

Fertilizer Management in Containers: What to do after/during all the winter rains!

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There are a couple of housekeeping items that need to be addressed in early spring for container production, especially because of all of the rain that we have had in California. Since the rains have leached many water soluble nutrients from the containers, nutrient deficiencies in the initial flushes of vegetative growth that occur late this winter and early spring may not receive adequate nutrients. Often, nurseries need to ship plants into retail for early March in Southern California and parts of the southwestern U.S. In addition, the weather predictions for the eastern half of the U.S. is an early Spring – up to a month earlier this year, which is becoming a trend. The same thing happened back in 2012 for the east coast.



Figure 1. Camphor (*Cinnamomum camphora*) tree in December. Two new flushes of vegetative growth are chlorotic. This is a common symptom in heavy leached soils after rains or if soils are waterlogged.

Many plant species grown in California may not go into complete dormancy, and will produce vegetative growth even during the cool winter months of California. However, most of these plants will have root systems which are not growing. This is a problem, since many of the physiological processes associated

with nutrient uptake occur in the young actively growing roots and associated root hairs. The result is chlorotic vegetative growth in the winter. This is a problem in container production, as well as orchards and landscapes. This is particularly a problem this year, since all of the rain has leached out most the water soluble nutrients that were available in the media. The image above is a camphor tree (*Cinnamomum camphora*) in a landscape, with two new chlorotic vegetative flushes of growth in December. In the retail industry, containerized plants with dark green growth are more attractive to the consumer than lighter green plants, even if the new growth is normal and just has not matured. Some of the more common plant species that have this problem are gardenia, ligustrum, callistemon, and acacia. The plants which are not like this include many of the California natives, such as the *Arctostaphylos*, which will start to flower and produce vegetative growth in late winter. Their roots are actively growing, so adequate nutrition in the media is important at this time. Most deciduous ornamentals will stay dormant until proper chilling is achieved and/or day length increases, so they are usually not affected by this problem.

What to do:

1. 'Greening up plants' early sale – greenhouse. Move plants into a warm hoop house or greenhouse. Even though air temperatures are beginning to increase, the container media is still cool. In the greenhouse, containers will warm sufficiently to increase root growth. In addition, overhead covers will prevent additional rains from leaching any more nutrients from containers.
2. 'Greening up' plants for early sale – foliar sprays. For chlorotic new growth, micronutrient sprays may be applied according to label directions. This also tends to work better in a warm hoop house or greenhouse. Plants with waxy or hairy leaves may not sufficiently absorb nutrients. Always run a test of some plants to make sure foliage will not be damaged by foliar treatments.
3. Controlled Release Fertilizers (CRF) vs. Liquid Fertilization. CRFs work by releasing fertilizer from encapsulated prills. These prills are usually coated with a polymer or sulfur coating. Nutrient release increases as temperatures increase, and most products work at temperatures in the range of 75-82F (24-28C); therefore, CRFs do not release nutrients or slowly release nutrients in the winter (which is good since most plants are dormant). For plants that are growing early, a liquid fertilization program may be needed to meet the needs of the new growth. Again, moving plants into a greenhouse to warm the root systems will increase root growth and thus nutrient uptake from the liquid fertilizer treatment and also mitigate nutrient leaching from additional rain events.

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