UF UNIVERSITY of FLORIDA
IFAS Extension

UF/IFAS Extension Nutrient Management Series: Container Media Nutrient Test Interpretation [1]

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Container media differ greatly from agricultural soils in their physical and chemical characteristics. Container media may include mixtures of materials such as perlite, expanded plastics, vermiculite, peat, pine bark, wood shavings, and sand. The UF/IFAS Extension Soil Testing Laboratory (ESTL) offers a standard fertility test that estimates water-soluble plant nutrients in the soilless container media. This test is designed for estimating the nutritional needs of Florida grown plants under intensive management typical of container plant production. Specialized interpretation of the test results is required.

Container Media Test Information Sheet (Form SL-134) should accompany samples submitted to the ESTL. This test includes pH, electrical conductivity, nitrate-N, phosphorus, potassium, calcium and magnesium. The Form SL-134 should be consulted for guidance on collection of samples and fee schedule for this test. Unlike other soil tests offered by the ESTL, container media samples should NOT be dried. Drying the media sample can adversely affect the results of the test by changing the quantities of nutrients extracted from the media. This test is not appropriate for agronomic situations or for home grown vegetable or flower gardens.

Results of the Standard Soil Fertility Test (Form SL-135) should not be compared to results of the CONTAINER MEDIA TEST due to the different extraction procedures used. The fundamental purpose of the Standard Soil Fertility Test is to act as a predictive management tool for agricultural soils by estimating the portion of the crop nutrient requirement that must be supplied as fertilizer for the growing season. The Container Media Test is designed as a diagnostic management tool for soilless media in which plants are already growing.

General interpretations for the CONTAINER MEDIA TEST are given in Tables 1 & 2. The interpretations of the test results are meaningful only in commercial nursery situations. However, one should observe plant growth and response to fertilizer management and also monitor nutrient status through a regular program of media testing (refer to IFAS Circular 556, "Diagnostic and Monitoring Procedures for Nursery Crops" for more information). Such a program will help one develop specific interpretations

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based upon media-test results for your particular crops, media, and management situations.

Whenever media tests in the “Low” range, plants may respond to added nutrients. The "Acceptable" range should be viewed as adequate for good plant growth. Therefore addition of nutrients may or may not result in additional plant growth. In general, plants may be ready for market 1 to 2 weeks earlier if nutrients in the media are maintained in the optimum range. No additional benefits are expected from added fertilizer when media nutrients test in either the “High” or “Very High” range. In fact, one may experience excessive nutrient loss from the media during irrigation creating possible nutrient disorders, when nutrients are maintained in either of these two ranges.

When making interpretations, one must consider that container-nutrient levels are influenced by many factors including environmental, fertilizer solubility or release characteristics, and water management. For example, a water-soluble nitrogen fertilizer applied just prior to sampling may produce "High” nitrate-nitrogen media test results that may decrease or stabilize in subsequent samplings. Thus, repetitive, consistent sampling is very important as a part of management strategy to ensure that optimal nutrient levels are maintained in the container medium. The CONTAINER MEDIA TEST can be a valuable management tool to assist in fertilizer decisions, especially when results can be interpreted in light of the cultural management techniques being used.

Table 1. Interpretation of CONTAINER MEDIA TEST for woody ornamentals*

Analyses	Rating Category				
	Low	Acceptable	Optimum	High	Very High
pH	< 5.0	5.0 to 5.5	5.5 to 5.8	5.8 to 6.5	> 6.5
Electrical Conductivity, dS/m	< 0.7	0.7 to 1.0	1.0 to 1.5	1.5 to 3.0	> 3.0
Nitrate-N, mg/L	< 40	40 to 80	80 to 100	100 to 200	> 200
Phosphorus, mg/L	< 3	3 to 8	8 to 12	12 to 18	> 18
Potassium, mg/L	< 10	10 to 20	20 to 40	40 to 80	> 80
Calcium, mg/L	< 10	10 to 20	20 to 40	40 to 100	> 100
Magnesium, mg/L	< 10	10 to 15	15 to 20	20 to 60	> 60

* Plants of the Ericaceae family (e.g., azaleas) and salt-sensitive plants require only one half the electrical conductivity amounts and can tolerate only half the levels of nutrients (NO_3-N, P, K, Ca, and Mg) shown in this table.

Table 2. Interpretation of CONTAINER MEDIA TEST for bedding and potted plants.

Analyses	Rating Category				
	Low	Acceptable	Optimum	High	Very High
pH	< 5.3	5.3 to 5.6	5.6 to 5.8	5.8 to 6.5	> 6.5
Electrical Conductivity, dS/m	< 0.8	0.8 to 2.0	2.0 to 3.5	3.5 to 5.0	> 5.0
Nitrate-N, mg/L	< 40	40 to 100	100 to 200	200 to 300	> 300
Phosphorus, mg/L	< 3	3 to 5	6 to 10	11 to 18	> 18
Potassium, mg/L	< 60	60 to 150	150 to 250	250 to 350	> 350
Calcium, mg/L	< 80	80 to 200	200 to 400	> 400	
Magnesium, mg/L	< 30	30 to 70	70 to 140	> 140	