

## MEDIA TEMPERATURES

Reports from mainland workers have shown that excessively high temperatures can occur in the media of container-grown plants. Soil temperatures have been observed to exceed 110 to 120 F while retardation of root growth can result when soil temperatures go above 85 F.

A study was conducted at the University of Hawaii's horticultural facilities at Manoa to determine if extreme soil temperatures do occur inside containers during the summer in Hawaii. Ti plants (*Cordyline terminalis*) were potted in various containers available locally using the standard UH potting mix, which consists of equal parts of volcanite and wood shavings by volume. Taylor soil thermometers were used to check the media temperatures every 2 hours during the day.

### *Time of Day*

Temperatures in the root zone within the containers were found to be between 70 and 75 F at 8 a.m., when temperatures were first checked. There was a gradual increase in temperature to about 85 to 90 F at 2 p.m. regardless of the type of container or the color used. This was followed by a sharp increase in temperature at 4 p.m. on sunny days. On heavy overcast or cloudy days the soil temperature would reach a maximum about noon and then level off or show a slight decline.

### *Color*

Trials in Hawaii and elsewhere have shown that the color of the container can have a direct effect on the soil temperature. Light colors, such as

white, result in lower media temperatures than dark colors, such as green or black, on bright sunny days. On cloudy days the container color had little effect on temperature.

### *Type of Material*

The material from which the container is made also affects the root zone temperature. It was found that temperatures inside plastic containers were in excess of 100 F while maximum temperatures inside clay or cement containers were 90 F or less.

This study suggests that the container can have a direct influence on the soil temperature of container-grown plants in Hawaii which are fully exposed to solar radiation. These high temperatures can restrict root growth when they exceed 85 F and may even cause death of the roots at higher levels, thus restricting the growth and development of the plant. This should be taken into consideration when selecting containers for growing plants or when placing them in the nursery or on the lanai.

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