

White Malady Strikes! The Cycad Aulacaspis Scale (CAS)

Takes its Toll on Sagos. *Doug Caldwell*
Collier County Commercial Landscape Horticulture Extension



Figure 1(above) and 2(right). Cycad aulacaspis scale insects have encrusted this sago like barnacles on a ship. Without intervention, this sucking insect will eliminate these classic plants from the Florida landscape. Figure 2. Over pruning ("bullet-head" pruning) of CAS infested fronds has made an eyesore of a previously beautiful king sago in the landscape.

Over the last five years, landscapes in Naples have probably lost over 70% of their king and queen sagos (cycads) due to the relentless attack of the cycad aulacaspis scale (CAS), *Aulacaspis yasumatsui*, a small white scale from Asia. CAS arrived in the Naples area about 1997. It is first noticed after it has established on the undersides of the dark green fronds changing them to a glowing white, so that the cycads resemble a small flocked Christmas tree (Figure 1). This flocked appearance is sort of attractive, but the sagos react adversely to the piercing-sucking feeding activity of this scale and turn brown and die within a quick two to three year period. What was once a low maintenance centerpiece has now become a high maintenance eye-sore (Figure 2).

Biology: CAS is from Thailand where it is not considered that big of a deal because the native insect parasites and predators keep it at bay. Three factors contribute to this insect being, in my experience, the most difficult ornamental pest to control: **1.** Without the normal complement of insect enemies in Florida, scale populations take off unchecked. **2.** Not only that, but it feeds on underground structures, especially at the point where new "pups" originate on the stem and inside the pups, under the layers of tissue (like the layers in an onion) as well as on roots. CAS populations also accumulate under the thick layer of woolly material near the frond bases on the trunk (Figure 3). **3.** This pest has repeating, overlapping generations. This means a constant re-invasion every 4 to 6 weeks especially during March through October in south Florida. Plus, each female scale can produce about 100 eggs, which makes their management even more challenging. The white appearance of plants is primarily due to the males (Figure 4), which outnumber the females 10,000 to one!

Biocontrol: A tiny wasp parasite and a predator beetle from the scale's homeland were released in 2000 or so and seem to be establishing! Unfortunately, I don't think that these good bugs are aggressive enough to help many of our already infested cycads. See what these good insects look like at: http://collier.ifas.ufl.edu/Horticulture/CAS_index.htm.

What To Do: This pest is very difficult to manage, forget the word 'control' at this point in time, as CAS is untouchable with most homeowner-use insecticides. I tested doses of 2% Ortho horticultural mineral oil; 2% Safer® Insecticidal Soap and 1.56% Organocide™ solutions. The results of these products, after one application, provided only 47%, 5% and 21% mortality, respectively. Not good enough! In another test, a Cygon® 2E (dimethoate) foliar application at 4 tsp /gal gave 85% control.

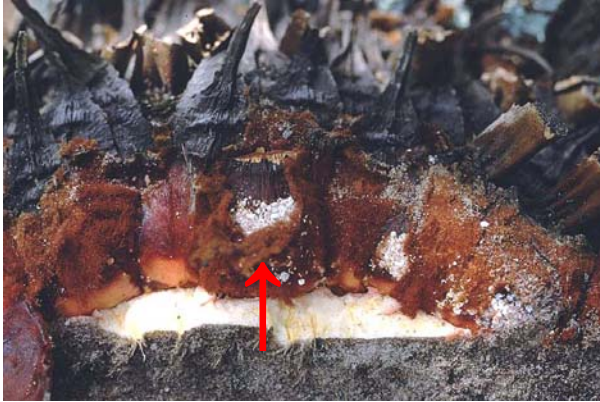


Figure 3. Scales feed under the frond stubs on the trunk, and under the woolly material, making them impossible to reach with a spray. ↑



Figure 4. Adult female scales are disk-shaped, while the male scales are elongate. The first instars (called "crawlers") are the little amber colored individuals in the center of the picture.

A systemic insecticide is needed in order to reach the CAS that feed hidden away. A systemic, applied as a root drench, would be absorbed into the root system and then move upward in the vascular pipelines and diffuse into the foliage and kill the scales that are on the fronds and hiding under the thick woolly material on the trunk (Figure 3), as well as the scales feeding on the roots. Merit® applied as a soil application has given unreliable results. A root drench of the systemic, dimethoate (Cygon® 2E, 2 oz per gallon/plant), gave 95% control of the adult scale in November 2002 in my test.

I tested a new systemic insecticide as a root drench in 2003 that was highly effective. This product, SAFARI™ (dinotefuran from Valent USA Corp.), became available in 2005. Dr. Catharine Mannion (U.F. at Homestead) also had successful results with this product in her tests. SAFARI 20 SG may be a two-shot "silver bullet" with only two root applications per year; one in early May and again in mid September. The price looks to be about half as much as a similar systemic, but it only comes in a 3 lb package at \$90 per pound! However, at the highest rate of 24 oz per 100 gal and 2 qt per foot of height, the cost breaks down to 34 cents per foot! A smaller volume product may be available next year for the homeowner. **In the meanwhile**, if the scale population has exploded and the predators and parasites are not protecting the cycad sufficiently, try Dimethoate 400 (EPA Reg. No. 34704-207; only available in 2.5 gallon size) as a root-soil treatment. For small cycads, up to 2 ft in height (measured from ground to bud), apply 1 oz of Dimethoate 400 in one gallon of water and if taller than 2 ft, add 0.5 gal of solution per 6 inches in additional vertical trunk height as measured to the bud (not the fronds). Because of their larger size, queen sagos may need double the dose. Make sure that the product has the intended use on the label as dimethoate is being phased out by the EPA. Another effective product, Distance® (pyriproxyfen), an insect growth regulator is also available to commercial landscape maintenance companies.

Until SAFARI is available in smaller units, **homeowners** should monitor plants closely and use repeated 2% doses of horticultural mineral oil when new white fluffy scales appear. Remove the "pups", as these side-shoots make scale management more difficult.

Plant Selection: If you are fed up with the battle, try a scale resistant, substitute plant with a form similar to the king sago, one of the Dioon species such as *Dioon edule* or perhaps an agave species, crinum lily or dwarf date palm, *Phoenix roebelenii*, may fill in as a substitute with a similar shape.

For more information on home gardening, contact the University of Florida Collier County Extension office (239-353-4244). Extension programs are open to all persons without regard to race, color, creed, sex, handicap or national origin. Visit our website for more horticulture information: <http://collier.ifas.ufl.edu/>