

# Managing Nutrients

## Apply only those nutrients the plants can use

Nutrients are essential for good plant growth, but over applying nutrients is not good for plants or for the environment. Excess nutrients leach through the soil and end up in ground water, or run off into storm drains and enter our streams and bays. The three primary plant nutrients are nitrogen (N), phosphorus (P), and potassium (K). In Hawaii, nitrogen and phosphorus have caused problems with excessive aquatic plant growth. Remember to consider native plants or others with low fertilizer needs.

### *Soil test is key*

The key to good nutrient management in your backyard is a reliable soil test. Without a soil test, you could be applying too much, too little, or the wrong nutrients. You'll want a separate soil test for your lawn and garden.

Commercial soil test kits available are not calibrated to give accurate recommendations for Hawaii. Contact your local Cooperative Extension Service (CES) office for information on how to take and submit soil samples to the University of Hawaii Agricultural Diagnostic Service Center (ADSC). Consult with your local cooperative extension agent to help you understand soil test results, fertilizer recommendations, and how to correctly calibrate your spreader.

Organic or conventional fertilizers usually provide primary plant nutrients (N-P-K), but plants require at least 10 other nutrients (called micronutrients). You can get a plant tissue test to determine if your plants need micronutrients. Apply only the nutrients needed according to soil test results. Never exceed the recommended rates and timing.

### *The importance of soil pH*

Acidic soils occur wherever rainfall is substantial. Hawaii's soils tend to be acidic in the areas that receive moderate to high rainfall. So, you can expect acidic soils in Mililani and the wet windward valleys of Oahu (i.e., Haiku and Maunawili), but on the hot and dry plains of Ewa soils are neutral to alkaline. The pH (acidity level) is measured on a scale of zero to fourteen, with zero being very acidic and fourteen being very alkaline. Most plants grow best in soil with pH values between 5.5 and 6.5. When the pH level is lower than five or higher than eight, nutrients that plants need are not as available to the plant. In acidic soils with pH below 5.5 elements like aluminum (Al) and manganese (Mn) occur at toxic levels and these soils must be limed to prevent harm to the growing plants. Every home and garden center carries pH test kits. These kits provide a general indication of your soil pH and fertility, but you must make sure you follow the testing instructions precisely. Sulfur will lower pH. Lime will increase pH.

### *Fertilizing lawns*

- To avoid excess nitrogen in Hawaii's waters, use slow-release nitrogen fertilizers. Consider using compost to enhance or replace fertilizers.
- Leave grass clippings on the lawn for fertilizer.
- Avoid using fertilizers that contain weed killer or insecticide. These chemicals should be used only when other more environmentally-friendly pest control options fail. Use them only on affected areas.
- Be careful not to spread fertilizer on sidewalks and driveways.
- Be sure to calibrate your spreader correctly.

### *Fertilizing gardens*

- Use compost to enhance or replace fertilizers.
- Choose a level site, or terrace the garden, to avoid runoff and erosion.
- Place fertilizer near plants rather than broadcast it over the entire garden.

### *Additional Resources:*

Agricultural Diagnostic Service Center  
<http://www2.ctahr.hawaii.edu/adsc/>

*In general, native plants such as 'Ilima do well without supplemental fertilizer applications.  
Photo by Amy Tsuneyoshi, HBWS.*



Testing Your Soil: Why and How to Take a Soil-Test Sample  
[www.ctahr.hawaii.edu/ctahr2001/PIO/FreePubs.asp](http://www.ctahr.hawaii.edu/ctahr2001/PIO/FreePubs.asp)  
Or call (808) 956-6706