
Asian Cycad Scale

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The problem...

Asian cycad scale originates in Thailand and southern China. It is believed to have been accidentally introduced into Florida through the legal importation of cycads. Infestations of this scale insect moved rapidly throughout the state since this pest was discovered in the mid 1990's in Miami. (Hamon, 2000)

This scale is known as cycad *Aulacaspis* scale, or Asian cycad scale. The family of plants affected is called cycads. This family

includes king and queen sagos, cardboard palms, and coonties among others. At this point, only the sagos appear to be affected. Cardboard palms and coonties have been relatively unaffected. Although sagos give the appearance of palms, they are actually unrelated to palms. Asian cycad scale has been observed

on several other cycads, but does not attack them as severely. A list of other species of cycads that are reported to be attacked are listed at the Featured Creatures file at:

http://creatures.ifas.ufl.edu/orn/palms/cycad_scale.htm

How do I know if I have Asian cycad scale?

There are **2 ways** to know if the scale on your sagos is Asian cycad scale.

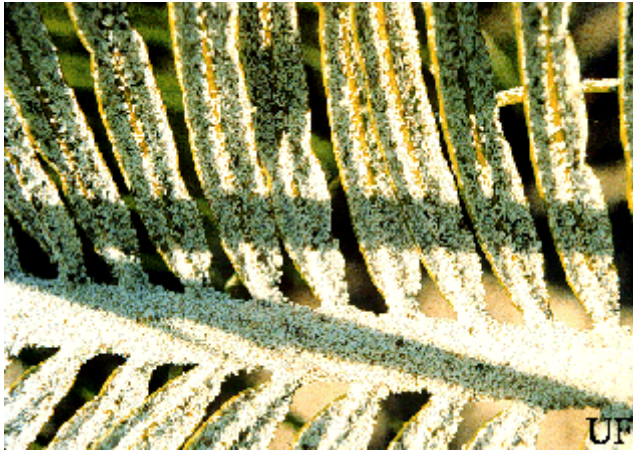
- 1) Look at the insect under a microscope and compare to the image above of the males and female.
- 2) Compare the appearance of your plant with the photos at <http://acs.ifas.ufl.edu>



**The smaller scales above are the males.
The larger scale is female.**

In general, scale insects hatch into a "crawler" stage capable of movement. When they find a suitable spot on a plant, they insert their mouthparts, called a stylet - (much like a straw), into the plant and start feeding. Shortly afterwards they begin to create a covering over themselves. They will stay this way until they die.

The unusually dense populations and rapid spread of Asian cycad scale help confirm it is an



A severe infestation

exotic invasive and has few, if any natural enemies. This pest appears to be spread short distances by wind dispersal of crawlers and long distance by transport of infested plants. (Weissling, 1999) If left untreated, this pest will kill its plant host. (Howard, 1999)

At its worst, an infestation of the Asian cycad scale can completely coat a medium-sized sago within months and kill it within a year. (Howard, 1999) The scale can eventually form several layers and include a high proportion of dead insects as well as live scale insects. Heavy infestations can

include up to 3000 scales per square inch in several layers. (Weissling, 1999)

The Asian cycad scale is unusual in that it can also infest the roots of cycads. These scales have been observed at depths up to 24 inches. (Weissling, 1999)

Is there a solution?

In the longer term, the ideal solution is one or more natural predators / parasites. Researchers at USDA are currently rearing two insects to serve in this role. One is a predatory beetle and one is a parasitic wasp. The biological approach will not be a quick fix as it may take several years for the predator populations to increase to the point they can truly be helpful. Many counties across Florida have begun to release parasitic wasps including Hillsborough County in 2002. The ability of the parasitic wasp to survive the winter was confirmed the following spring.

One solution that has proven somewhat effective, especially on smaller sagos is to simply spray the plant with a hard stream of water from a hose (2003 Mannion). Done regularly and thoroughly this technique can at the least, slow the pest down drastically.

The latest research (2003 Mannion) indicates that many products sold for the control of scale work effectively on the Asian cycad scale. Horticultural oils, (Ultrafine, summer oil, volck oil, dormant oil, etc), fish oil (not fish emulsion) and malathion-in-oil all yield good results. Contact pesticides, such as Malathion, kill insects by touching them. Systemic insecticides, such as those with the active ingredients acephate, dimethoate, disyston and imidacloprid, move into the sap system of the plant. The insects are then poisoned when they feed on the sap of the plant. Research shows that imidacloprid (aka Merit and Marathon) is not very effective on Asian cycad scale.

Several new and effective treatment options have recently been introduced. One is an insect growth regulator called Distance. The active ingredient in Distance is pyriproxyfen. Another recent chemical introduction is Safari. The active ingredient in Safari is dinotefuran. Safari is available through stores that specialize in selling pesticides to commercial applicators. It is not available in homeowner sized quantities at this time, therefore is very expensive per package. However, the cost per application is economical especially factoring in a twice a year application. The active ingredient in Safari is very water soluble making appropriate pesticide protective equipment essential.

Why is Asian Cycad Scale so difficult to control?

- 1) No natural enemies**
 - 2) Reproduces very quickly**
 - 3) Can move on the wind**
 - 4) Can live on the roots**
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How can the Asian cycad scale be controlled?

- 1) The long-term solution is to find, raise, and release predator / parasites. This is being done by the USDA, DACS, and IFAS.
 - 2) The short term solution is to control the pest on as many plants as possible.
 - a) The first step is to treat the plants to reduce the populations of the scale.
 - b) The second step is to treat the plants preventively until the predator population can grow to the point that the scale is controlled naturally.
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Dimethoate, sold under various brand names, such as Cygon, has been shown effective on this pest, but production of this chemical has been discontinued. Stocks on this product are quite limited, if available at all.

We recommend using either horticultural oil or Organocide as they appear to be quite effective with minimal disruption of beneficial insects.

Be cautious of spraying any chemical in the heat of the day, especially to any new growth that might be present. Spraying earlier in the morning or later in the evening will help avoid damage.

In the research that has been done, it was noted that within 21-35 days of hatching, Asian cycad scale females could begin laying eggs in warmer weather. (Hamon, 2000) To prevent new generations of scale from hatching and to bring this pest under control, spray every other week in warmer weather (above 70° F) and once a month in colder weather (below 70° F). **Make sure the spray application is very thorough.** Best results are obtained using a fine spray, so pump-up sprayers using adequate pressure to get into the nooks and crannies are preferable. Any gaps in coverage allow the population to rebound quickly. Nearby infested sagos can also spread the scale back to plants that have been treated. Spray the cycad down hard with a garden hose to loosen the dead scale occasionally. Preventative treatments can be either every other week or once a month (**remember to be thorough**). This should keep the sago safe while biological controls gain momentum. Don't forget to treat the soil under the sago fronds at the same time you're treating the fronds. The research has not yet indicated how often to treat the soil, but every other month should suffice until we have more information.

Other factors...

Some people are suggesting that the situation is hopeless and the only solution is to dig up all sagos and destroy them. This perception runs contrary to the facts. Asian cycad scale is more difficult to control than the typical scale because it has no natural enemies, can move on the wind and can live on the roots of plants. However, it is still just a scale and can be controlled in much the same way as other scale insects. It takes more effort, but it can be done.

For severe infestations, one option might be to remove all the fronds from the sago before beginning chemical application. This is not recommended as standard treatment - only on severe infestations. Removal of the fronds allows the chemical application to be more thorough as treatment of the fronds, both top and bottom can be eliminated and more attention focused on the trunk and roots.

At this point in time, the pest is everywhere in Florida. There is really no point in bagging the fronds and other clippings in plastic bags. That practice will not slow the pest down in any way. Simply set the clippings out with your other landscape debris.

The bottom line...

All is not lost. This is just a scale insect, although it's a tougher one to control than we're used to. The hope is that once a predator / parasite population is established, we'll have to do no more chemical control than before Asian cycad scale reared its ugly head. In the meantime many sagos that are not cared for properly will die. Get the word out to your friends, neighbors and co-workers about proper treatment options. We'll have to work together to get through this.

Remember the key is to **treat thoroughly**.

More information and a number of photos are also available online, along with a copy of this publication at <http://acs.ifas.ufl.edu>

References

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