LOUISIANA PLANT PATHOLOGY
DISEASE IDENTIFICATION AND MANAGEMENT SERIES
LSU AgCenter
Research · Extension · Teaching

Care for Freeze-Damaged Palms

Ornamental palms are native to tropical and subtropical climates. They are monocots, or grasslike flowering plants, and belong to family Arecaceae. Their trunks, or stems, are solid with vascular bundles scattered throughout the cross-section. Palms have a central growing point called an apical meristem, also known as a bud or heart, from which all new fronds emerge. If for some reason this central growing point gets killed, the palm will die. This can happen even to fully grown, well-established palms.

Twenty-one species of palms are known to exist in Louisiana. Some of the most common palm species planted in the state include the Canary Island date palm (*Phoenix canariensis*), cabbage palm (*Sabal palmetto*), Chinese windmill palm (*Trachycarpus fortunei*), date palm (*P. dactylifera*), queen palm (*Syagrus romanzoffiana*), silver date palm (*P. sylvestris*) and Washington palm (Washingtonia robusta).

Like other tropical or subtropical plants, palms also suffer from frost/freeze injury (Figure 1). Colder temperature injuries begin to show up on exposed palms in two to three weeks. This delayed onset of outward signs of cold damage is typical for palms. Before you start caring for freeze-injured palms, you need to figure out what kind of injury has occurred.

There are three types of injury palms can sustain in low temperatures. One type of injury is chilling injury from temperatures above freezing, which results in browning of leaves commonly known as necrosis, or death, of the palm fronds. Chilling injury results from a sudden drop in the temperatures in the 40-to-45-degree range. This type of injury is not deadly, and affected palms recover fully from the damage.

The second type of injury is frost injury that occurs when the leaf temperature drops to 32 degrees or below. The damage is similar to chilling injury, but affected palms may take longer than a year or more to fully recover (Figures 2, 3 and 4).

The third type, a deadly type of injury, results from a hard freeze. Extended temperatures below freezing not only affect the exposed fronds but may also kill the base

Figure 1. A cabbage palm (left) exhibiting mild freeze injury, compared to a silver date palm (right) severely injured from a hard freeze.

Figure 2. A silver date palm damaged from a hard freeze.

Figure 3. A queen palm damaged from a hard freeze.

Figure 4. Two Canary Island date palms damaged from a hard freeze.

of the spear leaf (newest leaf in the palm canopy) in the apical meristem. This dead tissue is subsequently colonized by decomposing fungi and bacteria, resulting in the death of the meristem.

Severe freezing temperatures may also kill the apical meristem. The spear leaf turns brown and can easily be pulled from within the palm canopy. Once the meristem of the palm is dead, it will not produce another one.

Freezing temperatures also can cause the stems of some species, including queen and silver date palms, to split longitudinally (Figure 5). These splits are later colonized by decomposing organisms, resulting in softening of the stem. As the decomposition progresses, vascular tissue rots (Figure 6), interrupting the water and nutrient supply. In some instances, palms break in the middle at the affected area.

When it comes to caring for freeze-injured palms, be patient. Do not rush into removing the affected (brown) fronds immediately after the damage becomes visible. If a portion of a frond is still green, leave it on the plant as long as possible. It may look unsightly, but it will benefit the palm during the recovering phase. The green portion will aid in photosynthesis necessary for production of sugars to support growth. Palms usually start their growing season long after other shrubs and trees begin their spring growth flushes. Wait for the affected palm to produce new growth and do not remove the affected fronds until the danger of additional hard freezes is over.

Figure 5. Longitudinal splits and decomposed tissue on a queen palm.

Figure 6. Advanced decomposed stem tissue on a queen palm.

Affected palms should not be irrigated or fertilized immediately after the freeze injury. Fertilize palms during the active growing season from as early as late spring to early fall. Water palms adequately to avoid any drought stress, especially during summer months. Wrapping a palm trunk in burlap or a frost protection blanket to prevent cold damage does not protect the apical meristem.

If a cold-damaged palm does not produce new growth and has to be replaced, plan to plant a new one in early summer. Root growth in Louisiana is best in June, July and August, and new palms will also benefit from annual fertilization in early summer. When selecting new palms, think about cold-hardy species, including cabbage and windmill palms.

Author and Photo Credit

Dr. Raj Singh, Associate Professor and Director, Plant Diagnostic Center, Department of Plant Pathology and Crop Physiology

Visit our website: www.LSUAgCenter.com

William B. Richardson, LSU Vice President for Agriculture
Louisiana State University Agricultural Center
Louisiana Agricultural Experiment Station
Louisiana Cooperative Extension Service
LSU College of Agriculture

PUB 3794 online 5/21