DRAGON-TREES (*Dracaena draco* L.) WITH ABERRANT GROWTH FORMS (MONOCOTYLEDONES: LILIIFLORAE: AGAVACEAE)

FRIEDRICH E. BEYHL


This paper reports on some individuals of Dragon-trees (*Dracaena draco* L.), which do not show the normal, umbellular and regularly branched canopy but exhibit aberrant growth forms. The possible reasons for the formation of these abnormal shapes are discussed.

Friedrich E. Beyhl, Nonnbornstr. 23, DE - 65 779, Kelkheim, Germany.

REGULAR GROWTH FORM

Dragon-trees have a unique, very regular growth form which varies only in some minor features (BEYHL 1995a) and which is the result of strong morphogenetic control. This control system seems to be dependent both on internal and external factors (RAUH 1939) and is so strict that the ramifications of the canopy of a Dragon Tree (fig. 1) are of self-similar character, in the sense of MANDELBROT (1991). Normally, only malnutrition and traumatic events (insect or rust infections, fire, storms) interfere with this regular growth pattern and result in aberrations as seen in the old Dragon-trees of Tacoronte (Tenerife) (Fig. 2) and Garajau (Madeira) and the historical Dragon-tree of La Orotava (Tenerife).

Overnutrition may occur in specimens that are planted in gardens or parks, causing excessive growth of branches so that they are in danger of breaking under their own weight. The trunks of very old trees will become hollow, and this may increase the danger of rotting. Damage may also be caused by cutting of the trunk or branches, by over-exploitation for sap ("Dragon's blood") or by interference with the trees' water and nutrient supplies.

This same situation holds true for the Socotran Dragon-tree, *D. cinnabari* Balf. fil. (BEYHL 1995b, 1998), except that there are virtually no trees of this species planted in gardens or parks (only one young tree is known from a house garden in the small town of Hadībū on Socotra). An extraordinary way of doing damage to Dragon-trees is reported from this island where they served as military targets for the training of soldiers in firing exercises.

ABERRANT GROWTH FORMS

Several examples of Dragon-trees have been observed which do not develop the normal, regular, umbrella-like canopy. A tree in a house garden in La Orotava, Tenerife and another in a house garden of Santa Cruz, Tenerife (Fig. 3) each has an abnormally tall trunk and lack an elaborate canopy. Instead there are only a few branches, which are themselves branched and bear large rosettes of leaves at the tip of the twigs. Both trees are growing in the shade of buildings.
Although their age is unknown, they are presumably young trees, which have grown very tall in a short time in order to reach the light. It is likely that they are simply not yet old enough to build up a "normal", dense canopy.

By contrast, some Dragon-trees with normal,
umbrella-like canopies, ramify very early and develop only a very short trunk. This is the case with one in the garden of the ayuntamiento of Gildar, Gran Canaria and with one in the botanical garden of Floriana at La Valetta, Malta.

Several Dragon-trees growing in the park of Arucas on Gran Canaria also bear more than one storey of branches (fig. 4). They are similar to the two examples mentioned above from Tenerife in their branching pattern and scant canopies. The reason for the aberrant growth of these trees cannot be easily identified. However, in all the cases reported here it seems clear that the strict morphogenetic control governing canopy formation in Dragon-trees and other plants of dracoid growth (SCHENCK 1907) has broken down.

Overall, these trees are reminiscent of specimens of the Nubian Dragon-tree, *Dracaena dactyloides* Kotschy & Peyer, and of the South Arabian Dragon-tree *D. serrulata* Baker, (BEYHL 1999) which also often do not produce a closed canopy but have only branches which may be branched themselves and which bear the leaves in extensive terminal rosettes. The African species *D. steudneri* and *D. ellenbergiana* as well as the Madagascan/Mascarene *D. marginata* and the Comoran *D. xiphophylla* are also of this type, with irregular branching, terminal leaf rosettes and lack of a canopy.

REFERENCES


Accepted 17 December 1999