

Fertilizer Recommendations for Landscape Plants¹

Contributors: Gary Knox, Tim Broschat, Jerry Kidder, Edward Gilman, Laurie Trenholm, Robert Black, Tom Wichman, Dave Palmer, Ray Zerba, Celeste White, Adrian Hunsberger, Glenn Israel, John Cisar, Kathleen Ruppert, Dan Culbert, Christine Kelly-Begazo, Sydney Park Brown, Eileen Buss, Eva Worden, Charles Vavrina.² Edited By: Gary Knox, Tim Broschat and Robert Black.²

Why Fertilize?

Clearly, plants grow in the wild without any help from humans. However, we have learned that plants respond to some fertilizers in ways which we may consider desirable, such as by growing faster or improving appearance. The usefulness of these fertilization outcomes is subjective. For example, faster growth may be desired in one circumstance but may lead to unwanted pruning in another. Improved appearance is important to some and unimportant to others.

Thus the reason for fertilizing plants should be to supply nutrients to achieve a clearly defined objective, such as:

- increasing shoot growth, root growth, flowering, or fruiting

- establishing newly planted trees and shrubs
- enhancing foliage color and plant appearance
- correcting or preventing nutrient deficiencies

Fertilizer Terms

"Fertilizer" means any substance that contains one or more recognized plant nutrients.

"Slow or controlled-release fertilizer" means a fertilizer containing a plant nutrient in a form which delays its availability for plant uptake and use after application, or which extends its availability to the plant significantly longer than a reference "rapidly available nutrient fertilizer," such as ammonium nitrate or urea, ammonium phosphate, or potassium chloride.

1. This document is ENH858, one of a series of the Environmental Horticulture Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date February 2002. Visit the EDIS Web Site at <http://edis.ifas.ufl.edu>.

2. Gary Knox, Professor, Environmental Horticulture, North Florida REC-Quincy. Tim Broschat, Professor, Environmental Horticulture, Ft. Lauderdale REC. Jerry Kidder, Professor, Soil and Water Science. Edward Gilman, Professor, Environmental Horticulture. Laurie Trenholm, Assistant Professor, Environmental Horticulture. Robert Black, Associate Professor, Environmental Horticulture. Tom Wichman, Florida Master Gardener Coordinator, Environmental Horticulture. Dave Palmer, Extension Agent I, Urban Environmental Horticulture, Hillsborough County. Ray Zerba, Extension Agent IV, Clay County. Celeste White, Courtesy Extension Agent I, Orange County. Adrian Hunsberger, Extension Agent II, Urban Horticulture M.G. Coordinator, Miami-Dade County. Glenn Israel, Professor, Extension Program Development, Agricultural Education and Communication. John Cisar, Acting Program Director and Professor, Environmental Horticulture, Ft. Lauderdale REC. Kathleen Ruppert, Assistant Extension Scientist, Energy, Agricultural and Biological Engineering. Dan Culbert, County Extension Director and Extension Agent III, Environmental Horticulture, Indian River County. Christine Kelly-Begazo, Coordinator, Educational/Training Programs, Environmental Horticulture. Sydney Park Brown, Extension Agent IV, Environmental Horticulture, Hillsborough County. Eileen Buss, Assistant Professor, Landscape Entomology, Turfgrass, Entomology and Nematology. Eva Worden, Assistant Professor, Landscape Horticulture, Ft. Lauderdale-REC. Charles Vavrina, Associate Professor and Acting District Director, Vegetables.

“Fertilizer grade or analysis” is the percent nitrogen, phosphorus and potassium guaranteed by the manufacturer to be in the fertilizer. For historical reasons, the nitrogen is expressed as N, the phosphorus as P₂O₅, and the potassium as K₂O. The percent sign is not used, but instead the numbers are separated by dashes, and the order is always N, P₂O₅, and K₂O (e.g. 15-0-15).

Recommendations and Basic Principles of Fertilizing Landscape Plants

The following recommendations do not pertain to products containing insecticides, herbicides or other pesticides.

- Before fertilizing, use soil and/or foliar nutrient analysis to determine whether any need exists for phosphorus fertilizer.
- Before fertilizing, soil may be modified in order to improve nutrient uptake or plant responses to fertilizer.
- Fertilizer can increase the severity of some pest and other problems to damaging levels. In these situations, the problems should be treated in conjunction with fertilization.
- Soil pH should be considered when selecting the fertilizer.
- The amount of fertilizer applied should be the minimum amount needed to achieve the defined objective.
- Slow-release fertilizers are preferred, but similar results can be obtained using small amounts of soluble fertilizers applied frequently.
- Read and follow *all* label instructions and safety precautions.

When to Fertilize

Fertilization may not be required:

- If homeowners or clients are pleased with the appearance of their landscape plants.

- If plants are established.
- If plants are flowering or fruiting. Exposure to high nitrogen at this stage may impede development.
- For trees, unless nutrient deficiencies exist.
- In some situations where landscape plants exhibit nutrient deficiency symptoms. In many instances, these plants may not be suited for that site due to soil pH, soil drainage, soil salts, limited soil volume, irrigation water quality or mineral content of the soil. Consider replacing such plants with others adapted to site conditions.

Fertilization may be justified in the following situations:

- If trees and shrubs are newly planted (thus justifying fertilization until established).
- If homeowners or clients desire more or faster growth.
- If landscape beds have been leached of nutrients by flooding or over-irrigation.
- If trees and shrubs are *not* located near fertilized turfgrass.
- If established plants are lacking in foliage color or density for the homeowner's or client's purposes.
- If plants exhibiting nutrient deficiencies are in situations where they cannot be replaced with more adapted species.

How Much to Fertilize

General Recommendations:

When it has been determined that fertilization is necessary, most established landscape plants should be fertilized at rates within the ranges listed in table 1. The number of pounds of various nitrogen-containing fertilizers to apply per 1000 square feet of bed area per year is presented in table 2.

Table 1. Amounts of Nitrogen Fertilizer vs. the Level of Maintenance

<u>Level of Maintenance</u>	<u>Amount of Nitrogen Fertilizer</u>
Basic	0-2 pounds N/1000 ft ² /year
Moderate	2-4 pounds N/1000 ft ² /year
High	4-6 pounds N/1000 ft ² /year

Phosphorus content of the fertilizer should be 0 - 2% P₂O₅. Historically, the ratio of nitrogen (N) to potassium (K₂O) for landscape plants has been in the range of 1:1 to 2:1. A 15-0-15 is an example of a fertilizer utilizing the 1:1 ratio. Due to the prevalence of magnesium (Mg) deficiency on certain landscape plants in many parts of the state, up to 2.5 pounds Mg/1000 ft²/year may be applied to address this problem. Micronutrients can be applied at specified rates and timing to achieve fertilization objectives.

Water-soluble fertilizers should be applied at no more than 1/2 pound of actual nitrogen per 1000 square feet per application. Application rates of controlled-release fertilizers depend on release rates of the product.

Landscapes in Which Palms are Important

Palms have different nutritional requirements than other landscape plants. When palms are important, landscaped areas within 30 feet of large established palms should be fertilized with a 4-1-6-2 Mg (N - P₂O₅ - K₂O - Mg) ratio fertilizer (an 8-2-12-4 Mg is an example of a fertilizer utilizing this ratio). N, K₂O, and Mg should have equivalent percentages of each nutrient in controlled-release form. Using a fertilizer with a ratio other than that specified may induce or accentuate nutrient deficiencies in palms. Fertilization rates may be based on the rates for nitrogen in Table 1, for basic, moderate and high levels of maintenance. Because palms are highly prone to several potentially fatal micronutrient deficiencies, any fertilizer applied to them should contain 1-2% Fe and Mn, plus trace amounts of Zn, Cu, and B to prevent these deficiencies.

Where and How to Fertilize

Fertilizer should be broadcast uniformly over the desired areas of the landscape. Consideration shall be given to root location, fertilization objectives and plant species. Areas where tree or shrub fertilization zones overlap with lawn fertilization zones should be fertilized for one or the other of the plant types, but not both. Foliar applications, injections or implants should only be used when soil application of fertilizer is impractical or ineffective in achieving fertilization objectives. When applying foliar fertilizer, the fertilizer solution should be sprayed to thoroughly cover the affected foliage at the proper stage of growth to achieve objectives.

Table 2. Number of Pounds of Fertilizer (per 1000 ft²/yr) to Use for Fertilizer Containing Various Percentages of N at 7 Rates.

% N in Analysis	Rate (lbs N/1000ft ² /yr)						
	0.5	1	2	3	4	5	6
6	8	17	33	50	67	83	100
7	7	14	29	43	57	71	86
8	6	12	25	38	50	63	75
9	6	11	22	33	44	56	67
10	5	10	20	30	40	50	60
11	5	9	18	27	36	45	55
12	4	8	17	25	33	42	50
13	4	8	15	23	31	39	46
14	4	7	14	21	29	36	43
15	3	7	13	20	27	33	40
16	3	6	13	19	25	31	38
17	3	6	12	18	24	29	35
18	3	6	11	17	22	28	33
19	3	5	11	16	21	26	32
20	2	5	10	15	20	25	30
33	1	3	6	9	12	15	18
39	1	3	5	8	10	13	15
46	1	2	4	7	9	11	13