



Production Times

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Potassium Nutrition in *Phalaenopsis*

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A recent study at the Texas Agricultural Research and Extension Center has shown that Potassium (K) concentrations directly affect the growth of *Phalaenopsis*. Bare root, white-flowered *Phalaenopsis* Tai-suco Kochdian clone plants were imported in late May and potted in a mix consisting of three parts medium-grade douglas fir bark and one part each of perlite and coarse Canadian sphagnum peat (by volume) or in Chilean sphagnum moss. Plants grown in moss produced four to five leaves, whereas those planted in the bark mix produced only two to three leaves. K concentration did not affect the length of the uppermost mature leaves when grown in the bark mix. However, plants with an increase in K concentration in bark mix had increasingly longer and wider top leaves.

Usually, K deficiency symptoms are shown in the lower leaves of plants. In this study, *Phalaenopsis* K deficiency symptoms appeared after plants in the bark mix had become

reproductive in November. Death of lower leaves on K-deficient plants began in late December when the flowering stem had reached one-third to one-half of their final lengths. It is possible that the K in the lower leaves of *Phalaenopsis* was removed and rearranged to the developing flower buds. This may explain the development of yellowed lower leaves originally and steady yellowing and progressive death of upper leaves and ultimately the death of the entire plants.

In certain hybrids of *Phalaenopsis*, lower leaf yellowing is a serious problem. These lower leaves were found to have extremely low levels of K. Application of 15N-4.3P-16.8K or full-strength Johnson's solution reduced the incidence of lower leaf yellowing. In this study plants that received 50 mg/L K, originally appeared healthy but began showing symptoms of K deficiency after anthesis. This suggests that although applying 50 mg/L K

(Continued on page 4)

Red Palm Mite is HERE!, *Raoiella indica* Hirst, was found in South Florida on a coconut palm in Palm Beach Gardens on 11/29/07. Suspect samples can be sent to DPI for identification or confirmation (Contact Information: http://www.doacs.state.fl.us/pi/plantinsp/pi_inspectordirectory/pi_insp_map.html). Residents can also contact the DPI helpline for additional information at 888-397-1517. For more information go to <http://mrec.ifas.ufl.edu/lso/RPM/RPM.htm>.



Stand Up and Be Counted 2007 Census of Agriculture

The 2007 Agricultural Census will be sent out in January 2008. The Census of Agriculture is taken every five years and is a complete count of U.S. farms and ranches and the people who operate them. The Census looks at land use and ownership, operator characteristics, production practices, income and expenditures and many other areas. It is vital that you respond so that our agriculture is counted. Your individual information is completely confidential, but the data totals are used in so many ways. It is used in community planning, lending institution decisions, USDA and extension staffing, and many other key issues facing you and the community. Florida legislators need to know about nursery and greenhouse production when shaping farm policies and programs, and they will not

know about the current state of Florida nurseries if you don't respond to the census.

You are required by law to respond to the census if it is sent to you, even if you don't operate a farm. You are considered a farmer if you have \$1000 or more of agricultural products produced and sold, or normally would have been sold, during the census year. Even if you only have a half acre nursery in your backyard, if you grossed \$1000 or more in sales, you need to fill out the census. Please stand up, be counted, fill out the 2007 Census of Agriculture and show the importance of the nursery and greenhouse industry to the state of Florida and the U.S.

Plant Clinic Problem of the Quarter - Aerial Rhizoctonia or Web Blight. Rhizoctonia is a soil pathogen that mostly affects roots and stems at the soil line, but when conditions are humid and warm, and the plants are tight, this fungus can jump to the leaves and stems. The mycelia can be seen like a fine brownish webbing in the dead leaves, and may be confused with spider mite webs. Check out the other plant clinic samples and diagnoses at http://cfextension.ifas.ufl.edu/agriculture/plant_clinic/index.shtml.



Nutrient Deficiencies and Indicator Plants

Adapted from Dr. Paul Fisher's "Put Water and Nutrient BMPs into Practice"

Plants that are especially susceptible to nutrient deficiencies can be used to indicate if your nutrition program is lacking. Having a few of these plants in your beds mixed in with the crop plants will allow your scouts to quickly check visually to see if the nutrition program is sufficient. The four most common problems are high salts, low pH, iron deficiency/high pH, and low nitrogen/phosphorus.

Plants that quickly show nitrogen and phosphorus deficiency are petunia and chrysanthemum. When nitrogen and phosphorus are low, the new growth cannibal-



(Continued from page 2)

izes the nutrients already present in the older leaves. As the nitrogen and phosphorus move up to the new growth, the older leaves turn yellow and fall off, the internodes get shorter and the plant starts to look very pale and ragged and grow slowly.

High salts can be seen by browning on the edges of the older leaves. The leaves in general look dark green and there is a lack of leaf expansion. When you check the roots, you will notice that there are brown roots. This can allow disease to set into the roots, but the real problem is high salt. New Guinea impatiens, ferns and penta are good indicators for high salts.

Low pH (5.5 or less) allows the plant to accumulate iron and manganese because these become much more soluble at low pH. You will see necrotic spotting in the older leaves caused by excess manganese in a few species that show this well. Marigolds, penta and New Guinea impatiens are excellent indicators of this problem. When adjusting pH remember that you need a ratio of Ca:Mg of 2:1. You can raise pH with potassium bicarbonate at 2 lbs/100 gal in the irrigation water.

High pH causes iron deficiency because the iron becomes unavailable to the plant. The older leaves remain relatively green and the younger leaves turn yellow. This is because iron is needed for chlorophyll production, but it cannot be remobilized from the older leaves. Petunias, nemesia and calibrachoa are good indicator plants for this problem. If the pH is too high, you can use fertilizer in which all the nitrogen is in the ammonium form – this is naturally acidifying. Iron can also be added with red iron se-



questrene 148, this is a more expensive chelated iron, but it works best and can turn iron deficiency around within 10 days.

This rose looks like an iron deficiency, but when you check the roots, there are no roots down into the potting mix, and the mix is very wet and heavy. The real problem here is that the substrate is too heavy for the production practices used. There is not enough air in the rooting media and the roots cannot take up iron no matter how much iron or fertilizer is applied.



This poinsettia looks like it is suffering from low pH, but the real problem is high salts. If you look at the roots, there are no roots in the bottom of the pot.



Nutrient deficiencies are easy to spot once you know what to look for. Become familiar with your crop or indicator plants that will quickly let you know what the problem is, and check your pH and EC regularly.

(Continued from page 1)

may be adequate for vegetative growth, it was not high enough for producing quality flowering plants.

Plants grown in sphagnum moss and receiving no K produced an identical number of new leaves with similar total length as plants receiving 50 to 500 mg/L K, but no spiking and flowering took place in these plants. Noticeable symptoms of K deficiency were minimal on these plants. It is not understood why these plants did not become reproductive. This may explain grower complaints that sometimes the bare-root plants, previously produced in moss, received by growers in the United States did not spike, regardless of good environmental conditions in the greenhouse for flowering.

A crop's response to K largely depends on the level of Nitrogen (N) being applied. Higher N results in a greater yield response from an increase in K. Plants used in this study received 200 mg/L K each of N and Phosphorous (P), which have been reported to promote fast growth and to produce high-quality *Phaleonopsis*. As a result, the responses to K in vegetative growth and flowering were likely the true responses to K amounts. *Phaleonopsis* responded to increasing K concentration by increased length and the diameter of the flower stem, larger flowers and overall increased quality of the finished product.

For more detailed information on this study refer to Wang, Yin-Tung, 2007: Potassium Nutrition Affects *Phalenopsis* Growth and Flowering, HortScience 42(7): 1563-1567.

Congratulations to PJ Klinger! Outstanding Agriculturist Award

from the Florida Association of County Agricultural Agents for leadership and support provided to Agricultural Extension Programming throughout Florida 2007.

2008 Planning Calendar

Links to most programs and agendas may be found at: <http://cfextension.ifas.ufl.edu> or the UF Extension Calendar at <http://calendar.ifas.ufl.edu/calendar/index.htm>

January

- 12— Winter 2008 Turf and Ornamental Pest Management Workshop. Orange County Extension. (407)254-9200.
- 17-19— TPIE. Ft. Lauderdale, FL. Register at www.tpie.org
- 24— Dead Palms Tell No Tales. Live Video Program. Lake County Extension office. (352) 343-4101.
- 26— AGRItunity 2008. Sumter County Extension.
- 26— Review and Exam Limited Certification Licenses. Orange County Extension. (407) 254-9200.

February

- 21— Review and Exam O&T and Private Applicator Licenses. Seminole County Extension.(407) 665-5551.
- 22-23— Tampa Spring Expo. <http://www.tbwg.org/>

March

- 29— Review and Exam Limited Certification Licenses. Osceola County Extension. (321) 697-3000.
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