



These yellow and brown spots are early symptoms of manganese deficiency.

King Sagos Brown-out and Die Due to Manganese Deficiency

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The lack of a micronutrient called manganese (Mn) may cause the death of king sagos. It may be hard to sort out from all of the cycad aulacaspis scale damage that eventually browns and kills the king sagos as well, but take a closer look. You could have both problems! To contend with the scale, see current recommendations at: <http://collier.ifas.ufl.edu> and go to the 'Commercial Horticulture' page and then to the 'Insects Problems and Solutions' page.

Hopefully the brown-out symptoms are due to the manganese deficiency, which is easier to remedy. Manganese deficiency typically manifests itself in the newer growth. The symptoms progress from yellow flecking to yellow bands with dark brown lesions to curled yellow-brown new growth (similar to new growth on Mn deficient queen palms, called frizzle-top), then the plant dies. The sand matrix your sago is planted in may have enough manganese, but the "soil" pH is probably too alkaline and the roots cannot absorb the bound-up element. Therefore supplemental Mn must be added or the plant will die. The University of Florida recommends adding eight to 32 ounces of manganese sulfate for small to large plants, respectively. The old discolored fronds will not green up but subsequent growth should return to its lush green color. Its best to use a fertilizer that also contains iron. There is a fertilizer developed for sagos available at the Cycad Jungle Nursery. The nursery has a web site, <http://www.plantapalm.com/centralfl/NewsCycads.asp> with lots of other good information about the many species of cycads, the plant group which sagos are in.

Doug Caldwell is the commercial horticulture extension agent with the University of Florida Collier County Extension Service. The C Extension Service is an off-campus branch of the University of Florida, Institute of the Food and Agricultural Sciences and a department of the Public Services Division of Collier County government. E-mail dlcaldwell@ifas.ufl.edu; call 353-4244. Extension programs are open to all persons without regard to race, color, creed, sex, handicap or national origin. For updates on the Southwest Florida Horticulture Learning Center and landscape information visit: <http://collier.ifas.ufl.edu>