In the horizontal type four roller crusher, the average juice extraction efficiency and the crushing capacity was 63.1 per cent and 183.2 kg/h respectively. Juice extraction efficiency was 11 and 8 per cent more respectively than the three roller vertical type and horizontal type crushers. The average capacity of this improved four roller crusher was 33 kg/h lower when compared with the horizontal three roller crusher. But it was slightly higher over the vertical three roller crusher.

The cost of crushing 1000 kg of sugarcane was calculated as Rs. 22.70 in the case of three roller crusher, whereas it was Rs. 28.50 in four roller crusher. But net return was found to be Rs. 326 for four roller crusher and Rs. 289 for three roller crusher. Thus, by using the four roller crusher an additional income of Rs. 37 could be obtained per 1000 kg of cane crushed. This is 13 per cent higher over the three roller crusher.

REFERENCES


(Received : Nov. 1996 Revised : Jul. 1999)

Changes in the Mineral Metabolism of Ganoderma Wilt Affected Coconut Palms

M. SURIACHANDRASELVAN, H. VIJAYARAGHAVAN, R. BHASKARAN and N. RAMADOSS

Coconut Research Station,
Tamil Nadu Agricultural University,
Veppakkalam - 614 906
Tamil Nadu.

ABSTRACT

The changes in the micronutrients content of Ganoderma wilt affected and apparently healthy coconut palms were studied. There was a progressive increase in the content of Fe in leaf, root and bark with increase in disease severity. The content of Zn was reduced due to wilt infection in all the tissues studied. Even though, there was not much variation in the Mn content of leaf, root and bark from bleeding area, it increased in leaf and root tissues of wilt affected palms.

KEY WORDS: Coconut, Ganoderma wilt, Mineral metabolism

Coconut (Cocos nucifera L.) palm is affected by many diseases of which Ganoderma wilt is a lethal one. The characteristic symptoms of the disease include discoloration, decay and death of roots, oozing of reddish brown fluid from the base of the trunk, drooping of leaves and premature death of the palms (Blaskaran et al., 1982). Bhaskaran et al., (1991) isolated Ganoderma lucidum and G. applanatum from the roots of affected palms and proved the pathogenicity. Attempts were made to study the changes in micronutrients content of Ganoderma wilt affected coconut palms and the results are reported in this paper.

MATERIALS AND METHODS

Three palms in each category showing mild, moderate and severe infection were selected based on the disease index computed by the method reported by Vijayan and Natrajan (1975).

Four leaflets on either side of the 14th frond and matured roots near the base of the trunk were collected. The bark and cortex from bleeding area and above the bleeding area (healthy portion) from wilt affected palms, and bark and cortex from apparently healthy palms were also sampled for this study. The samples collected were washed with 0.1 N HCl and distilled water and oven-dried at 70°C for four days.
The dried samples were digested in tri-acid mixture of nitric acid, sulphuric acid and perchloric acid (9 : 2 : 1). The contents of Zinc, copper, iron and manganese in the extract were determined by Variant electron U.V. atomic absorption spectrophotometer.

RESULTS AND DISCUSSION

The data presented in the table 1. revealed a concomitant increase of Fe content with increase in the intensity of disease in tissues of leaf, root and bark from bleeding area of wilt affected palms, while it decreased in cortex of bleeding area. Changes in mineral content of plants in response to infection by pathogens have been reported earlier. Accumulation of Fe in bark tissues of Ganoderma wilt affected palms has been reported as the cause of tissue browning (CPCRI, 1985). The content of Zn was comparatively low in tissues of leaf, root, bark and cortex of bleeding areas of wilt affected palms when compared to apparently healthy palms. The reduction was more pronounced in the cortex region.

Eventhough, there was not much variation in the Mn content in leaf, root and bark from bleeding area, a significant reduction could be observed in tissues of cortex of bleeding area of wilt affected palms. Cahill et al., (1988) reported that the roots of Eucalyptus inoculated with Phytophthora cinnamomii showed a reduction in the content of most of the minerals compared to uninfected roots. In the present study, a marked reduction in the Cu content was observed in the cortex of bleeding area while it increased in leaf and root tissues of wilt affected palms. Khan et al., (1985) found that except Zn, the other minerals (Fe, Mn and Cu) were high in the crown of root (wilt) affected coconut palms.

The accumulation of certain minerals might have been due to metabolic sink, created by the pathogen (Yarwood and Jacobson, 1955). Sadasivam and Kalyanasundaram (1956) suggested that there might be derangement in absorption by roots due to infection. The altered mineral metabolism could have resulted in physiological derangements in the diseased palms. (Roberts and Jenson, 1970 and Khan et al., 1985). Govindu et al., (1976) reported that G. lucidum on coconut affected xylem vessels and xylem parenchyma and also noticed tyloses in the xylem vessels which might have resulted in impairment of absorption and translocation of nutrients including micronutrients. Severe decay of root system in Ganoderma wilt affected palms was
observed earlier impairing the transport of water and minerals (CPCRI, 1985). Hence, the altered mineral metabolism observed in the present study might be due to impairment of absorption and transport of minerals due to root rotting and vascular plugging.

REFERENCES


Central Plantation Crops Research Institute, India. (1985). Research Highlights. p3


(Received: July 1997 Revised: May 1998)

QUALITY CHARACTERS OF GROUNDNUT KERNEL AS INFLUENCED BY MepyquAT CHLORIDE (MC)

P. JEVAKUMAR and M. THANGARAJ

Department of Crop Physiology
Tamil Nadu Agricultural University
Coimbatore - 641 003.

ABSTRACT

Investigations were carried out to study the effect of Mepyquat Chloride (1, 1-dimethyl piperidinium chloride) on certain quality characters of groundnut kernel. Foliar application of MC on 35 days after sowing increased the oil content by 4.6 per cent. Carbohydrate content decreased, and protein content showed no significant change in response to MC.

KEY WORDS: Mepyquat chloride, Kernel, Groundnut quality.

Compounds such as nicotinimines, quaternary ammonium, carbamates, hydrazines, phosphoniums, substituted cholines, substituted maleimide and succinamic acids, steroid synthesis inhibitors, limonene derivatives, pyrimidine and pyridones have been found as growth retardants with promising properties (Mary Ritzel Corcoran, 1974). Growth retardation is primarily induced by inhibition of gibberellin biosynthesis between ent-kaur-5-en-16-ol and ent-kaur-16-en-19-oic acid. In addition to this, evidence is available that the growth retardants interfere with the oxidative metabolism of abscisic acid and phytosterols as well as with the formation of cytokinins and ethylene (Rademacher, 1989). Apart from shortening of internodes and restriction of undesirable vertical and horizontal growth, growth retardants help plants to withstand drought, disease and cold injury. Growth retardants influence the increases in chlorophyll content, shelling percentage, total dry