

2. BIOLOGICAL CONTROL OF INVASIVE CACTUS SPECIES (FAMILY CACTACEAE)

2.7 Queen of the night cactus (*Cereus jamacaru*)

ORIGIN OF THE WEED

Queen of the night cactus (fig.1) is a native of South America.

BIOCONTROL AGENTS

Read more about biological control in general in leaflet 1.3, and about biocontrol in cactus species in leaflet 2.1 in this series.

Both insects that are responsible for the biological control of queen of the night cactus in South Africa - a mealybug and a stem-boring beetle - were originally used in Queensland, Australia, to control harrisia cactus (*Harrisia martinii*). They were introduced into South Africa for the control of harrisia cactus, but it was hoped then that they would be able to attack queen of the night cactus as well. Both insect species have accepted queen of the night cactus, but their effect on this cactus has not been studied in much detail.

a. *Harrisia cactus* mealybug, *Hypogeococcus pungens*

Background information on agent

Consult leaflet 2.5 in this series for essential information on the life cycle of this insect, its potential as biological control agent and its implementation.

Mealybug damage to queen of the night cactus

Typically the tip and sideshoots of infested plants are twisted, distorted and covered with a white, woolly mass of insects (fig. 2). Flower buds are also attacked, and the few fruit that are produced, are distorted.

The long-term effect of the mealybug on queen of the night has not been studied intensively because the mealybug has only recently started developing on the plant. Because this cactus is a large plant it takes much longer to die than harrisia cactus, but plants that are severely attacked by mealybug stop growing altogether. Because the flowerbuds are attacked, fruit production is limited. This will restrict the invasiveness of the plant, because queen of the night reproduces mainly from seeds.

The mealybug on its own is able to kill off large queen of the night plants. It seems as if the mealybug develops better on the "monstrosus" variety of queen of the night, and kills the plant faster than the normal, smooth-stemmed form. Where the harrisia cactus stem borer is also present, even the largest plants have been killed after about four years of combined attacks. Unlike harrisia cactus, queen of the night has no tuberous root system from which to regrow.

b. *Harrisia cactus* stem borer, *Aloidion cereicola*

Background information on agent

Consult leaflet 2.6 in this series for essential information on the life cycle of this insect, its potential as biological control agent and its implementation.

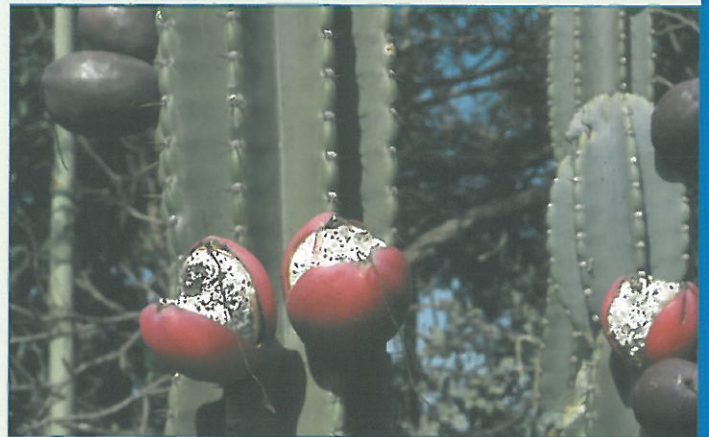


Figure 1. Queen of the night cactus, with its tasty fruits. The seeds are dispersed by birds.



Figure 2. A colony of mealybugs on the tip of a queen of the night stem.



Figure 3. Adult and larva of the harrisia cactus stem borer.

2.7 Queen of the night cactus (*Cereus jamacaru*)

Stem borer damage to queen of the night cactus

This is the most damaging biological control agent for queen of the night cactus (fig. 3). Larval feeding causes significant damage. The older larvae destroy the vascular (transport) tissue (fig. 4), and in this way kill the affected stems. Large cactus plants collapse, fall over and die, and if parts of the plant are still alive, the larvae will continue feeding in the fallen stems. In combination with the mealybug, the stem borer is extremely effective and has been known to kill even the largest queen of the night plants in at least one area in South Africa (fig. 5). Unfortunately, the stem borer breeds very slowly and is not yet freely available for redistribution.

CONTROL STRATEGY

North of Magaliesberg, plants larger than 1 m	Chemical control - MSMA
North of Magaliesberg, seedlings and plants smaller than 1 m	Biological control only - mealybug (and stem borer if available, in large, dense infestations)
South of Magaliesberg, plants of any size	Biological control only - mealybug (and stem borer if available, in large, dense infestations)
Isolated, small plants	Uproot and place onto a hard surface (rock, concrete) or suspend in a tree to prevent rooting

In most parts of the country, biological control by means of the mealybug is extremely effective, and there is no need for chemical control. However, in the warmer regions north of the Magaliesberg and Bronberg, the cactus reaches fruiting age earlier. Reliance should therefore not be placed on biological control of large plants in this area, as this might allow plants to spread by means of their bird-dispersed seeds before they succumb to the mealybug.

CONTACT PERSONS

Consult leaflet 1.4 in this series for the most updated contact details.

- Biocontrol research: Weeds Research Division, ARC-PPRI (Rietondale), Private Bag X134, Pretoria 0001; Tel (012) 329 3269; Fax (012) 329 3278, e-mail weeds@plant2.agric.za.
- Supply of biocontrol agents: National Department of Agriculture: Directorate of Agricultural Land and Resource Management (D:LRM): your nearest Provincial Office.

FURTHER READING

KLEIN, H. 1999. Biological control of three cactaceous weeds, *Pereskia aculeata* Miller, *Harrisia martinii* (Labouret) Britton and *Cereus jamacaru* De Candolle in South Africa. *African Entomology Memoir No. 1. Biological control of weeds in South Africa (1990-1998)*: 3-14.

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Figure 4. Larval feeding has destroyed the reinforcement tissue of this stem and caused it to snap off. Note the pupal cocoon in the tunnel.



Figure 5. Queen of the night plants killed by the combined action of the mealybug and the stem borer.