INTEGRATED CONTROL OF MANGO STEM END ROT DISEASE

BY

KHALED MOHAMED ABDEL-GHANY

B.Sc. Agric. Sci. (Plant Pathology), Fac. Agric., Cairo Univ., 1995
M.Sc. Agric. Sci. (Plant Pathology), Fac. Agric., Cairo Univ., 2001

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APPROVAL SHEET

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ABSTRACT

Incidence and severity of natural infection by mango stem end rot were greatly differed in all the inspected Governorates and Qualyobia recorded the highest figures. *Alternaria alternata, Aspergillus niger, Fusarium* spp., *Fusicoccum mangiferum, Lasiodiplodia theobromae* and *Pestalotiopsis mangiferae,* were the most prevalent fungi and varied in their pathogenic capabilities. *L. theobromae* was the highest pathogenic one followed by *F. mangiferum* then *P. mangiferae*. Orange fruits were highly susceptible to infection by the tested pathogens followed by grapevine then guava fruits. Alphonse cv., followed by Fagri Kalan cv. were the most susceptible ones. Meanwhile, Taymour and Zebda cvs. were the moderate resistant cultivars and Sukkary cv. was the most resistance one. Histopathological studies of several transverse sections from artificially infected mango peduncle revealed that three test pathogens were mainly confined to the vascular tissues through which it proceeded into the fruit. Fruits of Alphonse cv. at the mature stage were less susceptible to the infection, while the ripe stage, followed by immature stage were the most susceptible ones. Removing mango fruit pedicle after 24 hrs. of inoculation resulted in low disease severity. The disease was completely prevented when inoculated mango fruits were stored at 13 ^{o}C for up to 5 days. Moreover, stem end rot was reduced when the fruits were immersed in hot water at 52 or 54 ^{o}C for 5 or 10 min., respectively. Antagonistic action of the tested bioagents against the most pathogenic fungi was proved *in vitro* experiments. The severity of the disease was also reduced when *Bacillus circulans, B. macerans* and *Trichoderma koningii* were applied 24 h before inoculation with the tested pathogens. All the tested fungicides significantly decreased the fungal growth *in vitro* and disease percentage *in vivo*. Bendazin 50 % WP was the most effective fungicide, while Saprol 19 % E.C was the lowest effective one. Integrated disease control of the disease was obtained by pre-storage treatments. All treatments reduced disease severity of stem end rot disease. Bendazin (0.05 %) at 52°C for 4 min plus *B. circulans* and Bendazin (0.1 %) at 52°C for 4 min. treatments, were the most effective treatments and restricting lesion diameter after storage at ambient temperature and cold storage.

Key words: Biological control, chemical control, cultivar reaction, host range, integrated control, mango, physical treatments and stem end rot disease.

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29. Effect of the different treatments with Bendazin 50%, hot water and *B. circulans* treatments on the severity of stem end rot of mango fruits (cv. Alphonse) stored at room temperature (a) and/or 13°C (b).

Whereas: (1)Bendazin 50% (0.1%) at 52°C for 4 min,
(2)Bendazin 50% (0.05%) at 52°C for 4 min+ *B. circulans,*
(3)Bendazin 50% (0.1%) at 37°C for 4 min,
(4)Hot water 52°C for 5 min plus *B. circulans* and
(5) Check……...

INTRODUCTION

Mango (*Mangifera indica*), belongs to the family Anacardiacea, is considered as the world's fifth most important fruit crop (Ploetz, 2003) as well as one of the most popular fruits in the tropical and sub tropical areas and increasingly in the developed countries. Also, because of its delicious taste and high coloric value, it is ranked as one of the good fruits in the international market. Moreover, mango has become an essential fruit crop in Egypt as well as in many parts of Africa, because of diverse production conditions and the vast area grown. Mango is highly adaptable, and is grown between ~ 35^{o} N and S latitudes in a wide range of soils and environmental conditions.

Mango trees were introduced to Egypt during the period of King Mohammed Ali in 1825. It is considered as one of the most significant fruit crops in Egypt and described recently as a major item in 'the national food basket' (El-Khoreiby, 1997). According to Anonymous (2008), the cultivated area with mango is annually increased in Egypt, which reached about 184,204 feddan in 2007 growing season. Only about 115,529 feddan are considered as a fruiting area which yielded about 532,422 ton with an average of 4.61 ton/feddan.

Under local field conditions, all growth stages of mango trees are vulnerable to attack by many causal diseases. Moreover, each part is susceptible to the infection by various pathogens.

Under the Egyptian environmental conditions, mango stem end rot is considered as one of the important fungal diseases that attack the