

# Control of Bacterial Necrosis of Saguaro

The University of Arizona • College of Agriculture • Tucson, Arizona 85721

Prepared from information supplied by Dr. Stanley M. Alcorn and Dr. Alice Boyle (retired). Department of Plant Pathology, The University of Arizona.

Bacterial necrosis is prevalent throughout the natural Saguaro population. While uncommonly seen in small plants, these are also susceptible.

**Cause.** The disease is caused by a bacterium (*Erwinia carnegieana*). The same bacillus also causes a rotting of cholla, prickly-pear, barrel and organ-pipe cacti and, under proper conditions, a rot of such diverse fruits and vegetables as Persian melons, tomatoes and Italian squash.

**Symptoms.** The symptoms may appear on the trunk or branches of the Saguaro at any time. The first external symptom of bacterial necrosis is usually a circular darkening and softening of the plant tissues. In time the infected area may enlarge, become purplish-black and split open. If such an opening occurs, a dark odorous material will frequently "leak" out from the plant. At other times the soft areas dry and crack, revealing the dark dry remains of diseased tissues.

**Disease Cycle.** The bacterium is not only present in the diseased plant tissue of living cacti but also in the dark exudate associated with the infected areas. It may also be found in decaying Saguaro, which were previously diseased, and their adjacent soil. Infection begins when the bacterium from these areas are introduced into the cactus through wounds or natural openings. Many insects and small animals which are associated with diseased or decaying Saguaro may serve as carriers of this soft rotting bacterium. Research indicates that the bacterium is primarily carried by a night-flying moth (*Cactobrosis fernaldialis*). The larvae of this moth are commonly found feeding in the base of

Saguaro flower buds. Later, these larvae tunnel into the plant providing an open wound. It is along these tunnels that infection may take place.

**Control.** Removal of the diseased tissue is the most practical way of controlling the spread of the infection within the plant. The sooner this is done after the first symptoms are noted, the better the chance of stopping the rotting. Unfortunately, the only way to tell how far the disease has spread within the plant, beneath the external symptoms is to "dig in." If the affected area is small, one should remove all of the original rot pocket. The walls of the cleaned rot pocket should be smooth. Be careful not to make "puncture" type cuts into the remaining healthy tissues. Wash the cleansed pocket with 10% household bleach (1 part Clorox or Purex to 9 parts of water). Allow the pocket to stand "open." Be certain to wash the utensils used in cleaning out the rot. The removed decayed material should be soaked in the bleach solution for several hours or incinerated. For additional protection, paint or spray the cut surface with a bordeaux mixture several days after removing the diseased tissue.

If the lesion is so large as to nearly girdle or weaken an arm, serious consideration should be given to removal of the entire arm.

If the diseased tissues are not treated, there is no way of predicting just how long it will be before the plant is completely infected. Field studies involving 462 plants revealed that 50% died within seven years and 75% within 12 years of the first observation of symptoms.

Trade names used in this publication are for identification only and do not imply endorsement of products named or criticism of similar products not mentioned.

3/81/R1m