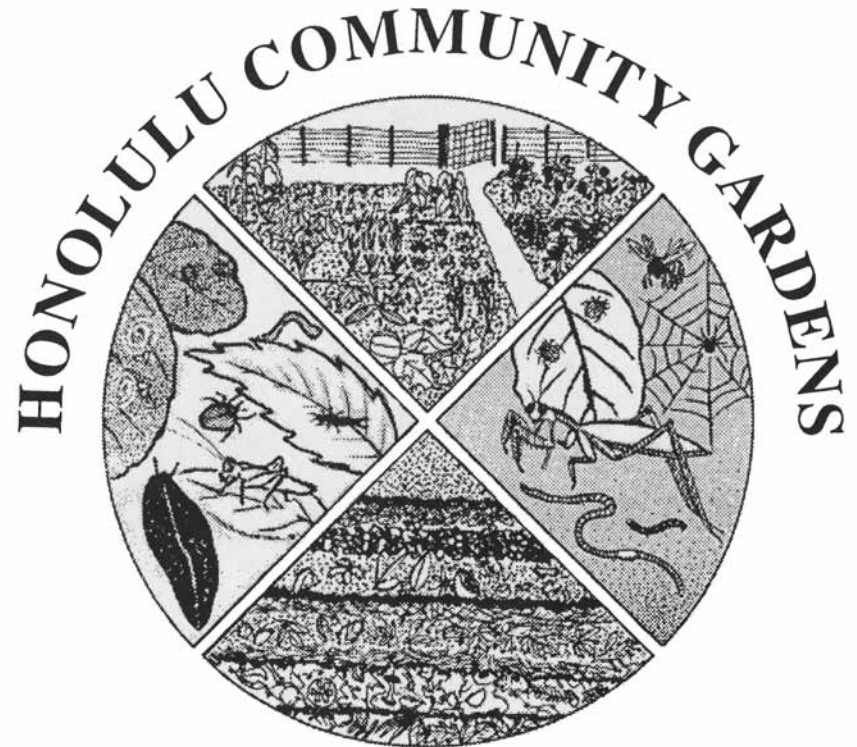


YOU are the reason for the gardens
and this book. May you and your garden
grow happier and healthier.



Department of Parks and Recreation
City and County of Honolulu
Mayor Peter B. Carlisle

**This Handbook paid for by the taxpayers
of the City and County of Honolulu**

Revised 2011

NOTES

MUNICIPAL REFERENCE LIBRARY CATALOGING-IN-PUBLICATION:
Honolulu Botanical Gardens. *Winge, Christina, Honolulu Community Gardens.
Community Gardens *Honolulu *Handbooks, manuals, etc.

HONOLULU BOTANICAL GARDENS

Department of Parks and Recreation
City and County of Honolulu
Mayor Peter B. Carlisle

SAMPLE COMMUNITY GARDEN AGENDA

- I. Call to Order
- II. Approval of Agenda
- III. Approval of Minutes
- IV. Treasurer's Report
- V. Old Business
- VI. New Business
- VII. Approval of plot revocation
- VIII. Approval of new plot assignments
- IX. Adjournment

NOTES

This booklet was produced by Christina Winge,
former Coordinator of the
Community Recreational Garden Program.
Honolulu Botanical Gardens
Department of Parks and Recreation
City and County of Honolulu

CONTRIBUTORS TO THE BOOKLET:

Walter Kay - Council By-Laws
Karen Fassler - Artist
Andy Thomas - Artist
Cally O'Neill - East Meets West
Stephen Nemeth - Community Gardens
Printing - City and County of Honolulu
Printing Services

**CITY AND COUNTY OF HONOLULU
DEPARTMENT OF PARKS AND RECREATION
BY-LAWS OF THE COMMUNITY RECREATIONAL GARDENS COUNCIL**

TABLE OF CONTENTS

- I. The objects and purposes of the Council are:**
 - 1) To disseminate information concerning business affecting all gardens.
 - 2) To act as liaison between the Director of Parks and Recreation and the garden organizations.
 - 3) To assist garden organizations with obtaining educational materials and programs.
 - 4) To maintain a gardener's library.
 - 5) To assist the Department with disciplinary problems and act as a fact-finding board for gardeners appealing disciplinary decisions of the garden organization; findings and recommendations of the Council shall be forwarded to the Director of Parks and Recreation for final disposition.
 - 6) To coordinate fund-raising efforts, maintain a treasury which shall be used only for purposes benefiting equally all garden organizations.
 - 7) To assist the Director of Parks and Recreation in enforcing City Rules and Regulations with individual garden organizations.
- II. Organization and Management**
 - a. The Community Gardens Council Shall be composed of two representatives from each garden organization.
 - b. Representatives shall be appointed by the president of each garden organization.
 - c. Representatives, or alternatives appointed by the garden organization president, must attend all meetings of the council.
 - d. The Council shall meet monthly at a time and place to be determined by the Council president.
 - e. The Council shall elect from among the representatives, a president, vice-president, secretary and treasurer whose duties shall be those normally assigned under Roberts Rules of Order which shall govern the conducting of Gardens Council meetings.
 - f. Council officers shall serve a term of office no longer than one year and shall not serve consecutive terms.

O'ahu: Where East Meets West	1
Special Community Garden Crops	3
Statement of Program Intent	6
Be A Good Garden Neighbor	6
What Is Soil?	8
What Is Fertilizer?	9
Chemical Or Organic?	11
Gardening Guides	11
Mulch	12
Composting	13
Where To Get Organic Matter	14
Instead Of Spraying Chemicals, You Can	15
Plants That Grow Well In Hawaii	17
Identification Of Plant Problems	17
Beneficial Insects	18
Harmful Insects	20
Common Plant Diseases	23
Rules and Regulations	24
Community Gardens Bylaws	28
Gardens Council Bylaws	30

- e. The management duties of the Garden organization shall be:
 - 1) To police the garden area and carry out a system of plot revocation and/or other enforcement activities to ensure that all gardeners follow the Rules and Regulations for the Community Recreational Gardening Program of the Department of Parks and Recreation of the City and County of Honolulu and the By-laws of this Garden Organization.
 - 2) To ensure that the Garden area is maintained as required by the City and the Garden Organization.
 - 3) To survey and stake new plots.
 - 4) To orient new gardeners to rules and procedures, and to set up a buddy system for non-English speaking gardeners.
- f. The Garden Organization may perform other duties or services such as cooperative buying, defining common use areas, composting, social activities, collecting reasonable dues, etc.
- g. The Garden Organization shall not take action nor pass any rule which contradicts City Ordinance or Department policy or the intent of the Community Recreational Gardening Program.

III. APPLICATION PROCEDURE

- a. Applications for garden plots will be issued by the applications officer on a first come, first served basis at monthly meetings of the Garden Organization. Approval of assignments will be by the Department.
- b. The Application Number will indicate the order of plot assignment. Each applicant is allowed to choose from available plots.
- c. The applications officer will provide a plot map showing the location and identifying symbol for each plot. As applicants choose their plots their names will be entered on the plot map and their symbol entered on their application.
- d. The “assignment begins” date shall be the assignment date. The “assignment ends” date shall be left open. A gardener may keep his plot indefinitely if he follows these rules and regulations and makes intensive recreational use of the plot.
- e. The applications officer will keep the file of applications up to date and will provide a quarterly report thereof to the Gardens Council and the Department.
- f. Should plots become vacant and the applications officer has no waiting list he may temporarily assign, for a period not to exceed 60 days, vacant plots to members on a first come first served basis.

IV. SPECIAL PROVISIONS: Rules and Regulations

- a. Every garden member must participate in at least two general garden clean-up parties per year;
- b. The Garden Organization shall make special garden rules, including the collecting of fees and assessments; such rules may not be in contradiction of any City rule or law; such rules must be approved by a majority vote of gardeners present at a regular meeting following a 30-day written notification.

BY-LAWS FOR COMMUNITY RECREATIONAL GARDEN ORGANIZATION

- I. **The objects and purposes of the organization are:**
 - a. To support the aims and policies of the Department of Parks and Recreation's Community Recreational Gardening Program so that knowledge, enjoyment and recreation concerning the growing of vegetables, herbs and flowers may be spread and deepened among the people of Honolulu.
 - b. To foster, encourage and carry on instructions, demonstrations, lectures and other activities pertaining to horticulture;
 - c. To provide volunteer service to the garden and the gardeners;
 - d. To promote fellowship and neighborliness among the gardeners;
 - e. To aid in securing funds in any lawful way to support the garden's activities and programs.
- II. **Organization and Management**
 - a. Any person who fills out an application becomes a member of the Garden Organization, although he is non-participatory until he is assigned a plot.
 - b. The Garden Organization for each garden site shall hold monthly meetings to conduct the business of garden management. All official business shall be conducted at these meetings. Members must attend a minimum of four meetings per year.
 - c. A bulletin board shall be placed in a prominent place near the entrance to the garden. Information shall be posted identifying the garden; giving the time, place, and date of monthly meetings; and announcing that application for membership may be made at monthly meetings. Applicants shall appear in person. The posting of any information relating to garden management on the bulletin board constitutes formal notification to all gardeners; every effort will be made to provide adequate interpretation for non-English speaking gardeners;
 - d. The Garden Organization shall have a president, vice president, secretary, treasurer and applications officer
 - 1) The duties of the president shall be to conduct meetings, set up meeting agenda, and represent the Garden Organization at community meetings, and appoint two representatives who shall attend monthly Garden Council meetings.
 - 2) The duties of the vice-president shall be to stand in for the president when necessary. As needed by the Garden Organization, the vice-president will also act as the rules officer. He will compile and keep up to date a list of Garden Organization rules, which must be posted, and forward a copy to the City Coordinator. He will also provide advice on matters related to making and changing rules.
 - 3) The duties of the secretary shall be to take minutes of the monthly meetings and forward a copy to the City staff supervisor; schedule monthly meetings as directed by the Garden Organization; set up and keep up to date a bulletin board (see item c above) where the minutes, notices, etc., are to be posted.
 - 4) The duties of the applications officer shall be as indicated in Section III, Applications Procedure.
 - 5) The duties of the treasurer shall be to collect, disburse, record funds; disbursements to be made only as approved by majority of Garden Organization officers.
 - 6) Garden officers shall serve a term of office no longer than one year and shall not serve consecutive terms.

O'AHU:

WHERE EAST MEETS WEST

“The Community Recreational Gardening Program, part of the Honolulu Botanical Gardens, Department of Parks and Recreation, City and County of Honolulu, began under the direction of Mayor Frank F. Fasi in the fall of 1975. Energized by Bonnie Goodell, the program officially started with the Mayor's planting of the first vegetables in the Makiki Community Garden.

The Community Recreational Gardening Program currently provides ten garden locations for its gardeners. The Gardens are located at Ala Wai, Dole, Foster, Hawaii Kai, Kaneohe, Makiki, Manoa, Moiliili, Diamond Head and Wahiawa. The City provides the land while the gardeners provide the love to reap the fruits of their labor.

A walk through any of O'ahu's Ten Community Gardens is a fine introduction into gardening techniques, food and herbal preferences of the various cultures here in Hawaii. Seeing the gardens and talking to the gardeners introduce you to a virtual United Nations of Gardening. You have the Hawaiians, Samoans, Tongans and other Polynesian peoples gardening. There are Japanese, Chinese, Koreans, Filipinos, Vietnamese, Loatians, Cambodians and other Asians growing their favorite vegetables and herbs. People from Europe, North America, South America, Africa and Australia are also gardening using their various techniques. You have very many different gardeners from all over the world doing their favorite thing, which is gardening.

Visit any of the Community Gardens and you will meet some of the friendliest people around. They are willing to share their knowledge, skills and their excitement about gardening with you. There are about 2,600 people involved in the Community Recreational Gardening Program. They take advantage of this program for food, fun, exercise, being outdoors and just plain friendliness. They are rich and poor, young and old, experienced and novices. They come from all walks of life: attorneys, bankers, doctors, nurses, plumbers, students, housewives and retirees. There really is no typical community gardener and for that matter, a typical community garden. Each has its own unique character molded by the persons that make up each garden.

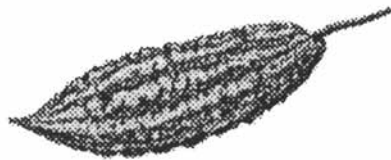
Besides the unique diversity of the people gardening, is the extreme variations in local climates and soils. The Diamond Head Garden has gravelly, porous soil, while the Ala Wai Garden has a salinity

problem due to its proximity to the Ala Wai Canal and its brackish water. Rainfall can average from 10" per year to 40" per year. Microclimates range from the arid windy and salty conditions to humid, jungle valleys. With all of these variations each garden must work to find its own formula for success. The one thing all have in common is the insufficient organic material in the soil. Therefore, every gardener is required to add back to the soil as much organic matter as possible. They are assisted by a compost program started in each garden to recycle all of the organic matter generated by each garden.

There are some gardeners who have not bought fresh vegetables for a long time. Some of their gardens are so productive that they give away as much produce as they consume. And who says Hawaii can't be self-sufficient in growing its own produce.

Each of the Community Gardens is self-governed. Each elects a President, Vice-President, Secretary, Treasurer and Applications Officer. Each garden organization meets monthly to take care of business. At these meetings they accept applications from new gardeners, enjoy guest speakers, learn from each other and just socialize. Each garden President and an appointed representative attend a monthly meeting of all the community gardens. These people form the nucleus of the entire program and are known as the Community Gardens Council. The council has the responsibility for directing and organizing the activities of all the community garden.

The program is administered by the Department of Parks and Recreation, through the Honolulu Botanical Gardens.



6.7 Status of Orders

Orders disposing of petitions shall have the same status as other Department orders. Orders shall be applicable only to the fact situation alleged in the petition or set forth in the order.

PART VII. RULES GOVERNING HEARINGS

7.1 Informal Discussion

A person seeking relief from any provision of the Community Recreational Gardens Rules and Regulations may discuss the matter informally with the Director of Parks and Recreation or his authorized representative.

7.2 Formal Application

If the matter is not disposed of thereby, such person may apply to the Department for relief by completing the appropriate "Application for Relief" form available at the Department of Parks and Recreation.

7.3 Public Hearing

Notice of such hearing, in conformance with Section 91-3, Hawaii Revised Statutes, shall be published at least twenty (20) days prior to such hearing in a newspaper of general circulation in the City and County of Honolulu. At the hearing, opportunity shall be afforded all persons to present evidence and argument on all issues involved.

ADOPTED this **24th** day of **October**, 1984, by the Director of the Department of Parks and Recreation, City and County of Honolulu, State of Hawaii.

/s/ Emiko I Kudo

EMIKO I. KUDO, Director
Department of Parks and Recreation
City and County of Honolulu

APPROVED as to form:

/s/ Maria C. Aviante-Tanaka

Deputy Corporation Counsel

APPROVED this **24th** day of

October, 1984.

/s/ Eileen R. Anderson

EILEEN R. ANDERSON, Mayor

CERTIFICATION

I, EMIKO I. KUDO, in my capacity as Director of the Department of Parks and Recreation of the City and County of Honolulu, do hereby certify:

1. That the foregoing is a full, true and correct copy of the Rules of the Department of Parks and Recreation governing the operation and use of Community Recreational Gardens.

2. That a public hearing was held on the foregoing on May 29, 1984, and that the notice of public hearing, including a statement of the substance of the proposed Rules and Regulations, was published in the Honolulu Star Bulletin and Advertiser on May 5, 1984.

/s/ Emiko I. Kudo

EMIKO I. KUDO, Director
Department of Parks and Recreation
City and County of Honolulu

Received this **25th** day of

October, 1984.

RAYMOND K. PUA, City Clerk

5.2 Submission

The petition shall be submitted in 10 copies to the Director, Department of Parks and recreation, City and County of Honolulu. It shall include:

- a. A statement of the nature of the petitioner's interest.
- b. A draft of the substance of the proposed rule or amendment or a designation of the provision sought to be required.
- c. An explicit statement of the reasons in support of the proposed rule, amendment or repeal.

5.3 Disposition of Petition

The Department shall within 30 days after the submission of the petition either deny the petition in writing, stating its reasons for such denial, or initiate proceedings in accordance with Section 91-3 of the Hawaii Revised Statutes, for the adoption, amendment or repeal of the rule, as the case may be.

PART VI. DECLARATORY RULINGS BY DEPARTMENT

6.1 Petition

Any interested person may petition the Department for a declaratory order as to the applicability of any statute or ordinance relating to the Department, or of any rule or order of the Department.

6.2 Submission of Petition

The petition shall be submitted in duplicate to the Director, Department of Parks and Recreation, City and County of Honolulu, and it shall contain:

- a. The name, address, and telephone number of the petitioner.
- b. A statement of the nature of petitioner's interest, including reasons for the submission of the petition.
- c. A designation of the specific provision, rule or order in question.
- d. A complete statement of facts.
- e. A statement of the position or contention of the petitioner.
- f. A memorandum of authorities, containing a full discussion of the reasons, including any legal authorities, in support of such position.

6.3 Rejection of Petition

Any petition which does not conform to the foregoing requirements may be rejected by the Department.

6.4 Refusal to Issue Declaratory Ruling

The Department may for good cause refuse to issue a declaratory ruling, without limiting the generality of the foregoing, the Department may so refuse where:

- a. The question is speculative or purely hypothetical and does not involve existing fact, or facts which can reasonably be expected to exist in the near future.
- b. The petitioner's interest is not of the type which would give him standing to maintain an action if he were to seek judicial relief.
- c. The issuance of the declaratory ruling may adversely affect the interests of the City, the Department or any of their officers or employees in any litigation which is pending or may reasonably be expected to arise.
- d. The matter is not within the jurisdiction of the Department.

6.5 Referral to Other Agencies

Where any question of law is involved, the Department may refer the matter to the Corporation Counsel. The Department may also obtain the assistance of other agencies, where necessary or desirable.

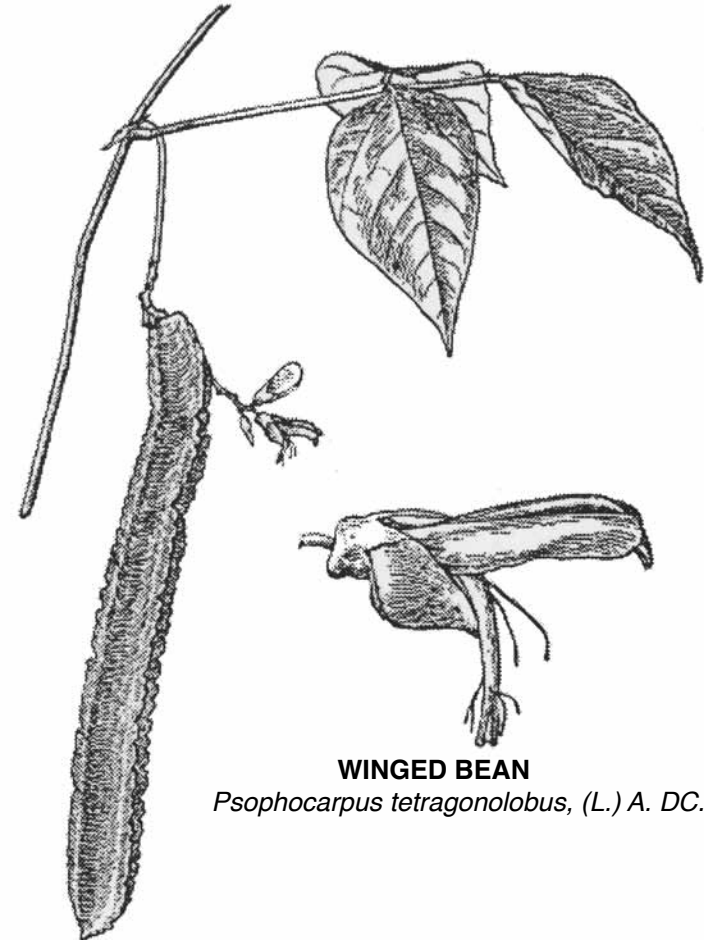
6.6 Notification of Petitioner

Upon the disposition of his petition, the petitioner shall be promptly informed thereof by the Department.

SPECIAL COMMUNITY GARDEN CROPS

Within the community garden, one can see and taste a little bit of everything: among the crops cleverly intermingled in every possible way are: Versatile.

The **Winged Bean**, a strong climber with edible leaves, flowers, tubers and pods.



WINGED BEAN

Psophocarpus tetragonolobus, (L.) A. DC.

Edible Hibiscus, a highly ornamental shrub with dark green fingerlike leaves.

Tahitian Taro, a good-looking, upright, arrow-leaved plant, grown for its tasty leaves and generous crop. The large leaves are often used to wrap fish and rice, and to make lau lau.

Ung Choy, a very popular low maintenance, prolific green, also known as swamp cabbage. This is an endless supplier of salad and stir fry greens.

Yard Long Beans, a popular bean found in Hawaiian gardens, can be prepared just like string or snap beans.

Pak Choy and all kinds of Chinese greens: Hin Choy, Chinese Spinach, Amaranth. Excellent steamed greens.

Thai Basil, a striking purple/green plant.

Okinawan Spinach, really special flavor and looks - the upper side is dark, true green with bright purple on the underneath side.

Eggplants and Cherry Tomatoes (fairly immune to the sting of fruit flies) which produce for months on end, only to be cut back and grow up and do it again.

Ceylon Spinach, a tasty green which grows upright to about 12" and then evolves into a vine, excellent for trellis growing.



CEYLON SPINACH
Basella rubra, L.

- j. No illegal drug plants shall be grown.
- k. The City may require return of the garden plot, by giving 30 days notice, if the garden area is required for another use.
- l. The gardener is subject to all applicable rules of the City.
- m. All gardeners become members of the garden organization upon assignment of a garden plot.

1.4 Applications Procedure

- a. Applications for garden plots will be issued by the garden organization's plot Application Officer on a first come, first served basis. Assignment will be issued by the Garden Organization subject to final approval of the Department.
- b. The Application Number will indicate the order of plot assignment. Each applicant is allowed to choose from available plots.
- c. The Application Officer will provide a plot map showing the location and identifying symbol for each plot. As applicants choose, their names will be entered on the plot map and their plot symbol entered on their application.
- d. The "assignment begins" date shall be the assignment date. The "assignment ends" date shall be left open. A gardener may keep his plot indefinitely if he follows these rules and regulations and makes intensive recreational use of the plot.

PART II. COMMUNITY GARDENS COUNCIL

- 2.1 Each garden organization shall be active participates in a Gardens Council composed of two members of each formally constituted garden organization.

PART III. PENALTY

3.1 Penalty for Violation of Rules

- a. Individual gardeners who knowingly and continuously break the preceding rules shall, after two warnings have their plot assignments revoked and be prohibited from re-applying for a period of up to one year.

PART IV. METHODS WHEREBY PUBLIC MAY OBTAIN INFORMATION

4.1 Where Obtained

The public may obtain information as to matters within the jurisdiction of the Director of Parks and Recreation, Department of Parks and Recreation, City and County of Honolulu, by inquiring at:

- a. The Office of the City Clerk, City Hall, where there are on file all rules of the Department; or
- b. The office of the Department of Parks and Recreation. All rules, orders or opinions of the Department are on file and are available for public inspection at said office. Copies of compilation of rules and supplements thereto are available to the public at a price to be fixed by the agency to cover mailing and publication costs.

4.2 Submittals or Requests for Information

Such inquiry may be made in person at said offices during business hours, or by submitting a request for information in writing to the Director, Department of Parks and Recreation.

PART V. PETITION FOR ADOPTION, AMENDMENT OR REPEAL OF RULES

5.1 Petition

Any interested person may petition the Department requesting the adoption, amendment or repeal of any rules of the Department.

CITY AND COUNTY OF HONOLULU
DEPARTMENT OF PARKS AND RECREATION

**1984 AMENDED RULES AND REGULATIONS FOR
COMMUNITY RECREATIONAL GARDENING PROGRAM**

Pursuant to and by virtue of the authority set forth in Chapter 13 of the Revised Charter of the City and County of Honolulu (1973), and Chapter 91, HRS, the Director of the Department of Parks and Recreation of the City and County of Honolulu, hereby adopts the following rules and regulations for the Community Recreational Gardening Program under the Department of Parks and Recreation.

PART I. GENERAL PROVISIONS

1.1 Applicability and Scope

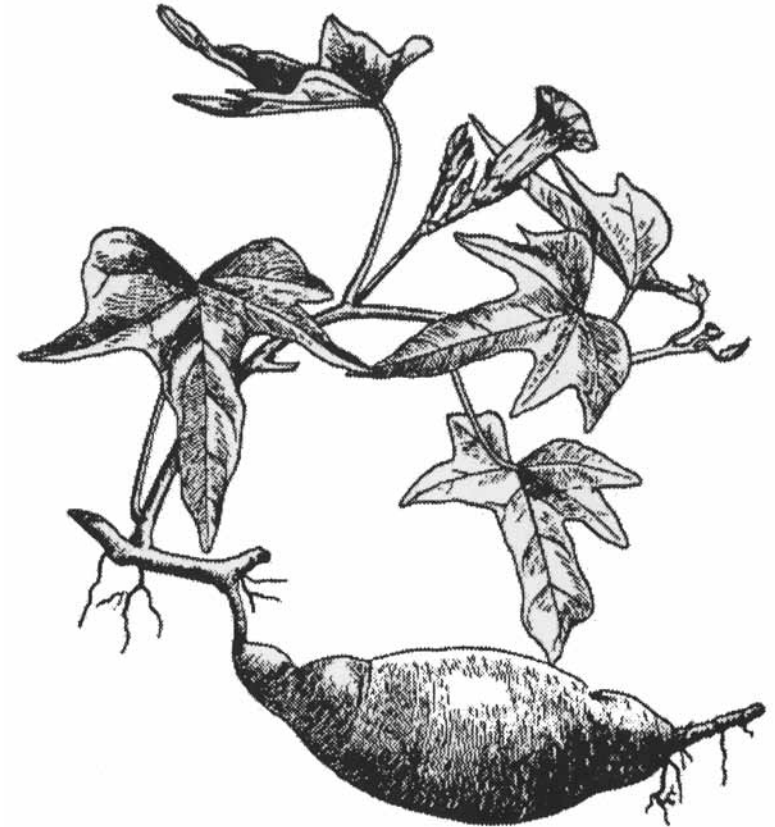
- a. These regulations shall apply to the operation and management of all community recreational gardening projects under the Department of Parks and Recreation. If any provision of these regulations, or the application of such provision is held to be invalid, the remaining portions of these regulations of the application of said portions shall not be affected.

1.2 Definitions

- a. Whenever used in these rules, unless plainly evident from the context that a different meaning is intended:
 - 1) "City" means the City and County of Honolulu.
 - 2) "Department" means the Department of Parks and Recreation, City and County of Honolulu.
 - 3) "Garden Plot" means land assigned to an individual or group to be used for gardening purposes.
 - 4) "Garden Organization" means the collective gardeners in any one City garden organization to deal collectively with that garden's business.
 - 5) "Gardens Council" means the Community Recreational Gardens Council.

1.3 Rules for individual Gardeners

- a. The City shall provide land. All other improvements and services shall be provided by the gardeners.
- b. Assignment of garden plots will be issued by the Garden organization subject to approval of the Department and shall be on the basis of one plot per family or household. Each applicant must be 18 years or older. The plot must be worked by the person(s) or family whose name is on the application.
- c. Gardeners, other than family members with the same surname, who wish to use garden plots cooperatively must sign the original application at the time it is first submitted. Nonfamily members who wish to co-garden a plot with original applicant(s) must follow regular procedure for plot application. When he or she reaches the head of the waiting list his or her name may be added to the original application if it is agreeable to the original applicant.
- d. Produce shall not be sold or put to any commercial use.
- e. Walkways, surrounding areas, and the garden plot must be kept clean and neat; trash and debris must be put in appropriate containers if available. If no containers are provided, each gardener must remove his own trash.
- f. No pesticides which are poisonous to humans or are in poisonous concentrations, before or after application, shall be brought to or used in the garden area. (See attached approved list of acceptable pesticides and acceptable concentrations).
- g. Water conservation policy prohibits the planting of flowers and vegetables requiring excessive watering (e.g., wetland taro, watercress, lotus).
- h. No herbicides shall be used in the garden area.
- i. The garden plot shall be returned in as good or better condition that when it was let out.



SWEET POTATO

Ipomoea batatas, (L.) Poir.

Sweet Potato, a rapid grower and ground cover with succulent, edible leaves.

Also grown are the classics: herbs and spices, Swiss chard, lettuce, the brassicaes in winter, some root crops, onions, chives, scallions and garlic, cucumbers and corn, edible podded peas and on down the line. They grow fast and abundantly. The well known sweet basil for pesto and the ever useful spearmint. The many unique scented varieties of basil and mint introduced by the Thai, Laotian and Vietnamese people.

GARDENING GUIDELINES

STATEMENT OF PROGRAM INTENT

1. To provide people living in the City and County of Honolulu's densely populated communities access to garden plots under the Community Gardening Program.
2. To serve the needs of people whose recreational interests are not met by athletic or instructional programs.
3. To provide citizens with experimental and environmental opportunities in dense urban communities.
4. To inject variety into the urban landscape and provide citizens with an opportunity to participate in that landscape.
5. To create a program providing high density use of limited urban park space.
6. To provide space to relieve stress and to make social contacts.
7. To provide a program that will assist in improving the nutritional intake of families and individuals.

BE A GOOD GARDEN NEIGHBOR -

The Community Gardens is not just a place for you to grow flowers and vegetables. It is a place for you to work together and get to know your neighbors. Here are some simple guidelines to being a good gardening neighbor.

- Keep your garden plot clean, neat and free from weeds and pests. Maintain your plot boundaries and walkways by keeping them free from weeds and obstructions.
- Do not build any structures.
- Do not grow any plants which will shade or send roots into neighboring plots.
- Put a mailbox with your plot number on it in your plot. This will facilitate communication with your garden organization.
- Do not dump or leave any rubbish. Compost all of your organic matter, do not throw away any organic matter. If you have any waste that cannot be composted, take it home or arrange with other gardeners for trash pickup.
- Do not trim, remove or damage any of the existing trees and shrubs in the area. If a tree needs trimming notify one of your garden officers who will in turn let the City and County know so that they may properly prune the trees.

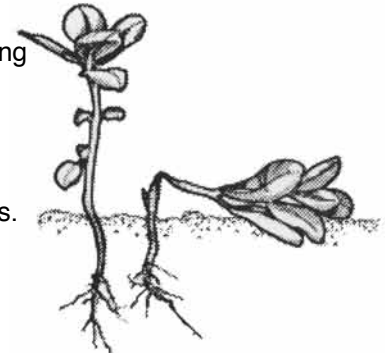
COMMON PLANT DISEASES AND THEIR CONTROL

DAMPING OFF DISEASE: (fungal)

Appearance: lower stem collapses causing leaves to turn inward and look pinched - usually attacks seedlings.

Cause: soil is infected - start seedlings in sterilized soil.

Controls: at first sign of wilting, water less.



LEAF SPOT DISEASE: (fungal)

Appearance: spots with yellow margins and dark damp or blistered centers.

Cause: high humidity, over watering, poor ventilation, dirt splash on leaves.

Controls: mulch to prevent soil splash, allow soil to dry out before watering, destroy infected leaves.



MILDEW: Appearance: white or grayish felt like growth on foliage, leaf curls and stem wilts.

Cause: high humidity.

Controls: use resistant varieties, pick and destroy affected leaves.



MOLD:

Appearance: black sooty mold - black coating on leaves.

Cause: associated with secretions of aphids, mealy bugs, scale, and white flies.

Controls: reduce water, plant resistant varieties.



NEMATODES: microscopic wormlike creatures that attach themselves to roots. Controls: pull plants; if the plant is healthy you may be able to root a cutting from it - some distance from the problem area. Keep the soil moist and full of organic matter. Plant the common marigold.

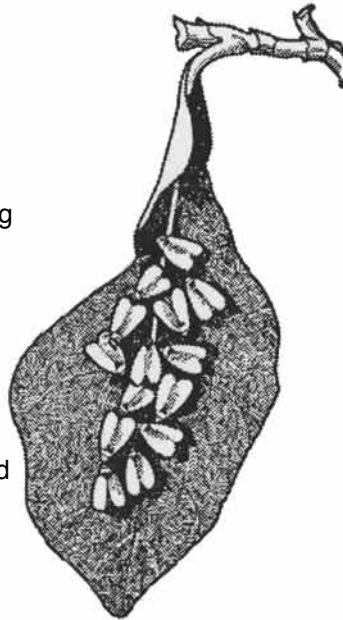


SLUG AND SNAILS: most species chew foliage. In Hawaii we have one "good" variety, the cannibal snail. If you see a long pointed shell snail anywhere, put it in your garden. It will take care of the other snails and slugs.

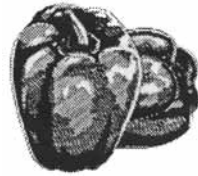


WHITE FLIES: sucking insects that usually attach themselves to the underside of leaves. If it appears to be snowing when you shake the plant, it has white flies. You will find nymphs - pale green sesame seed shaped critters with the flies.

Controls: dip or spray plant with soapy water or enclose plant in a plastic bag and spray an organic insecticide inside, close bag for several hours. Remove and destroy infected parts. A few are not a problem.



- When bringing children to the gardens do not let them do damage to anyone else's garden or common areas.
- Should you witness theft or vandalism, please do something. Call "911" and report what you have seen to the monitors or any of your garden officers. Please cooperate in catching lawbreakers.
- Remember that all of the gardeners come from different cultures and backgrounds. This provides a wonderful opportunity for new friendships and learning about other cultures. However, this also provides an opportunity for misunderstanding. What may seem like a simple complaint may not be fully understood by someone else and may cause hurt feelings and defensiveness. Therefore keep your lines of communication and cooperation open.
- If you see gardeners breaking a rule, inform him/her of the infraction in a friendly way. If they continue to break the rule or becomes defensive, do not get angry. Let **them** continue what **they** are doing and inform the monitors or any of the officers of the violation and let them handle the problem.
- Only you and your family are allowed to work on your plot. If you wish to have someone outside of your family work your plot, you should have the name added to the garden plot. If you are ill or going on a trip you may ask some else to water your plot. Please inform your monitoring committee or one of the officers to avoid any misunderstanding.
- Remember that garden decisions are made by the gardeners at the monthly meeting. Therefore, your attendance and participation at garden meetings are important. While attending the meetings of your community garden, it is important that you pay attention to what is going on. Continued talking while the meeting is in progress is both improper and rude.
- Remember - violations of any of the Rules and Regulations of the Community Gardens may result in your losing your community garden plot.



WHAT IS SOIL?

Soil is made up of:

- Different sizes of **mineral particles**, ranging from large sand particles to clay particles so small they can only be seen under a microscope.
- **Humus**, which is almost completely decomposed organic matter. Its microscopic particles are dark brown or black.
- Decomposed **organic matter**, the remains of plants and animals which are on their way to becoming humus.
- Bacteria, fungus, earthworms, and other **microorganisms** that live in the soil and become organic matter when they die.
- **Water**.
- **Air**.
- **Roots** of growing plants.

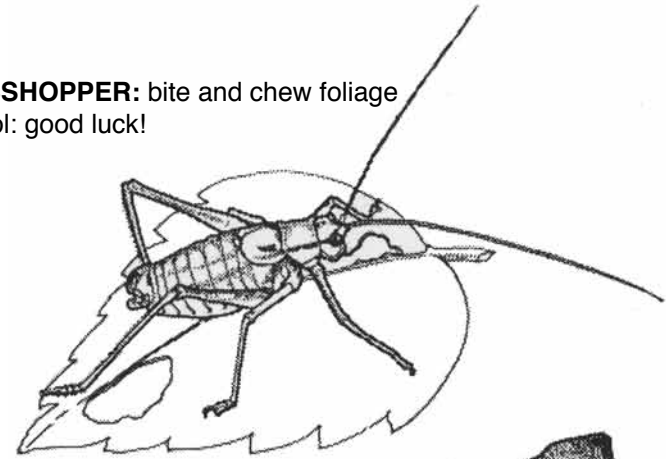
The soil is the most important part of your garden. If you take care of the soil, the soil will take care of your plants. First you have to understand what's happening.

Every garden is a small ecosystem. An ecosystem is a group of things, including air, sunlight, water, plants, animals, microbes and minerals, which work together to create the beauty and variety of life in that ecosystem. Everything in an ecosystem is related to everything else. The more variety of different kinds of living things and relationships between them, the healthier and more stable the ecosystem will be.

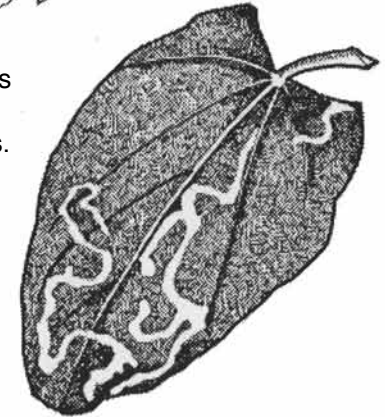
A health, stable ecosystem is less likely to be damaged by disease and infestations. As you help your garden become more and more healthy, it will require less and less work from you.

The life in an ecosystem is made up of two processes and neither can exist without the other. One is growth or life, and the other is death or decomposition. New life grows from the decomposition of the old. The decomposition process is carried out by living organisms which thrive on dead material or organic matter. This includes insects such as termites and sowbugs, as well as earthworms, many fungi, yeasts, bacteria and other microscopic organisms. This is where the soil comes in. Most decomposition takes place in or on the soil.

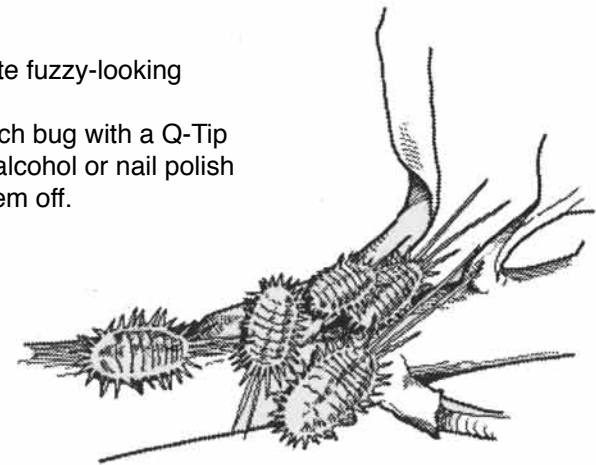
GRASSHOPPER: bite and chew foliage
Control: good luck!



LEAF MINERS: larvae of flies, moths and beetles that eat inside of leaves leaving trail-like blisters in the leaves.
Controls: pinch leaf at the end of the "trail," or remove and destroy infected and rolled leaves, keep growing conditions dry where possible, ignore them if there aren't too many.

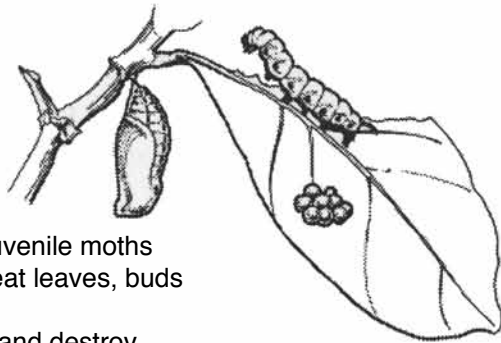
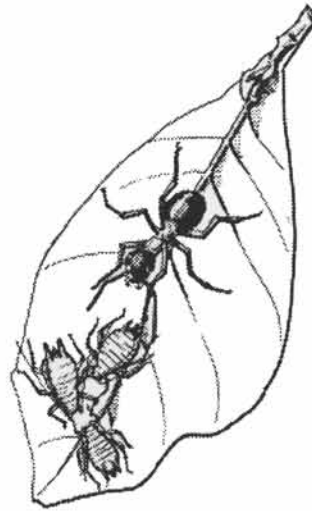


MEAL BUGS: white fuzzy-looking sucking insects.
Controls: touch each bug with a Q-Tip dipped in rubbing alcohol or nail polish remover, or rub them off.



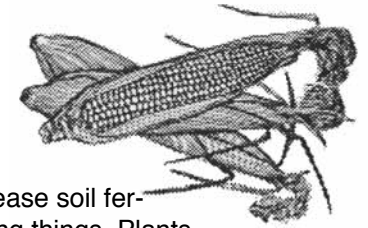
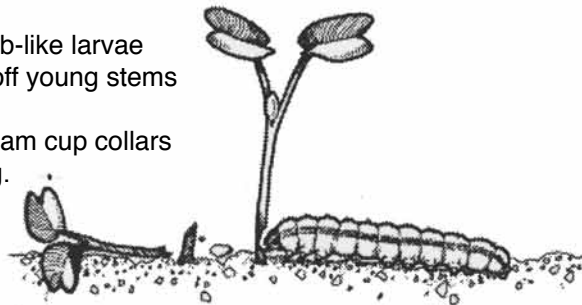
HARMFUL INSECTS

APHID: tiny soft-bodied round sucking insects. Attach selves to tender or growing tips. Some species cause (bumps) on branches with a colony of young inside each gall. Controls: squash insects or rinse off with lukewarm water with or without suds. Cut off and destroy portions with galls. Aphids are farmed by ants. Get rid of ants where possible. Also use sticky yellow boards.



CATERPILLARS: juvenile moths and butterflies that eat leaves, buds and flowers. Controls: hand pick and destroy.

CUTWORMS: fat grub-like larvae in the soil that chew off young stems at ground level. Control: place styrofoam cup collars around each seedling. Remove bottom of cups.



WHAT IS FERTILIZER?

Fertilizer is something added to increase soil fertility. Fertility is how good soil is at growing things. Plants grow well in fertile soil, poorly in nonfertile soil.

Fertilizer can be any of the elements plants need. This includes carbon, hydrogen and oxygen which come from the air and water. Nitrogen, phosphorus, potassium, calcium, magnesium and iron must be found in or added to the soil, as well as trace amounts (very small amounts) of manganese, boron, copper, zinc, molybdenum, sulphur and chlorine. Fertilizer, in the form of organic matter which contains these elements, or in chemical compounds made up of these elements, can be added to the soil to increase fertility.

The numbers on commercial fertilizer, such as 10-30-30, refer to the percentages of nitrogen, phosphorus and potassium, in that order. This is sometimes referred to as the N-P-K numbers. These three elements are required in the greatest quantities by plants. Other elements are listed in the "ingredients list."

Organic additives such as seaweed, add many fertilizer elements to the soil (See the General Rules.)

A shortage of one chemical element can cause problems for your plants. You should learn to recognize the symptoms of these shortages so you can correct the problems.

Nitrogen (N) creates lush, green, leaf growth. If there is **too little** nitrogen in the soil, plants will be stunted, with yellowish leaves, and older leaves will die. This is called chlorosis. **Too much** nitrogen produces a plant that is too green, soft and "fleshy." It will have a difficult time reaching maturity and will be more susceptible to insects and diseases.

Phosphorus (P) helps plants build strong roots and stems and is essential for fruiting and flowering. Stunted growth and leaves that become mottled, very dark, even purple or bronze, are symptoms of **too little** phosphorus. **Too much** phosphorus may cause other elements to become unavailable.

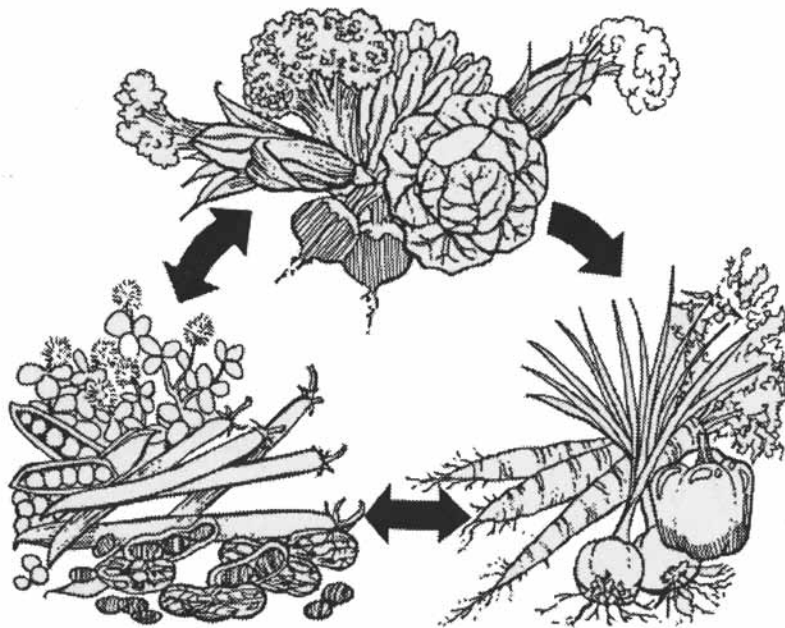
Potassium (K) helps plants resist disease and contributes to strong stems and abundant fruit. **Too little** potassium will cause the older leaves to dry up, starting around the edges and crinkling inward. Plant growth will slow or stop.

Calcium (Ca) aids the development of cells in flowers, stems and roots. **Too little** causes buds and new leaves to develop poorly. A deficiency occurs in soil that is too acid.

Magnesium (Mg) is essential for the production of chlorophyll. **Too little** magnesium results in chlorosis, similar to a nitrogen deficiency, except that the veins of the leaves stay green.

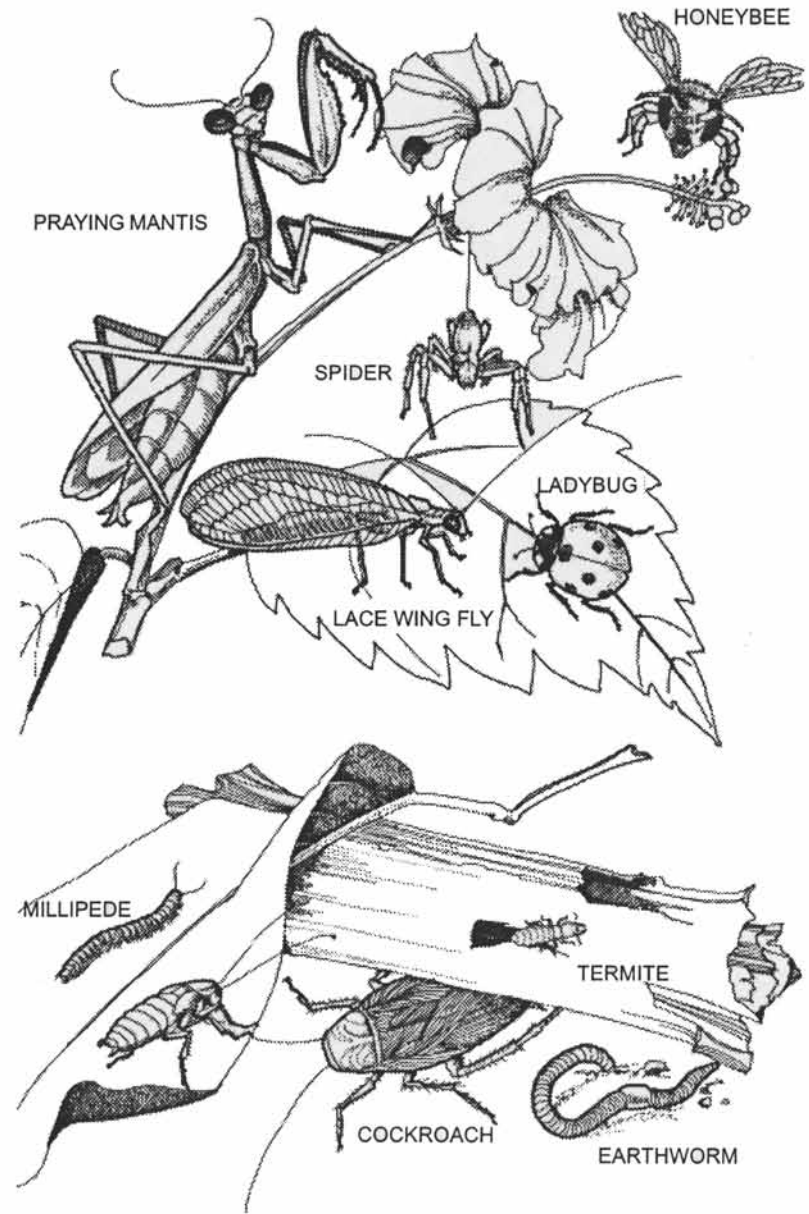
Iron (Fe) deficiency also produces chlorosis with the veins remaining green. It can also show up in stunted growth and unnaturally curled leaves.

PLANNING THE VEGETABLE GARDEN



Crop Rotations: Plants, like people, have different appetites. Some like to consume more than others, and some are even kind enough to replace almost everything they remove from the soil. To keep nutrient levels balanced within your garden, try not to grow the same vegetables (or those with similar appetites) in the same spot year after year. A good rotation cycle to use is to follow heavy feeders (top) by light feeders (lower right) by soil builders (lower left), follow heavy feeders by soil builders by light feeders. The only limitation is that heavy feeders should not follow light feeders.

BENEFICIAL INSECTS



THE TRUTH IS:

Insects are a natural part of the environment and will not get out of control unless your garden environment is out of balance. Prevention of insect problems is the best control - keep plants strong and healthy and keep the garden area clean. A small amount of insect damage is normal and should not be a problem in a well-maintained garden.

BENEFICIAL INSECTS

If you see these insects in your garden, do not get alarmed; these are not major pests of crop plants. Most of these insects feed on other insects or decaying plant material on the ground.

Earwigs occasionally chew plants but are not a real problem in the garden.

Spiders are beneficial and feed on garden insects.

Sowbugs hide under rocks and boards during the day and feed on garden debris at night.

Millipedes are harmless and feed on garden debris.

Praying Mantis feeds on other insects.

Termites eat only dead wood.

Lady Bird Beetle feeds on other insects.



CHEMICAL OR ORGANIC?

In healthy, living soil, everything in the ecosystem works together to provide the nutrients plants need. The decomposers arrange and rearrange the minerals and organic matter to create nutrients plants can use. Decomposers also mix the soil, creating a loose, spongy soil structure that holds air and water well, can be easily penetrated by plant roots and enables nutrients to get down to where the roots are.

Healthy soil grows healthy plants. Creating healthy soil takes work, patience, observation and respect for nature. It doesn't take money, and the longer you do it the less work it requires. This is called the organic or natural method of gardening.

GARDENING GUIDELINES

The most important part of getting and keeping your garden healthy is providing a constant supply of nutrients and organic matter used by decomposers and growing plants. There are three ways - **mulching, burying and composting** - to make sure your garden gets what it needs. Most gardeners use a combination of these techniques. First, some general guidelines:

- 1) Although almost any organic matter is useful, some things such as fats, meat, bones or nut shells don't break down easily and may cause problems. Use them very little or not at all.
- 2) Dead plants that are diseased or bug infested should be composted before being used in your garden.
- 3) Plants that have been chopped up into one-inch pieces are easier to handle and will decompose faster.
- 4) All organic matter uses nitrogen during decomposition. If your mixture doesn't have enough **nitrogen** it will decompose very slowly or it will borrow nitrogen from the soil and growing plants. Choose your organic matter mixture from the lists below:

Nitrogen to Spare: kitchen garbage; fresh, soft, green plant parts; animal manures (cow, chicken, horse); seaweed.

Need Nitrogen: garden waste (old plants and weeds); dry leaves; paper; twigs, bark; sawdust; wood chips; dry grass.

- 5) The greater variety of materials you use, the more nutrients your soil will contain.

- 6) One of the characteristics of soil is whether it is acid or alkaline. Most plants do best in neutral soil. This is measured on a pH scale from 1 to 14. A pH of 7 is neutral, below 7 is considered acid and above is alkaline.

You can purchase a simple pH tester in a garden shop. If your soil is very acidic (below 5.6) you can add dolomite or lime. If it's alkaline, don't worry about it. Plenty of organic matter will correct the problem and keep it neutral.

- 7) If you cannot get a variety of materials, especially seaweeds and manures, you can improve your organic matter mixture with some **additives** especially in the beginning:

Blood Meal: provides extra nitrogen

Bone Meal, Rock Phosphate: provides phosphorus

Wood Charcoal and Ashes: provides potassium

Calcium Carbonate: provides calcium

- 8) Freezing kitchen wastes for 24 hours before composting will help them break down faster.



MULCH

Mulch is a layer of organic matter that covers the soil. Mulch:

- Conserves water.
- Protects and improves soil structure and invites helpful organisms into the soil.
- Makes it hard for weeds to grow, but makes them easy to pull out.
- Helps to prevent many diseases and insect infestations.
- Keeps your feet clean even when it's very wet.
- Prevents erosion and soil splash on the bottom of plants.
- Provides a protective cushion for fruit and keeps them away from the soil where rot starts.
- Lessens transplant shock.
- Can get "nasty" if you add things like kitchen garbage: save that for burial or composting.

THERE ARE TWO WAYS TO MULCH:

1. Mulch is put around the growing plants or transplants after they are a few inches high. When the crop is harvested the mulch is dug into the soil. This method is usually used along with composting or tilling. Even mulch on top of the soil will take nitrogen from the soil, so be sure to include a nitrogen source!

PLANTS THAT GROW WELL IN HAWAII WITHOUT CHEMICAL FERTILIZER AND INSECTICIDE

Cassava (Tapioca)	Beets (here and there/not clumped)
Sweet Potato	Radishes
Ung Choy	Daikon
Amaranth	Tahitian Taro
Manoa Lettuce	Ceequa (bath tub gourd loofah)
Chives	Bottle Gourd
Dandelion	Yams
Chinese Celery	Lemon Grass
Coriander	Onion (where dry)
Swiss Chard	Basil - All Herbs
Edible Hibiscus	Yam Bean
Okra	Ginger
Malabar Spinach (in winter)	Chinese Parsley
Ceylon Spinach (in winter)	Comfrey
New Zealand Spinach (in winter)	Malunggay (horseradish tree)
Winged Bean (goa bean)	Mint, Peppermint
Chayote	

IDENTIFICATION OF PLANT PROBLEMS *IDENTIFY THE PROBLEM FIRST. YOU MAY NOT NEED TO SPRAY.*

Look closely for such damage as:

Curled Leaves - mites, aphids, calcium deficiency.

Leaf Spot - fungal or bacterial disease; discard spotted leaves and apply sulfur dust.

Die back of Leaf and Flower Buds - mites, aphids, copper deficiency.

Holes and Cuts in Leaves - beetles, caterpillars. One remedy is to pick off insects in the evening or early morning.

Winding Trails on Leaves - leafminer. The leafminer is the larva of a tiny black fly. Usually only the first few leaves of crops such as cucumber, tomato and squash are affected. Later the leaves are pest-free.

Pinpoint Reddish or Yellow Spots, Spider Webs on Leaves - usually spider mites.

Irregular Yellow Splotches on Leaves (Mosaic Effect), Wrinkled and Distorted Leaves - may indicate virus infection. There is no cure, so pull up and discard affected plants before disease spreads.

4. Plant insect and disease-resistant varieties of crops. Vegetable seeds especially bred for Hawaii are available at the University of Hawaii and many garden shops.

5. Prevent insects and diseases by pulling up weeds, disposing of dead plant material and maintaining vigorous, healthy plant growth.

Weeds provide food and shelter for insects.

Dead leaves can spread disease to other plants. Healthy plants naturally resist infestation by insects and disease. Problems are more likely to occur on weak plants.

6. Rotate your crops. Grow something different after harvesting a crop. Some vegetables will do better than others in your plot.

7. Use traps and barriers.

A cabbage leaf laid on the ground will trap snails, slugs and cut-worms that hide during the day and feed at night. Wood ashes, bone meal, cedar chips, tobacco, lime or boric acid, sprinkled in a border around your garden, can repel some insects.

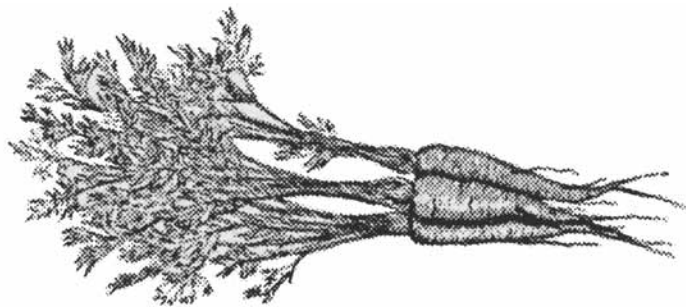
8. Try companion planting.

Some plants have beneficial effects in the garden. If you plant these in your garden, they may help to repel insects:

chives	mint	sage
onions	thyme	nasturtium
garlic	marigolds	borage

9. Use natural sprays and dusts.

Sprays made from soap, garlic, onion, hot peppers and tobacco may be effective in insect control. Refer to organic gardening publications for more details on these pest control methods.



NOTE: Only organic chemicals may be used in garden plots.

2. In this method, more layers are added on top as bottom layers decompose and become soil. The soil is never tilled again once the mulching is started. Mixing is left to soil organisms. Planting is done by making a space in the mulch for seeds, or seedlings. The layers must add up to a good mixture. To find out more about this “forest floor” method of mulching, read books by Ruth Stout.

Some good things for mulch are: newspaper under leaves; straw or dry grass; grass clippings; sawdust or wood chips (if they are not treated lumber and you add a nitrogen source); seaweed; compost.

COMPOSTING

Composting is what happens when organic matter rots. You can compost by mulching or burying in your garden, or you can compost the organic matter first, then mix it with your soil. A compost pile is an organic matter mixture that is left to decompose. It takes about two months if you follow these directions:

- Make a “layer cake” about 3’ x 3’ (see instructions below.) Keep it moist but do not soak it.
- Cover it with soil or plastic to keep bugs away.
- Turn it (mix it), and pile it up again every 1-2 weeks, more often in the beginning.
- To make rotting take place faster (in two weeks), chop up the organic matter and turn the pile every other day.
- If you can, raise your compost pile up about a foot off the ground, perhaps on a platform of wire mesh or on a wooden frame. This will allow for extra ventilation. You could also make ventilation holes by piling up the mixture around poles which can be pulled out. Ventilation is the key: the more ventilation possible, the less you must turn your mixture.
- If your compost pile begins to smell like garbage, it is too wet and lacks ventilation. Turn it more often.

An active, healthy compost pile will be hot in the center and smell like fertile soil.

START YOUR OWN LANDFILL

Put your garbage in the garden where it will do some good.

Dig a hole in your garden and put in kitchen wastes as well as other chopped organic matter. Throw in some additives (if you want) and add soil. Water it and stir it up to make a good organic matter mixture. When the hole is almost full, cover it with soil by digging a

new hole. Helpful hint: rotate crops to follow decomposition of the buried material. Plant legumes (peas, beans) on newly buried material, next fruit (tomatoes, peppers, etc.) then greens. Root crops grow best on thoroughly decomposed soil.

DON'T STOP NOW

There are endless variations on composting, mulching and burying. Organic gardeners are well known for constantly improving or adapting techniques to suit their own soil, climate, plants or personal habits.

If you wish to learn more, there are many easy-to-read books and magazines written by organic gardeners, which may be found in the Community Gardens Coordinator's library, public libraries, garden shops or bookstores.

WHERE TO GET ORGANIC MATTER

Neighbors: ask for kitchen garbage, newspaper, cardboard, leaves, banana stalks, hedge trimmings.

The beach: seaweed can often be found on many beaches, and beach parks are a good source for ashes.

Tree trimmers: may or may not deliver chopped tree trimmings by the truckload free of charge.

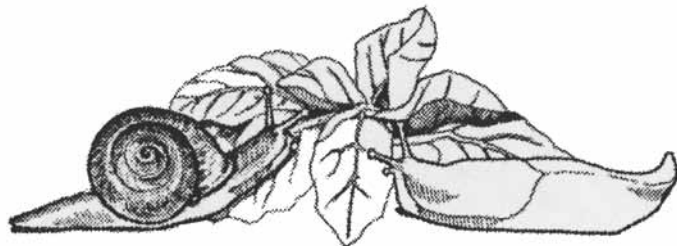
Dairies and poultry farms: manure (you'll need plastic garbage bags, a shovel and a garbage can or five-gallon bucket to hold the bag while you shovel.)

Huli-huli Chicken projects: ashes and charcoal.

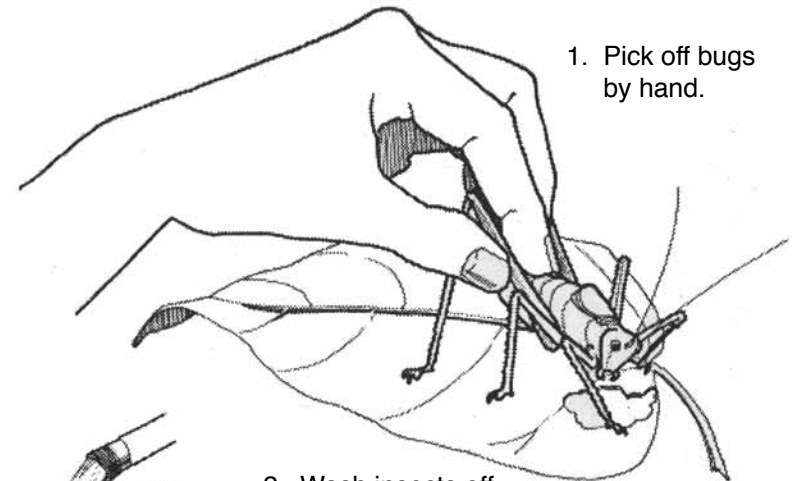
Gutters: especially good source of leaves, a premium mulch.

Vacant lots and roadsides: tall grass is an excellent mulch and is free to the cutting.

NOTE: No human waste is allowed in community gardens.



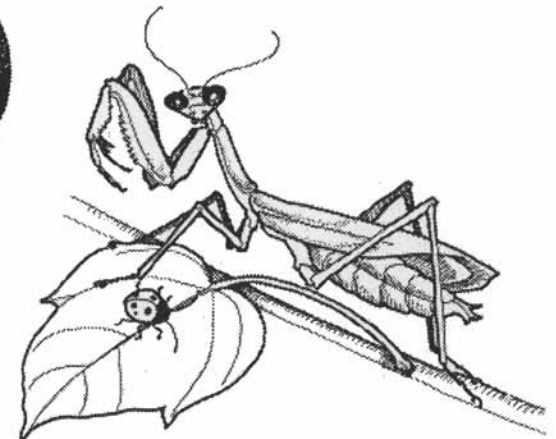
INSTEAD OF SPRAYING CHEMICALS, YOU CAN:



1. Pick off bugs by hand.



2. Wash insects off plants with a spray of water.



3. Introduce helpful insects such as ladybugs and the praying mantis into your garden.