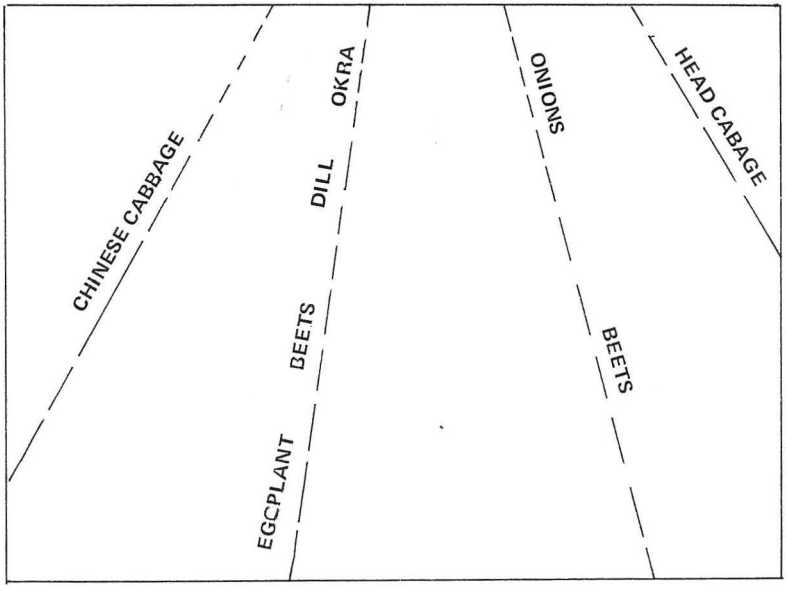
VEGETABLE MINIGARDENS

Cooperative Extension Service

CIRCULAR NO. 1

UNIVERSITY OF GUAM



Cover photo: An attractive minigarden plot showing a large variety of vegetable crops.

Cooperative Extension Service
circular no. 1

VEGETABLE MINIGARDENS

By Charles B. Frear

FOREWORD

Patterned after the "Victory" garden of the early 1940's, the "minigarden" is enjoying a new surge of interest in many areas of the United States. Guam is no exception.

This circular has been prepared to guide and assist the homeowner or apartment dweller in growing a successful minigarden with a minimum of experience in growing vegetables.

A "vegetable minigarden" can meet the aesthetic, as well as the physical needs of the gardener. Considerable enjoyment can be experienced in watching a plant grow and in beautifying the home. This enjoyment does not diminish with the harvesting and the consuming of "home-grown" vegetables. Growing vegetables successfully can also amount to considerable savings for the family.

This information has been assembled through review of literature and by the observations and experiences of the author. Supplemental information on individual crops can be acquired from the Cooperative Extension Service, College of Agriculture and Life Sciences, University of Guam, P.O. Box EK, Agana, Guam 96910.

ACKNOWLEDGEMENT

The author would like to take this opportunity to thank the Director, Associate Director, and staff of the Cooperative Extension Service, of the College of Agriculture and Life Sciences, University of Guam, for their assistance in arrangement, editing and review of content in this circular.

Appreciation is also extended to the Publication Office of the University of Guam and the District Agriculturist, Mariana Islands, Trust Territory of the Pacific Islands.

VEGETABLE MINIGARDENS

Minigardening? What is minigardening? Minigardening is simply the growing of plants in a confined area either in containers or small areas around the house.

Gardening on Guam can be profitable for the commercial grower and is now a popular pastime for the homeowner and apartment dweller.

The high cost of vegetables on Guam is one of the main reasons for this current minigardening interest, which also proves to be a most enjoyable hobby for children and adults.

This publication will define the basics of minigardening. To start a minigarden, the location, as well as the materials (seeds, containers, and growing medium) should be considered.

LOCATION

Vegetable crops can be grown in an area around the house, a patio, a balcony (lanai), a doorstep or even on a windowsill. Look for an area that can be protected from stray animals. An established path is no place to try to start a minigarden.

In choosing a location, consider the amount of sunlight the plants will be receiving. Since the strongest sun rays come from the south,

an area facing south should be selected, if possible. Also consider the length of time the plants will be getting sunlight. Avoid an area which is shaded by trees or buildings or one which frequently receives strong winds. Trees not only deprive the crop of sunlight, but also use up water and nutrients needed by the crop. Most vegetable plants grow better in full sunlight than in shade. Do not

A railing or grill work around an apartment or house could be a good place on which to trellis pole beans or cucumbers.

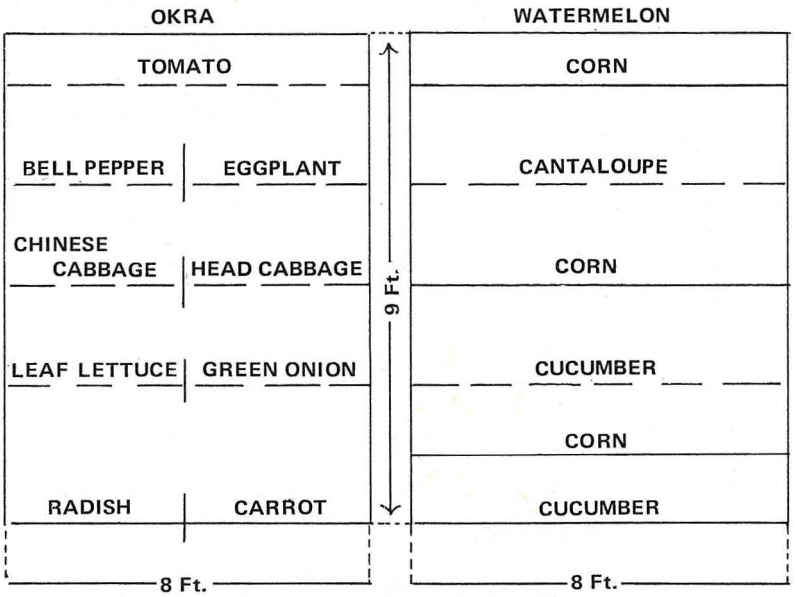
Do not try to trellis heavy fruits such as watermelon, cantaloupe or pumpkin as the vine will not be able to support the gruit. Vining plants with heavy fruit are best planted along the edges of the minigarden plot and then trained so they will grow outside away from the garden.

plant any vegetable crop in an area that receives less than four hours of direct sunlight a day.

In choosing a location, think about what type of vegetable crops can be grown there. Plant vegetable fruit crops such as tomatoes, peppers or cucumbers in an area where they will receive the most sun with the highest intensity. Root crops such as radishes, carrots and beets do best in full sunlight but can tolerate some shade. Leafy crops such as cabbage, leaf lettuce and Chinese cabbage can tolerate the most shade, but again, they do best in full sunlight if there is an area available.

When considering minigardening, draw up a plan of the garden plot. Remember to place tall plants in back so they will not shade the lower growing vegetables. Information can be obtained from seed catalogs or from the Cooperative Extension Service, University of Guam. Two sample garden plots are given in Chart A.

CHART A

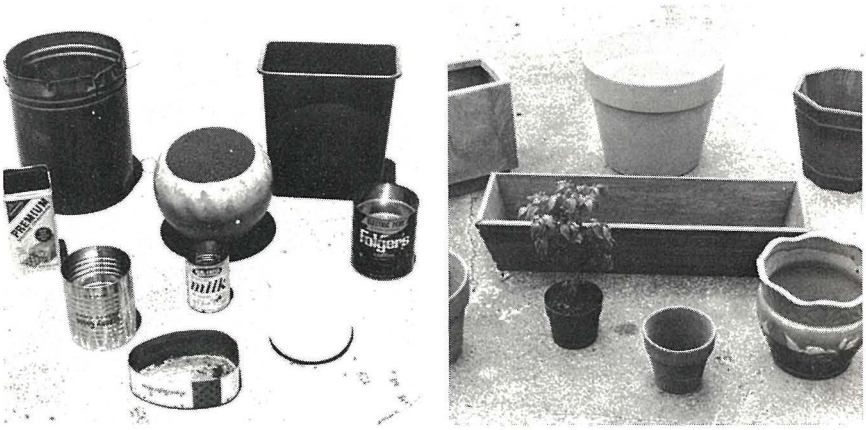


TWO SAMPLE MINIGARDEN PLOTS

CONTAINERS

Containers are needed to grow the plants in unless an area around the house is being used. Containers can be of any shape, size or description as long as they have ample drainage and will not fall apart before the crop is harvested. It should be remembered that the size of the container should be large enough to hold the plant when it is fully grown.

A plastic or clay pot, wooden box lined with plastic, an old pail, a biscuit tin, a plastic bucket, or even a coffee can are some examples of useful containers. These are just a few and are limited only by one's imagination and resourcefulness. Almost any container is satisfactory, depending on the area available.

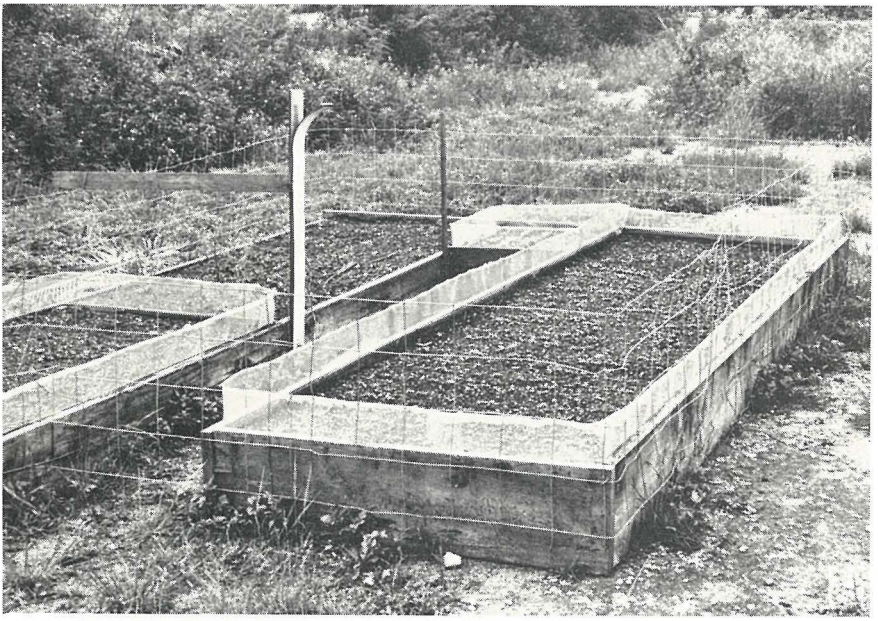


Many household containers commonly discarded can be used for minigarden plants (left). Commercial containers can be purchased locally and are attractive as well as useful (right).

When growing vegetable plants in a container, consider the size of the container and what crop is to be grown. For example, 6-inch diameter pots are satisfactory for Chinese cabbage, green onions or parsley. At least a 10-inch diameter pot will be needed for bulb onions and certain varieties of miniature tomatoes. If the family requires a large quantity, and room permits, five-gallon plastic trash cans, wash tubs, or bushel baskets could be used for leaf lettuce, radish, and other crops.

THE GROWING MEDIUM

After locating a container, a growing medium or soil is needed to anchor the plant. Top soil can be purchased on Guam through some construction companies but is in relatively short supply and quite expensive. If heavy soils (clay) are used, add ½ of a 1-pound coffee can full of sand to each 1-pound coffee can of clay soil.



Even an area of concrete or coral can be used with a little extra effort.

Sand can be purchased through some construction companies but care should be taken not to get beach sand as the high salt content can kill the plant. If there is any question as to the origin of the sand, place it in a container (such as a pail), wash it, pour off the water and wash it again. Continue this procedure at least five times to be sure all the salt is removed from the sand.

The other alternative is purchasing a synthetic soil (potting soil) which is usually prepared from a mixture of peat moss, horticultural vermiculate, and fertilizer. Synthetic soil is free of soil borne plant disease organisms and weed seeds as well as being lightweight, holding moisture well, and containing small amounts of fertilizer. Synthetic soil mixes can be obtained at local stores carrying agricultural supplies.

SEEDS

The last basic material needed is seeds. When purchasing seeds, buy from a reputable dealer or a well-known seed company. Check the label on the package or can. Labels should have the kind of seeds, the variety, the percentage of germination, and the date of testing clearly marked. The percentage of germination means how many seeds from a given number of seeds will actually grow. For example, if 85 seeds out of 100 seeds tested actually grew, the percentage of germination would be 85 percent.

Seeds can come in many quantities and various types of packages.

Disease and insect resistance should also be considered. Although it may not be printed on the package, the information can be obtained from the seed catalog. Beware of cheap or "bargain seed" or packages labeled "below standard" as this could mean that the seed

is impure, contains a high percentage of weed seeds or has a poor germination percentage.

When buying seeds consider the amount of each type required for the area being used. It is recommended that a garden plan such as in Chart A be prepared so that an idea of the necessary quantity of seeds is obtained.

In Chart B are approximate quantities of seeds required to plant a row of 100 feet.

CHART B

Approximate quantities of seeds and transplants required to plant 100 feet of row

CROP	SEEDS	PLANTS (Transplant)
Bean:		
Snap, bush	1/2 pound	
Snap, pole	4 ounces	
Yardlong (friholes)	4 ounces	
Beet	2 ounces	
Cabbage	1 pkt.	50-75
Cantalope (muskmelon)	1 pkt.	
Carrot	1 pkt.	
Corn, sweet	2 ounces	
Cucumber	1 pkt.	50
Eggplant	1 pkt.	100
Lettuce, head	1 pkt.	
Lettuce, leaf	1 pkt.	
Okra	2 ounces	
Onion:		
Plants		400
Seeds	1 pkt.	
Sets	1 pound	
Bell pepper	1 pkt.	50-70
Pumpkin	1 ounce	
Radish	1 ounce	
Sweet potato	5 pounds, bedroots	75
Taro	5-6 pounds	50
Tomato	1 pkt.	35-50
Watermelon	1 ounce	

Generally, it is impossible to buy "just a few seeds" in a single purchase. Usually one must buy an entire packet or a can of seeds which often results in a few seeds being left over. Methods for storing seeds then become necessary.

Guam presents a special problem in storing seeds due to the high temperature and humidity. It is recommended that jars be used as seed storage containers. It is important, however, to first warm the jar for five minutes in a 200 degree oven before placing the seeds in the jar. This will drive off most of the moisture in the jar. After removing from the oven, place seed packets in the jar and put the top on tightly, then store in the bottom of the refrigerator. This keeps the seeds cool and dry, but not so cold as to cause damage to them. Air conditioning also helps for a longer storage life, but the best way to store seeds over a relatively long period of time is the method given above.

This small, compact tomato will soon be bearing a bounty of fruit. This variety would be excellent for a windowsill or balcony.

VARIETIES

Choosing what varieties to grow is a very important part of a successful minigarden. Standard varieties are most often used in the home garden and for commercial production. Miniature varieties are smaller and more compact and are excellent when grown in containers or in areas where the space is limited or the family needs are small.

Chart C gives suggested standard and miniature varieties for production on Guam. Most work in the past has dealt with the standard varieties only. Therefore, miniature variety information relative to Guam is scarce and the recommended list should be used as a suggestion as to which varieties to try.

CHART C

RECOMMENDED COMMON VEGETABLE VARIETIES AND AVERAGE DAYS TO HARVEST

TYPE OR KIND	VARIETY	AVERAGE DAYS TO HARVEST
Bean:		
Snap, Bush	Bountiful*	48-50
	Surecrop Stringless Wax*	55
Snap, Pole	Manoa Wonder* ***	
	Hawaiian Wonder* ***	
	Kentucky Wonder* ***	64
Yardlong (friholes)	Local	75-80

Type or Kind	Variety	Average Days to Harvest
Cabbage:		
Head	K-K Cross (Summer Stride)*	58****
	Express Cross 60*	60****
	C-O Cross	
	Copenhagen Market	65****
	A-S Cross	75****
Chinese	Saladeer*	
	Tropicana*	60
	Won Bok	60
	Santo	
	Taisai	80
Cantaloupe (muskmelon)	Gulfstream	
	New Edisto 47	85
	Dulce	88
	Resistant No. 45	90
		87
Carrot	Danver Half Long *	70
	Nantes*	68
	Coral Cross	110
	Takii's Early Marketeer*	65
Corn, Sweet	Silver Queen	92
	Southern Bell	70
	Hawaiian Sugar	80
Cucumber:		
Short	Palomar	65
	Lehua Hybrid* ***	50
	Cherokee	60
	Ashley	63
Long	Burpless* ***	62
	Green Slicer	
Eggplant	Long Green	76****
	Early Long Purple	
	Waimanalo Long	
	Malokai Long	
	Black Beauty	80****
	Florida Market	82****
	Money Maker	

Type or Kind	Variety	Average Days to Harvest
Lettuce:		
Head	Great Lakes Varieties	90
Leaf	Manoa* (Green Mignonette)	50
	Oak Leaf*	40
	Black Seeded Simpson	45
	Clemson Spineless	
Okra		56
Pepper(Bell)	Emerald Giant*	74****
	Yolo Wonder	75****
	Florida Giant	75****
	Keystone Resistant Giant	80****
	World Beater*	73****
Radish	Scarlet Globe*	23
	Crimson Giant	29
	Cherry Belle*	22
	Scarlet Knight*	23
Tomato Standard	Hawaiian Varieties	85****
	Globemaster	65****
	Spring Giant Hybrid	65****
	Fireball* ***	65****
	Patio* ***	70****
Tomato Miniature	Pixie Hybrid* ***	52****
	Small Fry UFN* ***	65****
	Tiny Tim	45****
Watermelon Standard	Charleston Gray 133	85
	Florida Giant (Black Diamond)	90
	Crimson Sweet	90
Miniature	Sugar Baby**	75

* Suitable for growing in containers
** Miniature Variety
*** Should be staked or trellised
**** Average days to harvest after transplanting

STARTING PLANTS

For most container-grown plants, the seeds may be sown directly in the pots. To insure that there are enough plants for the recommended size pot or spacing, sow two or three seeds for every one plant that is desired. After the newly germinated seeds have developed their first true leaves, thin as recommended in Chart D.

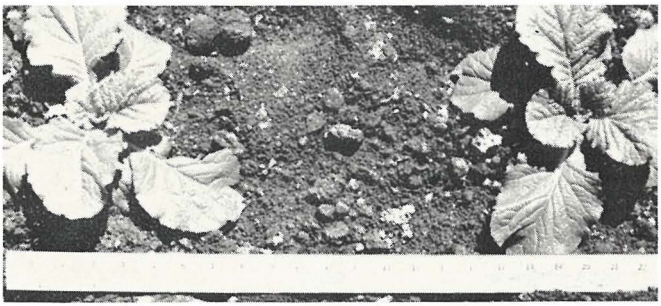
CHART D

RECOMMENDED DISTANCES AND PLANTING DEPTHS OF SOME COMMONLY GROWN MINIGARDEN CROPS

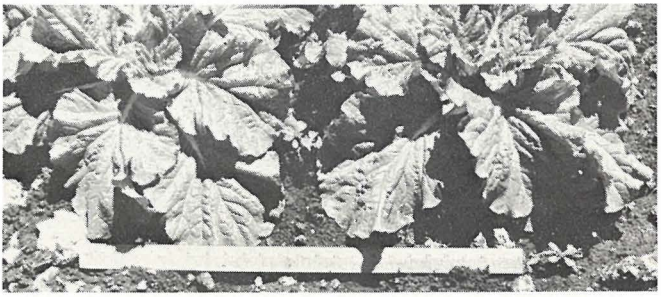
CROP	PLANTING DEPTH OF SEEDS (in inches	SPACING (Distance between plants in row x distance between rows (in inches)
Bean:		
Bush	1–1½	34x36
Pole	1–1½	36x24
Beet	1	3x15
Cabbage:		
Head	½	24x24
Chinese	½	12x24
Cantaloupe(Muskmelon)	1	Hills, 72x72
Carrot	½	3x14
Corn	2	14x36 Hills, 30x36
Cucumber	½	36x72 Hills, 72x72
Eggplant	½	36x30
Lettuce, leaf	½	6x14
Okra	1–1½	24x72
Onion:		
Plants	1–2	3x14
Seeds	½–1	3x14
Bell pepper	½	24x36
Pumpkin	½	36x72
Radish	½	1x14
Sweet potato	2–3	12x36
Taro	2–3	24x42
Tomato	½	36x36
Watermelon	½	36x72 Hills, 72x72

Adapted from U.S. Department of Agriculture. Growing Vegetables in the Home Garden, Home and Garden Bulletin No. 2020. Washington, 1972.

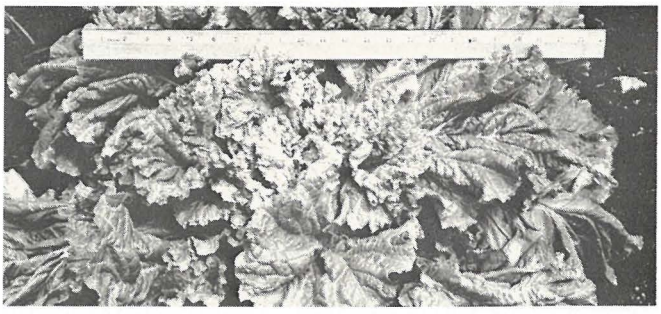
1



2



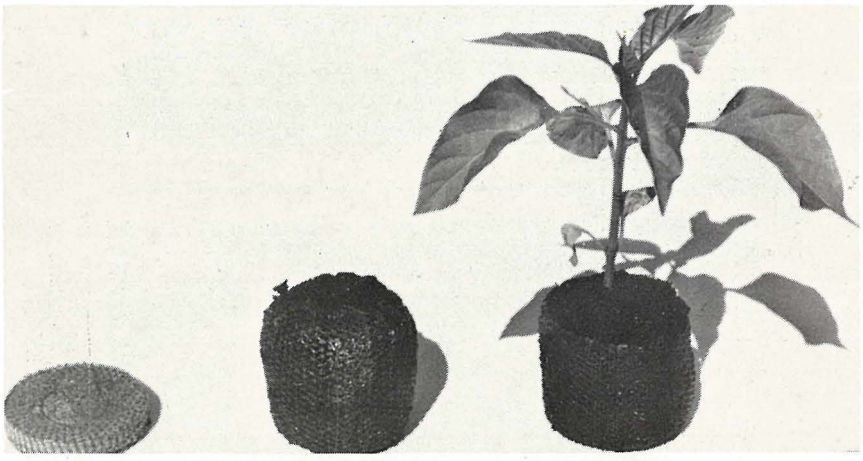
3



4

The photos show various stages of Chinese cabbage with proper thinning and spacing. Newly germinated seedlings, (with first true leaves) (No. 1); Plants after initial thinning (No. 2); Plants after final thinning (No. 3); Chinese cabbage ready for harvest (No. 4).

When plants are to be grown in a plot near the home, an easy way is preplant in small pots or peat pellets for transplanting at a later date. Peat pellets, consisting of peat, moss and a small amount of fertilizer, are held together by a plastic netting. When peat pellets are purchased, they are hard and dry in the form of a disc about 1/4 inch thick and 1¾ inches in diameter. When soaked in water for 5 minutes, they become moist and soft and will rise to approximately 6-8 times their original height. The seeds can now be planted in the peat pellets.



Peat pellets are one of the best mediums for starting plants.Compressed pellet (left) is shown before water has been added. Moistened pellet (center) is ready for planting the seeds. Plant growing from peat pellet (right) is ready to transplant to a larger container in which the plant will grow to harvest.

When the seeds are planted directly into the garden, spaces are often left where they either did not germinate or were destroyed by pests. The minigardener will insure a maximum utilization of the area to be planted by eliminating the empty spaces when starting seeds in peat pellets and then transplanting them into the garden. Another benefit of using peat pellets is the starting of seeds in a sterile, disease-free medium. This will eliminate loss of plants to soil borne

pests, the main one being a fungus which causes seedlings to rot at the soil surface and die (damping off--Pythium sp). Peat pellets also contain a small amount of fertilizer which will get the seedling off to a rapid and healthy start.

When transplanting with peat pellets, there is little or no setback (transplanting shock). Plants removed from the soil for transplanting can be damaged by breaking the roots or pinching the stem. Peat pellets eliminate most of this damage because the whole pellet is planted directly into the soil. It is recommended that the net holding the peat pellet together be removed before transplanting since it may restrict uniform root growth.

Some types of vegetable crops do not transplant easily. In these cases, the seeds should be sown directly in the container or areas in the minigarden plot where they are to grow. Chart E illustrates plants which are easily transplanted, crops requiring care in transplanting, and crops not successfully transplanted.

CHART E

SUGGESTED CROPS FOR TRANSPLANTING AND DIRECT SOWING

Easily Transplanted	Require Care in Transplanting	Not succesfully Transplanted
Beet Cabbage Lettuce Tomato	Carrot Eggplant Onion Pepper	Bean Cantaloupe Corn Cucumber Watermelon

CROP REPLACEMENT

While one crop is growing, think ahead to what the next crop will be. Buy the seeds for the next crop early and plant in small pots or peat pellets for crop replacement. Crops listed as "easily transplanted" and "require care in transplanting" in Chart E can be planted two to four weeks before the present crop is to be removed. Upon completion of the present crop, destroy old plants, remove the plant remains, and fertilize as in the previous planting. It is then possible to transplant the new crop into the container.

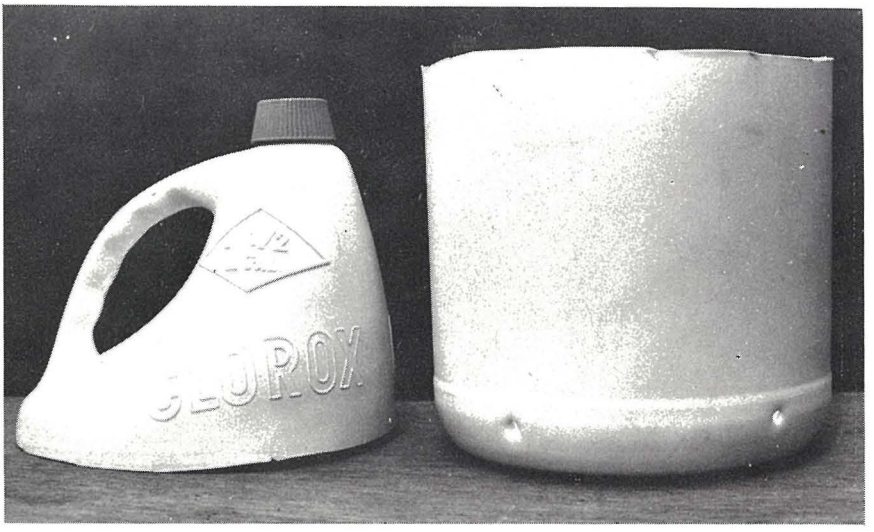
COMPANION CROPPING
(Interplanting)

Companion cropping is the planting of two or more vegetable crops in the same area, either in hills or rows. Companion cropping can be advantageous to the minigardener when space is an important factor. In some cases a low and/or fast growing crop can be planted between rows of slower growing plants. The fast growing crop is planted at the same time as the slower growing crop. It is usually harvested in 30 to 40 days, before competition or shading between the two crops becomes serious. Examples of companion cropping are the planting of radishes or leaf lettuce between rows of tomatoes, okra or eggplant; onions or carrots between rows of taro; and cucumber, pumpkin, watermelon, or cantaloupe between rows of corn.

Companion cropping of taro, a tall, long season crop and watermelon, a low short season crop gives maximum use of the land area available.

DRAINAGE

Adequate drainage is important for potted plants. The United States Department of Agriculture (USDA) recommends when using solid plastic containers to make four or more holes at least ¼ inch in diameter. These holes should be evenly spaced along the side very near the bottom. Put about ½ inch of coarse gravel or stones in the bottom as this will prevent the plant from becoming waterlogged and possibly dying. In the backyard minigarden, consider an area that is well drained where water does not remain on the soil surface after a moderate rain.



A plastic bleach bottle, ready for addition of soil and plant, shows proper drainage holes.

WATERING

Vegetables need a water supply averaging one inch of water per week during their growing season. In the minigarden it is relatively easy to supply the plants with water by using a garden hose or watering can. Plants should be watered when they become dry at a depth of 1/8 to 1/4 of an inch from the soil surface. Be careful not to go to the other extreme of overwatering and drowning the plants.

During the wet season, container plants are usually watered once a week, or sometimes not at all, if the containers are located where the rain will fall on them. During the dry season, some plants may have to be watered two, three, or even four times a week, depending on the amount of sunlight and rain they receive.

It is important to remember that care should be taken not to dampen the leaves without adequate time for them to dry off before evening. Wet leaves encourage plant diseases which can severely damage the plant and reduce production.

FERTILIZING

A program of fertilization should be developed to keep vegetable plants producing well over a long period of time. For potted plants, mix one level teaspoonful of 10-10-10 fertilizer (check label before purchasing) into a two-pound coffee can full of soil. Similar concentrations of complete fertilizers such as 9-11-10, 12-12-12, or 10-12-10, work equally well and can be used in the same amounts as the 10-10-10 type. When applying higher analysis fertilizers such as 16-16-16, or 20-20-20, reduce the amount to 3/4 teaspoonful of fertilizer per two pound coffee can full of soil. Be sure to mix thoroughly. A good way to mix small amounts of fertilizer and soil is to place both on a sheet of plastic, pick up each corner (one corner at time) and roll the soil and fertilizer together. Continue this process until an even soil mixture is obtained. Then place the mixture into a container and water it thoroughly.

A good way to mix small amounts of soil for use in containers is to roll the soil together on a sheet of plastic. The soil along with sand, fertilizer and organic materials can be uniformly mixed by picking up the corners of the plastic, one corner at a time and rolling them together.

When using an area around the house (minigarden plot) another method of applying fertilizer is used. First determine the area of the plot. To do this measure the length and width of the garden and multiply the two figures. For example, in Chart A, the length of the plot is 9 feet and the width is 8 feet (9 x 8 = 72) for a total area of 72 square feet. After determining the area (square feet) of the garden, apply 10-10-10 fertilizer at the rate of ½ cup for every 48 square feet; therefore, 3/4 cup of 10-10-10 should be applied. Spread (broadcast) the fertilizer evenly over the area and work it into the top ½ inch of soil with a short-toothed rake or hoe. Water thoroughly and plant the seeds or young plants.

Three weeks after the plants have reached the two-leaf stage and every three weeks thereafter, the plants should be fertilized (side-dressed). For each plant, roughly figure on a small closed handful of 10-10-10 fertilizer, placed 6 to 10 inches from the plant to prevent burning. For container grown crops add one level teaspoon of 10-10-10 fertilizer for each two-pound coffee can full of soil. When sidedressing, work the fertilizer into the top 1/2 inch of soil to prevent loss of the fertilizer (mainly nitrogen) to the air, then water the plant thoroughly.

In crops like tomato, eggplant, and bell pepper (Solanaceae) a program of adding potassium nitrate fertilizer (in the same amount as above) at "first fruit set" (the very first time fruit appears on the plant) and every three weeks thereafter will result in healthy plants and a near constant supply of quality fruits. Again work the fertilizer into the top 1/2 inch of soil and water the plant thoroughly. When applying fertilizer be careful not to spread it on any plant parts as this will cause burning, especially on the leaves.

"First fruit set" is the very first time that fruit appears on the plant.

The previously mentioned fertilizers may sometimes be unavailable on Guam. In such instances call the Cooperative Extension Service, University of Guam for information.

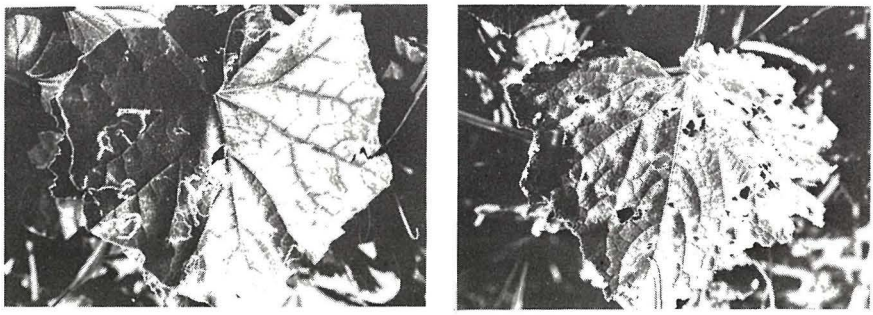
CULTIVATION

Destroying weeds (cultivating) in container grown vegetables is easily done by hand weeding or by using a small tool. Where sterile potting soil is used, there will be few or no weeds. In cases where native soil and especially tangan-tangan humus (decayed leaves) are used, weeds may be numerous. If weeds do come up in the minigarden, try to remove them as soon as possible because weeds rob vegetable plants of valuable water, nutrients, light and space.

In the minigarden plot the same holds true. A larger tool, such as a hoe, rake, or even a garden tiller, may be needed depending on the size of the plot. Remember when using a hand tool, do not dig too deeply as many plants have root systems near the surface of the soil. Cultivate just deep enough to kill the emerging weed seedlings.

INSECTS AND DISEASES

Guam poses a special problem in relation to insect populations because many species reproduce year around. Diseases also are abundant, due mainly to the high humidity and heavy rains. It would be impossible in this publication to list all of the numerous insects, diseases, and their respective controls.



Insects and diseases can severely damage a plant and/or its production. Leaf miner insect damage (left) on cantaloupe and Anthracnose disease damage on cucumber (right) are common problems on Guam.

A general purpose insecticide or fungicide -- such as carbaryl (Sevin), dicofol (Kelthane), malathion, pyrethrum, zineb, maneb, or captan -- is recommended for most home use. Read and follow all directions on the label. If insect or disease problems are encountered or the pesticide in use is ineffective, consult the Cooperative Extension Service, University of Guam for information.

For the small container-grown plants, a spray gun (flit gun) or small hand sprayer is sufficient. For minigarden plots a two or three-gallon sprayer will give best results. The underside of the leaves, as well as the top sides should be sprayed as this is where many insects live and feed. If spraying is done in the afternoon, give enough time for the leaves to dry before evening. When using pesticides or fertilizers be sure to read and follow all directions carefully. Keep chemicals out of the reach of children and wash hands immediately after use.

Sprayers come in many types, sizes, and price ranges. The spray gun or "flit gun" (left front) is usually sufficient for a small number of plants. For larger numbers of plants or in minigarden plots, the 2-gallon hand sprayer (right front), 3-gallon hand sprayer (center), 4-gallon backpack sprayer (left rear), or even the low volume mist blower (right rear) is recommended.

SNAIL AND RODENT CONTROL

In some areas, rats, shrews, mice and snails can cause considerable damage to a plant and/or its fruit. Commercial rat poisons and snail baits can be readily purchased on Guam. Again, read the directions well before using and keep out of the reach of children.

APPENDIX A

POINTS TO REMEMBER IN USING AND STORING COMMERCIAL FERTILIZERS

1. Store in a cool, dry place.
2. Use the proper kind of fertilizer for each crop.
3. Do not put chemical fertilizers on plant parts unless specifically recommended.
4. Use only as much fertilizer as the plant can use. Too much can injure the plant or waste money.
5. Using a little fertilizer, more often, is better than a lot at one time.
6. Apply fertilizer in the "root zone" of the plant.
7. Mix fertilizer with the soil to prevent loss to the air or runoff.
8. Commercial fertilizers are chemicals. Wash hands after handling to prevent skin irritation or burning.

APPENDIX B

SAFETY PRECAUTIONS IN HANDLING AND STORING PESTICIDES

1. Read all instructions on the label carefully and follow them completely.
2. Wash off (immediately with plenty of soap and water) any pesticide that is spilled on the body during application.
3. Wash hands thoroughly before eating or smoking after using pesticides.
4. Change clothing and bathe after applying pesticides.
5. Destroy all empty pesticide containers. Break and/or crush glass and metal containers (EXCEPT PRESSURIZED CANS) and bury at least 18 inches below the soil surface.
6. Do not store pesticides in any food or beverage container. Store out of the reach of children and make sure it is properly labeled.
7. When using measuring spoons or cups do not reuse in kitchen. Wash well with soap and water and store with pesticides.
8. Call a physician at once in all cases of suspected poisoning. Be sure to tell the doctor the name of the pesticide being used.

APPENDIX C

AMERICAN SEED COMPANIES

Agway Inc. Seed Division
Box 333
Syracuse, New York 13201

Asgrow Seed Company
Subsidiary of the Upjohn Co.
Tracy, California 95376

Geo. J. Ball, Inc.
Box 335
West Chicago, Ill. 60185

W. Atlee Burpee Seed Company
Box 748
Riverside, California 92502

Dessert Seed Company, Inc.
P.O. Box 181
El Centro, California 92243

Ferry Morse Seed Company, Inc.
P.O. Box 100
Mountain View, California 94040

FMC Corp. Agricultural Chemical Division
Niagara Brand Seeds
Box 3091
Modesto, California 95353

Fukuda Seed Store
1079 River Street
Honolulu, Hawaii 96822

Gurney Seed & Nursery Co.
Gurney Bldg.
Yankton, S.D. 57078

Joseph Harris Seed Company. Inc.
Rochester, N. Y. 14624

Kilgore Seed Company
P. O. Drawer D
Plant City, Florida 33566

Northrup King and Company
1500 Jackson St., N.E.
Minneapolis, Minn. 55413

Park Seed Wholesale, Inc.
Greenwood, S.C. 29646

Petroseed Company, Inc.
1905 Lirio Avenue
P.O. Box 4206
Saticoy, California 93003

Seedway, Inc.
Hall, N.Y. 14463

R.H. Shumway, Seedsman
628 Cedar St.
Rockford, Ill. 61101

Otis S. Twilley Seed Co.
Salisbury, Maryland 21801

University of Hawaii
College of Tropical Agriculture
Horticulture Department
Business Office
Honolulu, Hawaii 96822

Vaughan's Seed Company
5300 Katrine Avenue
Downers Grove, Ill. 60515

Wilhite Melon Seed Farms
Poolville, Texas 76076

NOTES

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with United States Department of Agriculture.
Wilfred P. Leon Guerrero, Director
Francisco B. Aguon, Associate Director
Cooperative Extension Service
College of Agriculture and Life Sciences
University of Guam

August, 1974