College of Tropical Agriculture and Human Resources
University of Hawai'i at Mānoa

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Plant Needs

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Plants need light, air, nutrients, and water, but each kind of plant is different, and the environment in which it grows also affects its needs. Giving gardeners the gift of a "green thumb" can be as simple as providing them with knowledge of basic plant needs, accompanied by resources for seeking more information.

Light

Light requirements vary with the type of plant. Look at plants in your neighborhood, resort areas, botanical gardens, or the CTAHR Urban Garden Center at Pearl City to discover examples of how plants thrive in shade, partial sun, or full sun in a particular landscape.

Air

Plants absorb carbon dioxide from the air. However, there also must be oxygen in the soil for the plant's roots to thrive. If you are growing the plant in a container, a "potting media" mix from your local garden center will ensure the right amount of drainage and air for the root system. Also, when buying a plant, ask the store's staff to remove it from its container so you can look at the roots. If the roots are massed together and circling the container, the plant is "pot-bound" and will need time to recover from that condition after being repotted into a larger container. Preferably, choose one that is not pot-bound.

When growing plants in your garden, soil amendments may be needed to improve drainage and allow adequate air around the root system. Incorporate compost or potting media containing peat, perlite, or volcanic cinder into the garden soil to increase aeration and drainage. Compost and other amendments can be purchased at garden centers or, on O'ahu, from a company like Hawaiian Earth Products.

Nutients

The nutrients plants need the most of, the "macronutrients," are nitrogen, phosphorus, and potassium ("NPK"). These letters represent the three numbers used to describe general garden fertilizers (e.g., 10-20-10). Here's an easy way to remember the functions of each macronutrient: "Up, Down, and All Around." The first nutrient, N, is used for green growth, or upward growth. The second, P, is used for root growth. And the third, K, helps build the systems that transfer water and nutrients throughout the plant. Slow-release fertilizers are very useful in gardening and landscape maintenance. Slow-release fertilizers are encased in a capsule from which

*CTAHR Popular Press articles were written to appear as newspaper columns and therefore are of necessity brief and sometimes simplified treatments of their subjects. For more detailed information resources, visit www.ctahr.hawaii.edu.

Do you have a gardening question?
Contact a CTAHR Cooperative Extension Service or Master Gardener program resource.

East Hawai'i: (9 a.m.–noon, Tu, Th) 981-5199, himga@hawaii.edu
Kaua'i: (1–4:30 p.m., M–F) 274-3475, rebesu@hawaii.edu
Maui: (9 a.m.–noon, M, Tu, Th) 244-3242 ext. 228, MauiMG@ctahr.hawaii.edu
Moloka'i: (9 a.m.–noon, M–F) 567-6935, arcer@ctahr.hawaii.edu
O'ahu: (9 a.m.–noon, M–F) 453-6055, OahuMG@ctahr.hawaii.edu
West Hawai'i: (9 a.m.–noon, Th) 322-4892, KonaMG@ctahr.hawaii.edu

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the nutrients are gradually released. This type of fertilizer helps avoid plant "burning," which can occur when using too much rapid-release fertilizer. A soil test can determine how much P and K are available to plants in your garden, so you can decide how much you need to add as fertilizer. N usually needs to be added in most gardening situations.

Water

The most important rule in watering is to achieve a consistent watering schedule. As a general rule, it is a good idea to allow the soil to dry between waterings, but not so much as to cause plants to wilt. Depending on the season and where you are located, this can mean watering every other day in leeward areas, or watering every 3 days in some windward areas. The best tool for watering plants in a landscape is drip irrigation. Overhead irrigation can encourage leaf wetting and increase incidence of plant diseases, causing decline. Drip irrigation can be attached to a regular garden hose faucet and can be put on a timer to obtain a regular watering schedule.

See also . . .

Enhancing your lanai, balcony, or patio with container plants
http://www.ctahr.hawaii.edu/oc/freepubs/pdf/HG-43.pdf

Use of soil amendments in landscape plantings
http://www.ctahr.hawaii.edu/oc/freepubs/pdf/SCM-11.pdf

Testing your soil—why and how to take a soil test sample
http://www.ctahr.hawaii.edu/oc/freepubs/pdf/SCM-9.pdf