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GENETIC DIVERSITY OF DATE PALM (*Phoenix dactylifera* L.) ACCESSIONS FROM OMAN DETERMINED BY AFLP MARKERS

Iqrar A.Khan [1], Pachanoor, S. Devanand [2], Jinggui Fang[2] and Thompson Chao[2]
[1]Sultan Qaboos Univ. College of Agri.,Muscat, Oman
[2]Department of Botany and Plant Sciences, University of California, Riverside

ABSTRACT

Date, lime, banana, mango are the principal fruit tree crops in Oman. In the years 1990 – 1997 the annual production rose from 8,800t to 12,000t. In the subsequent years mango production has dramatically declined. The cause of the decrease is attributed to the introduction of *Ceratocystis fimbriata*, a serious fungal pathogen responsible for the sudden decline of infected trees. Prior to the report of *C. fimbriata* in Oman, the pathogen had only been recorded from mango in Brazil where it causes *seca* disease. The disease arrived in Oman, probably in 1997 or early 1998 close to the town of Barka on the northern coast. During the next 5 years it spread throughout the northern region, reaching the border with UAE in 2001. In the process, and up to 2002, the rapidly expanding epidemic caused the death or removal by eradication of over well over 25% of all mango trees.

The aetiology of the disease is complex. Initial symptoms are seen as wilting and leaf death, especially on a single branch. Subsequently the whole tree shows symptoms and death occurs usually within 6 months. A bark beetle is involved in the transfer of pathogen spores between trees, and *C. fimbriata* has been consistently isolated from insects collected in the field. Many secondary pathogens, especially *Diplodia theobromae*, also compound the damage and initially confused the diagnosis. In artificial infection tests *C. fimbriata* consistently caused maximum disease levels compared to other putative causal organisms.

The disease is especially severe on local trees and local material used as rootstocks for exotic scions. Local varieties are primarily from locally collected seeds from mature trees showing good cultural characteristics. Close to the epicenter, in the early stages of the epidemic the incidence on local material was 39%; of the other varieties grown the incidence was highest on cvs Zafran, Pairi, Alphonso, Neelum, Langra and Bermasei. Low incidences were recorded on Dushahre, Ruse, Tanerow, Totapure, Imam Basined, Banilsiyan, Amble, Mascutee and Sarpate, although in some of these varieties, the number of trees planted was low.

In collaboration with the Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, DNA analysis was used to confirm the identity of the pathogen.

In the course of the molecular analysis of *C. fimbriata* isolates a previously undescribed pathogen was identified and named *C. omanensis*. This is a weak pathogenic species not thought to play a major role in disease development.

Although symptoms remission can be achieved by the injection of fungicides into tree trunks, the process is laborious and expensive – beyond the means of most small scale producers. The main component of a mango regeneration programme remains the introduction of varieties resistant to the disease – polyembryonic types available in South Africa, Brazil and elsewhere.

Results will also be described from the most recent research that is concerned with the potential of *C. fimbriata* to transfer to other hosts among the native Omani flora. Results of investigations into the possible route of the pathogen from Brazil to Oman will also be discussed.