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Irrigation and Nutrient Management Considerations for Container Nurseries[1]

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Have you wondered how you might become more precise or proficient with irrigation and nutrient applications? Irrigation and fertilizer are controllable costs, but until you examine some of the factors that affect the efficiency of applying water and nutrients, and make necessary adjustments, you might not be controlling those costs to your maximum benefit. Listed below are 13 important management strategies regarding container plant irrigation and nutrition. Implementing any one of these management strategies could reduce your production costs or result in other benefits such as a reduction in water and nutrients lost from containers.

Irrigation Management Considerations

1. Check uniformity of irrigation water delivery. There are several articles listed at http://edis.ifas.ufl.edu that explain in detail how to measure uniformity of overhead and micro-irrigation systems. It may also be helpful to take weekly measurements to observe sprinkler rotation speed, angle of water through, water drop sizes, and water discharge pressure from sprinklers in order to determine if the irrigation system is working properly. Recording the time to fill the same size bottle at different locations within an irrigated zone is a convenient way to check micro-irrigation system uniformity.

2. Check the amount of water applied. Cups or rain gauges can be placed in the nursery to record the amount of water applied. Jugs or bottles that receive water from micro-irrigation emitters are an effective means of catching micro-irrigated volumes.

3. Consider the plants water requirement. Plants in the nursery should be grouped according to their irrigation requirements. At the web site listed above you will find survey results from questions asked nursery producers about the irrigation requirements of many container-grown plants.

4. Consider effective water delivery. Plants grown in spaced 7- gallon containers or larger containers should be irrigated with micro-irrigation. This is necessary because under common production situations with overhead irrigation only about 20% of the applied water enters spaced 7-gallon containers.

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5. Container temperature. Spaced containers can have the potential to evaporate about twice as much water as jammed containers or containers placed touching each other. Therefore, plants of the same size in spaced containers will need more water than those in jammed containers.

6. Container design. Squat containers retain more water than taller conventional containers of the same volume. Thus, squat containers may result in a longer duration between irrigations.

Nutritional Management Considerations

1. Substrate physical properties. A container substrate will retain a given quantity of water based on its composition. Thus the water-holding capacity of the substrate or the amount of water held in the container after irrigation and drainage is an important quantity to know because you do not want to apply more water to a container than it can absorb or hold. Excess water is lost along with nutrients.

2. Reduce the leaching fraction. Leaching fraction is the amount of water leached from the container compared to amount of water entering the container. As leaching fraction decreases, nutrient leaching decreases.

3. Irrigation method. Cyclic irrigation applications or dividing the total amount of water applied into small multiple applications will reduce nutrient leaching.

4. Fertilization method. Plant growth response and container nutritional levels may vary depending on whether fertilizer was incorporated in the substrate or surface applied on the substrate. Test representative plants to determine their response.

5. Container temperature. The release of nutrients from some fertilizers is affected by temperature with more release of nutrients at high temperatures. Check the product label.

6. Nutrient monitoring. Longevity of nutrients in the substrate will vary with cultural practices and environmental conditions. Consequently, monitoring the nutritional status of the substrate is best way to determine when fertilizer applications are needed.

7. Collection basins. Runoff water should be contained or collected in basins to prevent nutrient discharge into natural waters and to conserve water.