches of the seeds. Keep the seeds at room temperature.

Discuss/Observe: The noticeable steps as the seeds germinate

1. Swelling of the seed.
2. Bursting of the seed coat.
3. Appearance and downward growth of root.
4. Lengthening of stem as it pushes to the surface, taking the seed leaves with it.

Discuss: Seed viability

1. Only viable seeds will germinate. The number of viable seeds in a given lot decreases with age. In a year or two, some seeds are no longer viable, while others stay alive for many years.
2. The age of seeds is not necessarily related to the calendar. Moisture and temperature play a big part in the aging of seeds. They live longer when stored in a dry, cool (40°F) atmosphere.
3. Good seeds should germinate 80% or more for most vegetables. Making germination tests tells whether seeds are worth planting.

Demonstrate: Seed germination test

Let one or two members demonstrate how to determine the percentage of germination of some seeds.

1. Place 100 seeds (or any definite number) on a sheet of moist blotting paper or paper towel in a pie pan. Place another pie pan over the top to prevent evaporation. Keep in a warm room and keep the paper moist.
2. After a reasonable time allowance (according to the type of seed) count the number of seeds that have germinated (sprouted) and figure the percentage.

Exhibit: Vegetable seed identification

1. Make a collection of the vegetable seeds which are listed in the 4-H Vegetable Judging, Grading, and Identification Workbook.
2. Have these displayed in vials, bottles, or seed display frames.
3. Teach the members to be able to recognize and identify these various seeds.

Before the next meeting:

Members should:

1. Set up the two germination experiments demonstrated at this meeting.

Program Number 5

SOIL PREPARATION

At this meeting members should gain a working knowledge of what is involved in getting a garden soil ready to plant. Some instruction should be given in (1) soil sampling; (2) liming; (3) spading or plowing; (4) nematode control; (5) bedding; and (6) fertilization. The first three items should be covered in the first meeting, and the final three in the following meeting.

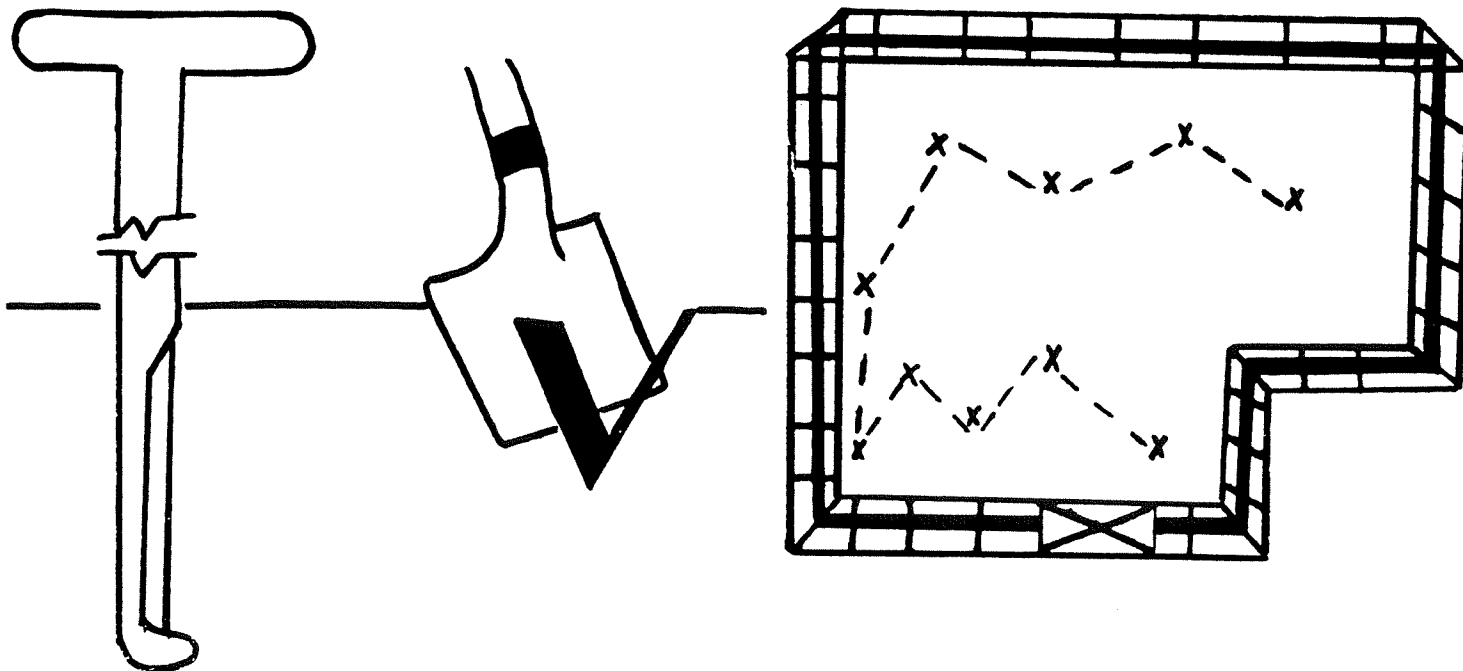
Suggested Subjects and Activities

Discuss: Soil testing

1. It is important to have a garden soil tested to determine lime and fertilizer needs.
2. A good, representative sample is necessary if the test results are to have value.

Exhibit/Demonstrate: Soil testing

1. Show the group an inexpensive, simple soil-testing kit, if possible (County Agent may supply one). Take a representative sample and test it for acidity.
2. Have the two following diagrams on taking a representative sample drawn on a poster.

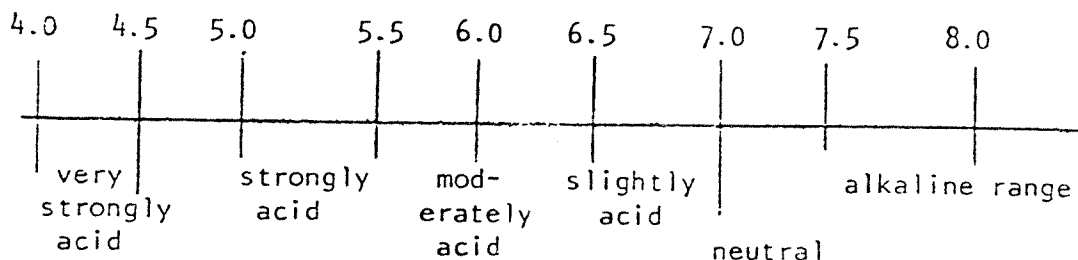


Discuss: Liming

1. Liming needs are determined from a pH reading. Most garden vegetables grow best between a pH reading of 5.5 and 6.5. Soils testing lower than pH 5.5 should have lime added. Too much lime in the soil may be as bad as too little. Apply lime only if soil test indicates a need.
2. Hydrated lime may be used where a quick-acting material is needed. It should be spaded or disked into the soil at the rate of 1 to 2 1/4 pounds per 100 square feet at least 3 weeks before planting. Dolomitic lime is a good liming material because of its magnesium content. It should be applied at the rate of 2 to 3 pounds per 100 square feet at least 2 months before planting.

Exhibit/Demonstrate:

1. Have on hand a small bag of dolomite or hydrated lime to show the members.
2. On a poster, draw the following diagrammed scale.



Discuss:

1. Soil preparation usually means that the soil is loosened and turned over to a depth of 6 to 8 inches. This is done by plowing in a large garden and usually with a spade in a small garden.
2. Any large lumps are broken up with a hoe or disk and raked or harrowed smooth. A leveling device may also be used.
3. A soil should be thoroughly prepared before planting to:
 - a. Cut under weeds, grasses, or manure, so they will rot.
 - b. Provide adequate aeration, temperature, and moisture conditions.
 - c. Make the soil easy to handle.
4. A soil should be prepared at least 3 weeks before planting so that:
 - a. Broadcast lime and fertilizer will have time to react.
 - b. The amount of root rot will be reduced.
 - c. Chemicals to control nematodes can be applied and will have time to leave the soil.

Exhibit/Demonstrate:

1. In a garden plot, show the members how to properly turn a soil using a spade or a spading fork.

Program Number 6

FERTILIZATION AND NEMATODE CONTROL

Nematodes are microscopic worm-like organisms that live in the soil and feed on plant roots.

Nematode Control -- Since most Florida soils contain plant parasitic nematodes, most garden soil would not be properly prepared without a nematicide applied to it. The members should learn what recommended chemicals to use and how.

Suggested Subjects and Activities

Demonstrate/Exhibit:

1. Show rootknot infested plants to the members, comparing the knotted roots to healthy roots.
2. Have on hand some EDB or DD or Vapam and demonstrate their use. These chemicals should be used with caution and only as directed on the label.
 - a. Open a furrow 6 inches deep.
 - b. Using a small jar with two holes in the lid, dribble into the furrow 1 pint of Vapam per 100 feet of row.
 - c. Rake the soil into the furrow immediately.

Discuss: References: "You Can Grow Vegetables, Part 1 - Before You Plant"

1. Reading the label and following instructions.
2. Keeping the material off the skin.
3. Allowing 2 weeks before planting for proper aeration.

Fertilization -- Especially in Florida, commercial fertilizers should be used in gardens to supply the necessary elements to insure production of satisfactory crops of high quality. The members should learn what fertilizer to use and how to apply it.

Discuss: References: Fact Sheet VC-5 - "Fertilizing the Garden".

1. A fertilizer analysis such as 6-8-6 refers to how much of the most commonly needed nutrient elements - nitrogen, phosphorus, and potassium - is in the bag.
2. Plants show definite symptoms when one of these elements is not available to the plant in adequate amounts.
3. Recommended grades and amounts should be applied, preferably at planting time in two bands - each 2 to 3 inches to the side of and 1 to 2 inches below the level of the seed or planting row.

Demonstrate/Exhibit:

1. Display a tag from a fertilizer bag.
2. Each nutrient deficiency symptom outlined in the 4-H Vegetable Judging, Grading, and Identification Workbook should be on display.
3. In the garden plot, demonstrate how to apply fertilizer in bands under the row.
 - a. Lay down a string or cord to mark the row center.
 - b. With a wheel or hand hoe, open a furrow on each side of the row.
 - c. Apply the fertilizer at the recommended rate from a quart can into each furrow.
 - d. Again using the hoe, fill the furrow with the soil and form the row into a bed.

Discuss:

1. Beds are not always necessary, except where drainage is important or where water can easily be run down middles.

2. Where manure is to be used, emphasize that it is not a complete fertilizer and should have superphosphate (10 lbs. per 100 lbs. of manure) added to it. Manure should be broadcast and mixed into the soil 3 or more weeks before planting.

Before the next meeting:

Members who earlier planned and laid out gardens should now prepare the soil for planting.

Program Number 7

PLANTING THE GARDEN

At this meeting, members should gain some knowledge of what vegetables to plant in their area and the proper practices to follow during actual planting.

Suggested Subjects and Activities

Discuss: Variety selection

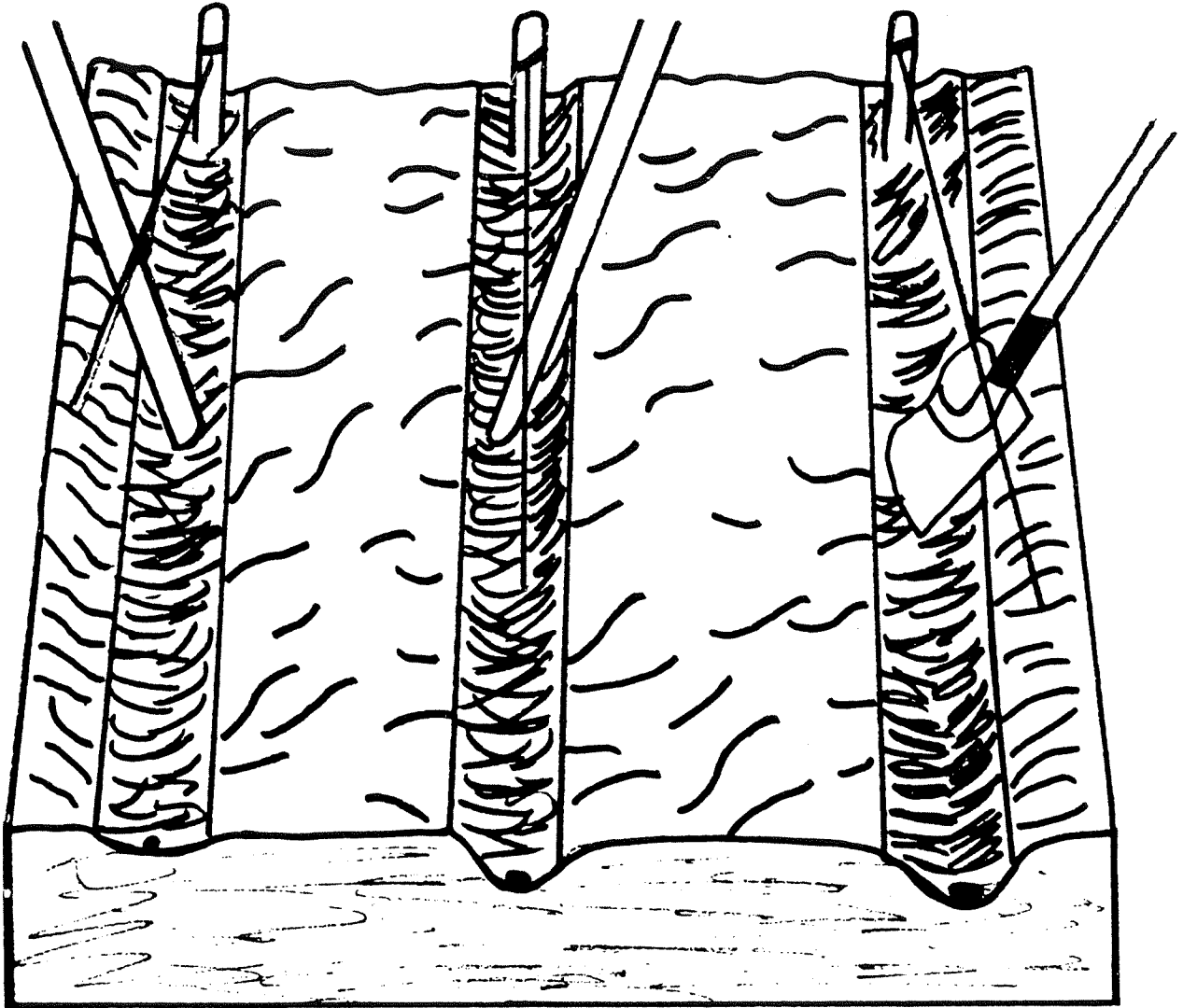
1. The best variety for a given area is usually established through proven usage over a number of seasons. Depend on varieties that have proven their value.

Exhibit: Proper varieties

1. On a posterboard, list the recommended varieties (or some of them) for your area. See the "Vegetable Gardening Guide."

Demonstrate/Exhibit: Planting time

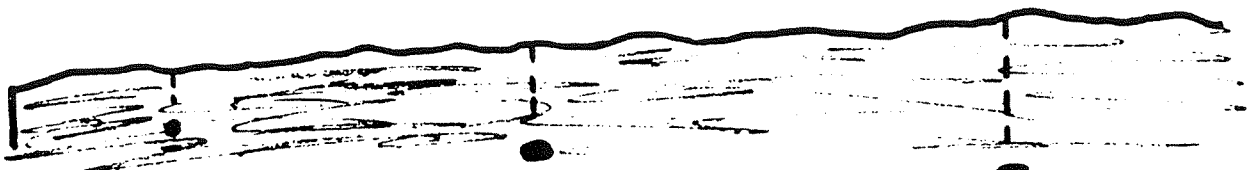
1. Using the "Vegetable Gardening Guide," place the proper planting date on the garden plan which you prepared earlier on posterboard.



(SMALL SEED)

(MEDIUM SEED)

(LARGE SEED)



1/4-1/2"

1/2-1"

1-1 1/2"

Demonstrate/Exhibit: Planting seed

1. Have on hand small, medium, and large seed, cord or twine, labels two, hoe and rake. If possible, exhibit a wheel planter and explain its use.
2. Out in the garden plot, show the members how to properly plant a row of seed.
 - a. Stretch the cord down the center of a row.
 - b. Use the end of a hoe handle to make a shallow and a medium shallow furrow; use the blade for a deep one. (See diagram).
 - c. By hand, dribble or drop the seed into each furrow.
 - d. Cover each furrow and firm with the back of the hoe rake blade.

Discuss: Planting seed

1. Straight rows are attractive and necessary with mechanical cultivation, so use a cord.
2. Planting depth is important. (See Diagram):
3. Seed should be placed in the furrow somewhat closer than the desired spacing of the plants. Plants may then be thinned to the desired spacing.

Program Number 8

GARDEN CARE

Garden care and maintenance follows planting. The members, encouraged by the emerging plants, will probably become very interested in caring for the tiny plants. You will need to point out to them some of the fundamental operations in garden care.

Suggested Subjects and Activities

The jobs of thinning, weeding, cultivating, staking, and the like are most effectively taught in a garden.

Discuss: Thinning

- (1) Normally, seeds are planted close together to insure a good stand of plants. The plants must then be thinned to give them room to develop properly.
- (2) Plants should be thinned when they get large enough to handle, but before they get tall and spindly.
- (3) The weakest plants should be removed.
- (4) Thin to a spacing outlined in the "Vegetable Gardening Guide."

Demonstrate/Exhibit: Thinning

- (1) In a garden plot, or in a seed flat, show the members how to thin properly.

Discuss: Cultivation

- (1) Cultivation or loosening the soil is done mainly to destroy weeds while small. Weeds compete with the vegetables for nutrients, water, and light.

- (2) Cultivation should be shallow (upper 1 inch), so vegetable roots will not be injured.

Demonstrate/Exhibit: Cultivation

1. Have on hand a common hoe, a wheel-hoe, and some wheel-hoe attachments.
2. In the garden, demonstrate how to properly cultivate with these tools.
3. On cardboard, mount pictures of several common garden weeds, such as those included in the 4-H Vegetable Judging, Grading, and Identification Workbook and display to the group. Help identify these weeds.

Discuss: Mulching

1. Mulches protect fruit from soil rot and sand scratching.
2. Mulches help control weeds, conserve moisture, and reduce soil erosion.
3. Some of the materials used are pine straw, leaves, sawdust, paper, and plastic films.

Demonstrate/Exhibit: Mulching

1. If possible, show how to mulch and/or exhibit some of the mulching materials.

Discuss: Staking

1. Directions and suggestions about staking various vegetable crops are found in "Vegetable Gardening in Florida." Discuss these ideas with the members.

Demonstrate/Exhibit:

1. In a garden plot, show the members how to properly set poles and stretch supporting string for a selected crop such as pole beans.

Discuss: Irrigation

1. Without a means of watering the garden, a long drought may mean loss of the crop, and even a short period of dry weather will cut yields and quality.
2. Vegetable plots may be watered by various means. A porous hose through which water soaks may be ample for a small garden. On a commercial plot, a gasoline pump and furrow irrigation system or overhead sprinklers may be advisable.
3. A vegetable plot should be watered thoroughly (1-2 inches) once each week rather than in several light sprinklings.

Demonstrate/Exhibit:

1. Display three or four kinds of watering devices.
2. Show the members how to test a sprinkler and let sprinkle for 15 minutes.
 - a. Set a couple of coffee cans under the sprinkler and let sprinkle for 15 minutes.
 - b. Measure depth of water in each can.
 - c. Estimate the total time needed to leave sprinkler running to apply 1 inch of water.

Program Number 9

INSECT AND DISEASE CONTROL

The goal of this meeting should be to provide information to help members identify and control vegetable insects, diseases, and pests. For reasons of safety and economy, members should be encouraged to enlist their parents' help in the purchase and use of pesticides and equipment.

Suggested Subjects and Activities

Demonstrate/Exhibit: Insect identification

1. A club collection, derived from insects brought in by members and outlined in the Judging and Identification Workbook should prove helpful.
2. Pictures of the garden insects and their damage could be mounted on cardboard and used for study.
3. You and the members could bring to the meeting plants damaged by insects.
4. Take the group to a garden where insect damage can be studied first-hand.

Discuss: Insect control

1. Weeds, which harbor insects, should be eliminated.
2. Vigorously growing plants tend to overcome or modify some insect damage.
3. Paper collars around newly set plants act as barriers to cutworms.
4. Handpicking large insects in small gardens is often effective.
5. Insect damage should be controlled and prevented through the proper use of insecticides.

Exhibit/Demonstrate: Insecticides

1. Set up a display of some recommended insecticides.
 - a. Dust, such as 5% malathion.
 - b. Wettable powder, such as 25% Sevin.
 - c. Liquid concentrates, such as 50% emulsifiable liquid malathion.
 - d. Granules and baits, such as 5% Sevin.

2. Display an easily used duster and sprayer.

Discuss: Insecticides

1. Insecticides may be applied as emulsions, wettable powders, sprays, dusts, granules, or baits.
2. For gardens, a general insecticide spray or dust is recommended. It should include one or more of the following: malathion, rotenone, or Sevin.
3. Certain insecticides, such as sevin, must be eaten by the insect to kill it; others, such as malathion, kill by contact.

Exhibit/Demonstration: Disease identification

1. Vegetable diseases, including those outlined in the Vegetable Judging, Grading, and Identification Workbook, may be studied through pictures on cardboard and by color slides. (County Agent slide loan sets are available).

Discuss: Disease control

1. Disease resistant crops and varieties should be planted.
2. Soggy, wet, poorly drained soils promote root disease.
3. Treated seed should be used.
4. Old crop plants should be pulled up and destroyed.
5. The garden should be rotated from one area to another, or crops should be rotated to different areas within the garden.

6. A fungicide spray or dust routine should be initiated early.

Demonstrate/Exhibit: Fungicides

1. Display a few of the recommended fungicides such as zineb, maneb, captan and Dithane M-45.
2. If you have a pressure sprayer, mix 1 ounce of 75% WP zineb in 3 gallons of water and show members how to apply it on a plant.

Discuss: Fungicides

1. Repeated applications, to cover new growth and to replace that washed off, are needed if the spray or dust is to be effective.
2. A good general garden fungicide should contain one or more of the following: zineb, maneb, copper, or captan.

Program Number 10

HARVESTING, MARKETING, STORING AND USING VEGETABLES

Prompt harvesting at the proper stage of maturity insures good quality and more uses for the crop. Members marketing their produce wisely should show a sizable net return from the vegetable enterprise. Plans for storing, canning, and freezing should be made in advance.

Suggested Subjects and Activities

Discuss: Proper time for harvesting

1. One of the biggest enjoyments of a vegetable garden lies in the gardener's ability to harvest vegetables at a stage of maturity where quality is highest.

2. Discuss some of the various vegetables in relation to the proper time for their harvest. For example, cantaloupes should be pulled as soon as the stem comes loose easily. Harvested before this, they do not sweeten well, and if allowed to get fully yellow, they lose flavor and firmness.

Discuss: Marketing of vegetables

1. Peddling (house-to-house selling) can give the club member a good return for vegetables. Although most vegetables may be sold in this manner, strawberries are one of the best.
2. Roadside stands -- 4-H members have been very successful with roadside retailing. Two or more members may cooperate to provide a continuous supply of fresh vegetables.
3. U-pick'em operations -- A 4-H member might invite the public to come into his patch or garden to pick and purchase.
4. Local retail markets -- Many local grocery stores prefer to buy home-grown produce. A member should check with the local merchant before planting to see which vegetables and how much are needed. The club member may have to grow only one or two items to insure a sufficient supply.
5. Farmer's markets -- When large quantities are produced, this is a possibility. While a ready market is offered for vegetables which are properly graded and packed, the selling price will probably not be as high as for retail selling.
6. Processers -- There are several vegetable processers in Florida. For contracts with processers, members should check with the nearest company.

Discuss: Storage of various vegetables (See your County Agent who has storage information in the County Agent's Handbook and the Home Economics series on "Using Florida Vegetables").

1. Potatoes -- Immediately after harvest, diseased and injured potatoes should be graded out. Sound potatoes should be stored in boxes in a cool (above freezing), dry, dark place.
2. Sweet potatoes -- After grading defects, they should be crated and stacked so air circulates freely. Storage temperature should be kept at 80° to 85°F for 10 to 14 days; then lowered to 50 to 60°F.
3. Onions -- Harvested after the tops have fallen over, onions should be spread out in thin layers in a dry, well-ventilated place.
4. Tomatoes -- Before frost injures tomatoes, they may be stored for several weeks if mature, green fruits are picked and spread in a single layer in a relatively cool place. Tomatoes may also be stored by pulling and hanging up the entire plant by the roots in a cool place.
5. Beans and peas -- They should be allowed to mature thoroughly on the plant. Before storing, they should be spread to dry for 2 to 3 weeks in a dry, well-ventilated place. Then they should be shelled and stored where mice and insects cannot damage them.

Discuss: Canning or freezing vegetables

1. The family can have an abundance of nutritious vegetables practically all year by canning or freezing the garden surplus.
2. Proper freezing retains the color, flavor, and food value of most vegetables better than canning. However, some vegetables such as beets and tomatoes are more suitable to canning. Also, vegetables that are usually eaten raw, such as lettuce, should not be frozen.

3. Can or freeze only high-quality vegetables. The quality of vegetables cannot be improved by canning or freezing. However, careless or improper methods may lower the quality of the canned or frozen product.
4. Crops that are at the right stage for eating fresh are ideal for canning or freezing.
5. Vegetables should be harvested in the early morning while they are still cool.
6. Overmature, bruised, diseased, and insect-damaged vegetables should be removed.
7. Vegetables should be thoroughly washed with plenty of cool, running water, then placed in a refrigerator or under crushed ice.
8. Since some vegetables lose much of their quality even in 2 or 3 hours after harvest, they should be canned or frozen as soon as possible after harvesting.
9. For best results in canning and freezing vegetables, the following bulletins have been prepared.
 - a. "Canning Florida Fruits and Vegetables," Fla. Coop. Ext. Service Bul. EHE 58.
 - b. "Canning in Florida," State Dept. of Agric. Bull. 117.
 - c. "Using Florida Vegetables" Series, Fla. Coop. Ext. Service.

Exhibit/Demonstrate:

1. Give a vegetable canning/freezing demonstration.
2. Display cooked snap beans which were harvested at various stages of maturity. Ask members to sample them and to note woodiness or overmaturity.

Program 11

VEGETABLE EXHIBITING, JUDGING, GRADING, AND IDENTIFICATION

Members get enjoyment and inspiration from seeing the best vegetables from other 4-H members' gardens. They take a great deal of pride in showing-off the best of their own vegetables. To know what is best, skill in judging vegetables becomes important, as does skill in identifying the kinds of varieties of vegetables.

In this meeting, you will want to help members learn something about properly exhibiting, judging, grading, and identifying vegetables.

Suggested Subjects and Activities

Discuss: Exhibiting vegetables

1. An excellent vegetable exhibit has:
 - a. Trueness to variety.
 - b. Good market quality.
 - c. Uniformity in size, color, shape, maturity.
 - d. Freedom from insect and disease injury.
 - e. Proper labeling.
2. Generally, medium size vegetables make the best exhibits.
3. Carefully washing and brushing make the vegetables appear at their very best.

Exhibit/Demonstrate: Vegetable exhibiting

1. Show and discuss how to set up on paper plates two or three exhibits of some vegetable in season.

Discuss: Judging vegetables

1. A class of vegetables for judging contains one or more exhibits. A class may contain only one kind of vegetable, but may have several varieties if varieties are not mixed within exhibits. For example, a judging class of potatoes might contain an exhibit of a variety such as Red Pontiac and an exhibit of a variety such as Katahdin.

2. Rather than compare exhibits with each other, a member should be taught to evaluate the traits of each exhibit individually. A good way to learn what to look for in an exhibit and to measure the merits of that exhibit is to use a point system scorecard such as the following.

Judging Class:	Possible Score	Your Score		
		A	B	C
Condition of Exhibit	10	—	—	—
Varietal Character	20	—	—	—
Labeling	10	—	—	—
Uniformity (Size, Shape, and Color)	20	—	—	—
Maturity	20	—	—	—
Freedom from Blemish (Insect, Disease, Mechanical, and Other Injury)	20	—	—	—
	100	—	—	—

3. Vegetables fall into four classifications: Excellent, Good, Worthy, and Unworthy. The requirements of each classification are discussed in the 4-H Vegetable Judging, Grading, and Identification Workbook. Normally, an exhibit can be classified based on the total score given it, using the following scale:

<u>Classification</u>	<u>Total Score</u>	<u>Ribbon</u>
Excellent	90-100	Blue
Good	75-89	Red
Worthy	60-74	White
Unworthy	0-59	Yellow

However, any exhibit which receives a score of 0 on any one trait (such as Varietal Character) automatically should be judged Unworthy

4. Numerical placing of exhibits should be based on total score. In this manner, several exhibits may be classified similarly, such as Excellent, yet a winner may be selected.
5. The judging portion of the 4-H Horticulture contest uses the numerical placing procedures instead of the Danish system.

Exhibit/Demonstrate: Vegetable judging

1. Set up two or three vegetable exhibits and have the members practice judging them. Prepare and hand out scorecards similar to the above. Then judge the exhibits yourself and discuss the reasons for your placings.

Discuss: Irish potato grading

1. Since vegetables must be properly graded to bring top prices, the U.S.D.A. has set standards for each of the vegetable crops. As for most vegetables, the most popular grade for potatoes is U.S. No. 1.
2. In potato grading, the grader must be able to quickly examine a tuber and determine if it meets the requirements of the U.S. No. 1 grade. These requirements are listed in the 4-H Vegetable Judging, Grading, and Identification Workbook.

Exhibit/Demonstrate: Potato grading

1. Place 10 to 20 numbered potatoes 3 inches apart on a table. Each member should practice grading them by marking down on a piece of paper the number of each potato thought to be less than U.S. No. 1.

2. Grade each potato yourself and discuss why you graded as you did.
3. If possible, have on hand for display potatoes which show some of the grade defects described in the identification and judging workbook.

Exhibit/Demonstrate: Vegetable kind and variety identification

1. On cardboard, paste pictures of the kinds and varieties of vegetables which are outlined in the 4-H Horticulture Contest scoresheets. Pictures may be obtained from seed packets and seed catalogs.

Program Number 12

VEGETABLE DEMONSTRATIONS

The demonstration is one of the most effective ways for 4-H members to share their garden know-how with others. Through demonstrations, members also learn how to plan, to organize, and to speak and think on their feet.

Suggested Subject Matter and Activities

Discuss: Demonstrations

1. Demonstrations stimulate careful planning, a thorough knowledge, and the ability to explain by word and action the why and how of various production practices, and marketing procedures.
2. There are about three major types of vegetable demonstrations:
 - a. Production concerns growing a vegetable garden or a vegetable crop.
 - b. Soil fertility and improvement concerns practices that improve the soil fertility or condition.
 - c. Marketing concerns selecting, preparing for market, and marketing vegetable produce.

Exhibit/Demonstrate: Topics for Demonstrations

1. On the blackboard or on a poster, list the following suggested topics under their appropriate headings. Ask the members for suggested topics to add to these.

Suggested Vegetable Demonstration Topics

Production

- a. Preparing a seed flat
- b. Planting large and small seed
- c. Treating seed
- d. Transplanting
- e. Staking and pruning tomatoes
- f. Treatment for nematodes
- g. Plastic mulching

Soil Fertility and Improvement

- a. Making a soil test
- b. Liming
- c. Fertilizing methods

Marketing

- a. Marketing strawberries (any crop)
- b. Grading vegetables
- c. Keeping vegetables fresh

Exhibit/Demonstrate: Giving a demonstration

1. Here it is desirable that you, or one or two members give a simple demonstration to the group.
 - a. Ask each member to score the demonstration, using the score sheets available from the County Agent.
 - b. Discuss the items on the score sheets.

State Horticulture Demonstration Contest

The Contest -- Contestants may perform as individuals or as a team of two in giving a 12-minute demonstration in either of two divisions - fruits and vegetables, or flowers and ornamentals.

In scoring the contest, judges may award the demonstrators a maximum of 10 points for appearance and poise and 10 points for voice and grammar. In the organization and presentation area, 5 points each may be awarded for introduction, arrangement and use of equipment, visual aids, logical sequence, ability to work easily and efficiently, and summary. A total of 50 points may be given on subject matter using the following breakdown: 10 points for selection of subject and practical value, 5 points for using one basic theme, 10 points for accurate, complete and up-to-date information, 5 points for degree of difficulty, 10 points for knowledge of subject and related skills shown, and 10 points for results (was the purpose of the demonstration accomplished).

Vegetable Gardening References

1. University of Florida Cooperative Extension Service and Agricultural Experiment Station Publications
 - a. Most of the publications may be obtained from your County Extension office.
 - b. Here are some of the University publications which you may find helpful:
 - "4-H Vegetable Garden Record (For Beginners)"
 - "4-H Horticulture Record" (4-H 332)
 - "4-H Vegetable Garden Record (Advanced & Commercial)"
 - "Vegetable Gardening Guide" (Circ. 104)
 - "Commercial Vegetable Fertilization Guide" Circ. 225
 - "Know Your Minor Vegetables"
 - "Vegetable Weed Control Guide" (VC-16)
 - "Growing Tomatoes in the Florida Vegetable Garden" (VC-8)
 - "Vegetable Gardening Fact Sheets" (VC2 - VC7)
 - "Grow A Row of Vegetables" (Circ. 463)

2. Florida Department of Agriculture and Consumer Services Publications

- a. Write to the above address in Tallahassee for a copy of "Vegetable Gardening in Florida."

3. U.S. Department of Agriculture Publications

- a. These bulletins, pamphlets, and books may be obtained by writing to

Office of Information
U.S.D.A.
Washington, D.C. 20250

- b. Some U.S.D.A. gardening-related publications are
"Growing Your Own Vegetables"
"Insects and Diseases of Vegetables in Home Gardens"
"Suburban and Farm Vegetable Gardens"
"Canning and Freezing Vegetables"

4. Textbooks

Knott's Handbook for Vegetable Growers by O. Lorenze and D.N. Maynard. New York. John Wiley and Sons. 1980.

Producing Vegetable Crops, by Geo. W. Ware and J.P. McCollum. Interstate Printers and Publishers, Inc., Danville, Illinois.

Vegetable Gardening, Splittstosser, AVI.

5. Periodicals, other.

- a. Most of these listed have excellent articles and information of interest to vegetable growers.
"Citrus and Vegetable Magazine"
"Produce Marketing"
"Florida Grower and Rancher"
"Florida State Horticultural Society Proceedings"
"American Vegetable Grower"
"The Progressive Farmer"
"Florida Market Bulletin" - Florida Department of Agriculture and Consumer Services

6. Visual Aids

- a. Your County Agent may secure the following for your use.

Color slide sets on gardening include the "You Can Grow Vegetables" series.

Color slides on the Horticulture Identification and Judging Contest.

7. Seed Catalogs

- a. Most seed companies will send free a descriptive seed catalog upon request. Some companies and addresses are:

Burgess Seed and Plant Co.
P.O. Box 218
Galesburg, Michigan 49053

Kilgore Seed Company
100 West 1st. Street
Sanford, Florida 32771

W. Atlee Burpee Company
P.O. Box 6929
Philadelphia, Pennsylvania 19132

Gurney Seed and Nursery Co., Inc.
Yankton, South Dakota 57078

Joseph Harris Co., Inc.
Moreton Farm
Rochester, New York 14624

Geo. W. Park Seed Co., Inc.
P.O. Box 31
Greenwood, South Carolina 29646

Stokes Seeds, Inc.
Box 548
Buffalo, New York 14240

These companies are listed for informational purposes only, not as recommendations.



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