

Palm gender affects magnesium deficiency

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MAGNESIUM DEFICIENCY is a somewhat common problem with palms in the landscape. It typically appears as marginal yellow banding around the edges of older leaves, resulting in an aesthetically compromised palm. (Fig. 1)

Recent research shows that there is a link between the gender of a Canary Island date palm (*Phoenix canariensis*) and magnesium deficiency symptoms. Researchers recorded the gender and severity of magnesium deficiency symptoms in 337 Canary Island date palms growing at Hope Ranch in Santa Barbara, CA. (Fig. 2)

All of the palms in the study group were approximately the same age and had the same history of pruning and fertilization. All were mostly unpruned and retained old leaves and fruiting structures (infructescences) by which the gender could be determined. The gender was recorded as male (staminate) or female (pistillate), and the severity was recorded on a four-point scale (0 = no symptoms, 3 = severe symptoms).

Data analysis revealed that 162 of the 163 male palms had little or no deficiency symptoms whereas 103 of the 174 female palms had moderate or severe deficiency symptoms. Thus, female palms had a much higher ten-

Figure 1. Magnesium deficiency symptoms appear as marginal yellow banding around the older fronds. Photo: D. R. Hodel



Figure 2. Looking north at the Canary Island Date Palms in the study growing at Hope Ranch in Santa Barbara, CA. Photo: D. R. Hodel

Landscape managers should consider adjusting their nutritional management of Canary Island date palms based on each palm's gender.

dency to show deficiency symptoms under similar growing conditions than their male counterparts.

Magnesium is a mobile element in plant tissue. Researchers theorized that mobile magnesium was being re-allocated to the developing fruiting structures on the female palms, resulting in more deficiency symptoms in the leaves. Male palms were able to uptake the adequate magnesium to meet their needs, but female palms with the same access to magnesium did not receive enough due to their increased demand for the element. (Figs. 3-4)

Landscape managers should consider adjusting their nutritional management of Canary Island date palms based on each palm's gender. To mitigate magnesium deficiency symptoms, consider pruning off flowering structures (inflorescences) of female palms before fruit begins to develop. Also consider applying additional palm-special fertilizer to female palms to compensate for their higher demand for magnesium. Avoid applying only magnesium because an excess of magnesium can induce a potassium deficiency.

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Figure 3. (Left) A male palm showing no deficiency symptoms. *Photo: D. R. Hodel*

Figure 4. (Right) A female palm with severe magnesium deficiency symptoms. *Photo: D. R. Hodel*