Palm Diseases & Nutritional Problems

Palm trees grown in the landscape appear carefree, but they are susceptible to many diseases, insects and nutritional problems. Avoid many of these problems by following the recommended cultural practices that help keep plants healthy and vigorous. More information on how to grow outdoor palms successfully is provided in HGIC 1019, Palms & Cycads.

Diseases

Leaf Spots: Palms are commonly affected by many leaf-spotting fungi. Leaf spots can be circular to elongated, brown and possibly oily in appearance. It is difficult to differentiate among the leaf-spotting fungi by visual symptoms alone.

**Prevention & Treatment:** Don't allow irrigation to wet palm foliage. In most cases, leaf spots will not kill the tree, and fungicides are usually not necessary. If damage is becoming severe, fungicidal sprays containing copper can be used (see Table 1 for specific products). If palm fruits are used for food purposes, copper fungicides are the only approved fungicides. Apply all fungicides at rates and spray intervals according to directions on the label.

False Smut: False smut or Graphiola leaf spot is caused by *Graphiola* species. This disease is most common in areas of high humidity. Only palms in the Arecaceae family are affected. In South Carolina this includes sabal palmetto (*Sabal palmetto*), jelly or pindo palm (*Butia capitata*), Chinese fan palm (*Chamaerops humilis*), and Washington palm (*Washingtonia robusta*).

Infected leaves have small, black, wart-like structures erupting through both leaf surfaces. Tiny filaments may emerge from the black spots. There are usually no symptoms on the youngest leaves.

**Prevention & Treatment:** Properly space palms so that there is plenty of air circulation to reduce humidity. Avoid wetting fronds during irrigation. Removal and destruction of severely infected palm fronds will help minimize disease spread. However, removal of too many fronds may be more damaging to the palm than the disease. Palms are sensitive to nutritional deficiencies and frond removal can worsen existing problems and weaken the tree.

Fungicides are usually not necessary but can be applied as a preventative treatment during the spring. Select a fungicide containing copper (see Table 1 for specific products). If palms are used for food purposes, copper fungicides are the only approved fungicides. Apply all fungicides at rates and spray intervals according to directions on the label.
**Ganoderma Root & Butt Rot:** This disease is caused by the fungus, *Ganoderma zonatum*, which can infect many types of palms. The first symptom of infection is the withering and drooping of older fronds. Fronds collapse and droop parallel to the trunk. New growth is stunted and is pale green or yellow in color. The head of the infected palm may fall off or the trunk collapse. Depending on the point of invasion, the roots may be severely decayed.

Outer trunk tissues may seem solid, but affected palms have a hollow sound when tapped. Areas of dark brown tissue are evident when the trunk is dissected. Over time, conks (spore producing structures of this fungus) may form. Palm death can take three to four years, depending on the age of the tree and environmental conditions.

**Prevention & Treatment:** This fungus survives on plant tissue, so remove and destroy any root systems, stumps and trunks of dead palms in the landscape. Avoid any injury to the tree, especially during planting, staking and regular maintenance activities by string trimmers and lawn mowers. Ganoderma survives in the soil, so it is not recommended that another palm be planted in the same location. There is no chemical control for this disease.

**Bud Rot:** This disease can be caused by various fungal pathogens, *Phytophthora* species and *Thielaviopsis* species, as well as by bacterial pathogens. While bud rot tends to occur after a tropical storm or periods of excessive rain, bacterial bud rot tends to occur after the bud has been damaged by cold weather.

Regardless of the pathogen, disease symptoms are similar. Buds and young fronds show black lesions, and young leaves wilt. A firm rot of the bud occurs. Over time, this area may become slimy later due to secondary invaders. Older fronds may remain green for several months and are the last to die. Eventually, only the trunk remains.

**Prevention & Treatment:** Avoid overhead irrigation when possible. Once infection occurs, plant recovery is unlikely. In general, infected palms should be removed and destroyed promptly to reduce disease spread.

Preventative fungicides containing copper can be used on plants exposed to the disease (see Table 1 for specific products). Apply at intervals sufficient to protect new developing tissue. Apply all fungicides at rates and spray intervals according to directions on the label.

**Nutritional Problems**

Palms frequently suffer from improper mineral nutrition in the landscape. The most common nutritional deficiencies of palms are nitrogen (N), potassium (K), magnesium (Mg) and manganese (Mn). Other essential nutrients such as boron (B), calcium (Ca), copper (Cu) and zinc (Zn) are occasionally found to be deficient if they are not present in the fertilizers applied, but these deficiencies are not very common in the landscape.

Nutrient deficiencies can be caused by insufficient nutrients in the soil, a nutrient imbalance, poor soil aeration, a high soil pH and an excessive planting depth.

**Potassium (K) Deficiency:** Potassium deficiency is perhaps the most widespread and serious of all disorders of palms in coastal South Carolina. Symptoms vary among palm species, but occur first on the oldest leaves and affect progressively newer leaves as the deficiency becomes more severe. Typical symptoms are translucent yellow to orange spots that may be accompanied by black or necrotic spotting. Leaflets will usually have areas of necrosis (dead tissue) along their margins and tips. Symptoms are worse at leaf tips and margins and less severe at the base of the leaves. As symptoms progress, tips of leaves will appear withered, burnt and frizzled. The midrib typically stays greenish-yellow for a period of time. Potassium deficiency can eventually be fatal to the palm.

![Bud rot (Thielaviopsis spp.)](https://www.bugwood.org/)

Photo by Rachel Brown, University of Florida, Bugwood.org
Potassium tends to leach rapidly from sandy soils, and it is in these soils that potassium deficiency is more apt to occur. In heavier clay soils, the rate of potassium leaching is reduced. Deficiencies in clay soils may be more due to insufficient potassium fertilizer applied. Palms that are in lawns may become potassium deficient as many turfgrass fertilizers are high in nitrogen, but low in potassium. Palms need fertilizers that contain potassium as high as or higher than the nitrogen content. Fertilize all palms separately from the lawn.

**Prevention & Treatment:** Potassium deficiency can be prevented and/or treated with applications of sulfur-coated (slow-release) potassium sulfate, but slow-release magnesium should also be applied simultaneously to prevent a potassium to magnesium imbalance. If treated, necrotic leaves will not recover, but new growth should become healthy and will eventually replace the injured leaves.

**Manganese (Mn) Deficiency:** Manganese deficiency can be fatal to palms. This is a common problem in high pH soils (above pH 6.5) because manganese is insoluble at high pH levels. Additional causes can be high water tables or poor drainage, and excessive amounts of soil phosphorus, as it will tie up certain micronutrients, particularly manganese.

Early symptoms of manganese deficiency are interveinal chlorosis (yellowing between the veins) accompanied by interveinal necrotic streaking on the newest leaves. If the deficiency is advanced, leaves emerge completely frizzled, withered, scorched and reduced in size.

**Prevention & Treatment:** Have a soil test performed to determine the soil pH and if necessary, adjust downward to increase the availability of manganese. For more information, see [HGIC 1650, Changing the pH of Your Soil](https://gardeners[((http://www.f formidable.org)/)g/science touted). Manganese sulfate applications to the soil or foliage can be used to avoid the problem. Apply 1 teaspoon manganese sulfate per gallon water to soil around the palm two or three times per year. Tecmangam is one brand of manganese sulfate.

**Iron (Fe) Deficiency:** Iron deficiency is primarily a cosmetic problem. Palms usually survive, but will exhibit interveinal or general chlorosis on the newest leaves. Intervenial chlorosis is basically green veins surrounded by yellow tissue, and this is usually seen on newest leaves first. As the iron deficiency becomes more severe, new leaves will show extensive tip necrosis, and there will be a reduction in leaf size. Iron deficiency in palms is usually induced in palms growing on poorly aerated soils (compacted or over-watered) or in palms planted too deeply. Iron deficiency may occur in palms with a damaged or inadequate root system which leaves the plant unable to take up sufficient nutrients from the soil. This deficiency is much less often caused by a lack of iron in the soil, or by high pH soils.

**Prevention & Treatment:** In alkaline soils, iron-deficient palms can be treated with chelated iron fertilizers. In some cases, iron deficiency symptoms can be temporarily alleviated by regular foliar applications of chelated iron or iron sulfate, but long term corrections will only occur when the poor soil aeration or proper planting depth is corrected. The rate of iron sulfate to use for foliar application is ½ teaspoon per gallon of water. Spray the foliage to runoff.

**Nitrogen (N) Deficiency:** Nitrogen deficiency is not a major problem in landscape palms unless soils are nitrogen-poor. Most palms generally require low levels of N, especially in comparison to turfgrass. Symptoms of nitrogen deficiency are uniform light green color foliage and a decrease in growth.

Nitrogen deficiencies are more common on light or sandy soils. This is the nutrient deficiency that is most common in container-grown palms, whereas potassium, manganese and magnesium deficiencies are more prevalent in landscape situations.
**Prevention & Treatment:** Treatment with any fertilizer containing N will quickly improve leaf color. The fertilizer nitrogen should be in a slow-release form.

**Magnesium (Mg) Deficiency:** Magnesium deficiency is never fatal and is primarily a cosmetic problem in landscape palms. Classic symptoms are marginal chlorosis on the oldest leaves which progress upward to younger foliage. Magnesium deficiency is distinguished by a typically broad lemon-yellow band along the margin of older leaves with a green center and a distinct boundary between the yellow and green portions. If leaflet tips are also necrotic (brown dead tissue), this indicates the presence of potassium deficiency on the same leaves. As with potassium deficiency, leaves with a magnesium deficiency will not recover, and must be replaced by new healthy foliage.

Coated or uncoated "prilled" (pelletized) kieserite can be applied to prevent or correct magnesium deficiency, but may be difficult to find. Epsom salts (magnesium sulfate) is very water soluble, and tends to leach from sandy soils very quickly. However, the use of 2 to 4 pounds of magnesium sulfate per tree along with controlled-release potassium four times per year should prevent further symptoms from occurring. If the soil pH is low, adjust using dolomitic limestone based on soil test results. Avoid the use of magnesium oxide as a treatment if the soil has a neutral or alkaline pH, as it is quite insoluble in soils with a high pH.

**Boron (B) Deficiency:** Boron deficiency in palms can cause leaves to appear small and crumpled. Other symptoms are sharp bends in the trunk with horizontal growth and bud necrosis or death.

**Prevention & Treatment:** Boron can also be toxic in even small amounts, so generally fertilizers for palms should contain only very small amounts of boron. Sodium borates, boric acid, borax or Solubar can be applied at 2 to 4 ounces per tree.

**General Fertilizer Recommendations**

Palm nutritional deficiencies are easily prevented by following a yearly fertilization program. Mature palms in the landscape should be fertilized with a complete granular fertilizer formulated for palms, often called a "palm special."

Three to four applications of a palm fertilizer are recommended to provide a constant supply of nutrients during the growing season. Be sure to only fertilize during the growing season (April through September).

The latest research at the University of Florida recommends a fertilizer analysis of 12-4-12-4 (N-P-K-Mg) applied at the rate of 1.5 pounds per 100 square feet over the area beneath the palm canopy. This fertilizer should be a slow-release form and should contain the trace nutrients listed above. Roots of larger palm trees may extend 30 to 50 feet from the trunk, and the entire area needs to be fertilized. If centipedegrass grows within 30 feet of the palm, the fertilizer rate over the lawn area should not exceed 1 pound per 100 square feet, with a maximum of three applications per season.

Adjustments for rates and distances will have to be made for newly planted palms. Newly planted palms should not be fertilized until after they put
out a new spear. Be sure to fertilize only during the growing season.

An example of a palm fertilizer is Atlantic Fertilizers New Improved Palm Special, which is an 12-4-12-4 sulfur-coated slow-release fertilizer with manganese, boron, copper, zinc and iron. In the absence of an available palm fertilizer, use the same rate of a 12-4-8 slow release fertilizer every two months during the growing season. Apply epsom salts at 2 to 4 pounds per tree during the in-between months of regular fertilization. Apply a product containing the micronutrients needed by palms, such as Ironite Mineral Supplement, during the same months as the epsom salts applications.

Supplemental magnesium and complete micronutrient amendments in the fertilizer are important. Once symptoms of a deficiency are evident, it can take six months or more for a palm to recover.

Table 1. Copper Fungicides for Palm Disease Control.

<table>
<thead>
<tr>
<th>Fungicide Active Ingredient</th>
<th>Brand Names &amp; Products</th>
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<tbody>
<tr>
<td>Copper Salts of Fatty Acids</td>
<td>Natural Guard Copper Soap Liquid Fungicide Concentrate; &amp; RTU ¹</td>
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<tr>
<td></td>
<td>Bonide Liquid Copper Concentrate</td>
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<tr>
<td></td>
<td>Camelot O Fungicide/ Bactericide Concentrate</td>
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<tr>
<td></td>
<td>Concern Copper Soap Fungicide RTU ¹</td>
</tr>
<tr>
<td>Copper Ammonium Complex</td>
<td>Monterey Liqui-Cop Fungicide Concentrate</td>
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<tr>
<td></td>
<td>Southern Ag Liquid Copper Fungicide</td>
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<tr>
<td>Copper Sulfate</td>
<td>Bonide Copper Fungicide Spray or Dust</td>
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</table>

¹ RTU = Ready to Use (pre-mixed spray bottle for small palms).

Note: Control of diseases and insects on large trees may not be feasible, since adequate coverage of the foliage with a pesticide cannot be achieved. As with all pesticides, read and follow all label instructions and precautions.

Sources:


This information is supplied with the understanding that no discrimination is intended and no endorsement by the Clemson University Cooperative Extension Service is implied. All recommendations are for South Carolina conditions and may not apply to other areas. Use pesticides only according to the directions on the label. All recommendations for pesticide use are for South Carolina only and were legal at the time of publication, but the status of registration and use patterns are subject to change by action of state and federal regulatory agencies. Follow all directions, precautions and restrictions that are listed.