

FLOWER BUD ANATOMY OF 'KOKKAN' AFFECTED BANANA

Banana cultivation in Kerala is being threatened by a disease popularly known as kokkan. Many farmers engaged in banana cultivation especially Nendran is suffering from heavy economic loss due to this malady. The disease was first reported by Samraj *et al.* in 1966. They observed that the symptoms appeared first on the outside of leaf sheaths as longitudinal irregular reddish streaks of varying sizes. The leaf sheaths of the affected plants got detached from the pseudostem. In the later stages the streaks appeared on the peduncle and bract. The kokkan affected plants will produce very small unmarketable bunches bearing small malformed fingers which have a characteristic ashy grey colour. Experiments are being conducted at the Banana Research Station, Kannara to find out the etiology, symptomatology and control measures of kokkan disease from 1984 onwards.

Since the kokkan plants produce very poor bunches having malformed fingers, attempts were made to study the anatomical changes occurring in the flower primordia at the Banana Research Station, Kannara, during 1987-88. Thirty kokkan affected suckers and thirty healthy suckers were planted and flower primordia were collected at 15 days intervals from the 5th month of planting onwards and samples were preserved in formalin aceto- alcohol. Later hand sections were taken, slides prepared and microphotographs taken.

The studies did not reveal much of an anatomical difference between the kokkan affected and healthy samples. The only anatomical difference observed was in the ovary. The size of the tissues was found to be considerably reduced in the disease affected plants when compared to the healthy one (Fig. 1).

The studies revealed the presence of an increased number of mechanical tissues i.e., the xylem and fibres in disease affected plants. When the plant is under stress more number of fibres will be present due to lack of turgidity.

Another important observation is the presence of starch granules in the kokkan affected flower primordia (Fig. 2). When the inflorescence axis was examined a good number of starch granules were found in it when compared to the healthy primordia. From this it can be inferred that since the sink becomes limited, the excess photosynthates produced are translocated to some other vegetative parts like pseudostem, which explains the presence of more number of starch granules in the kokkan affected flower primordia.

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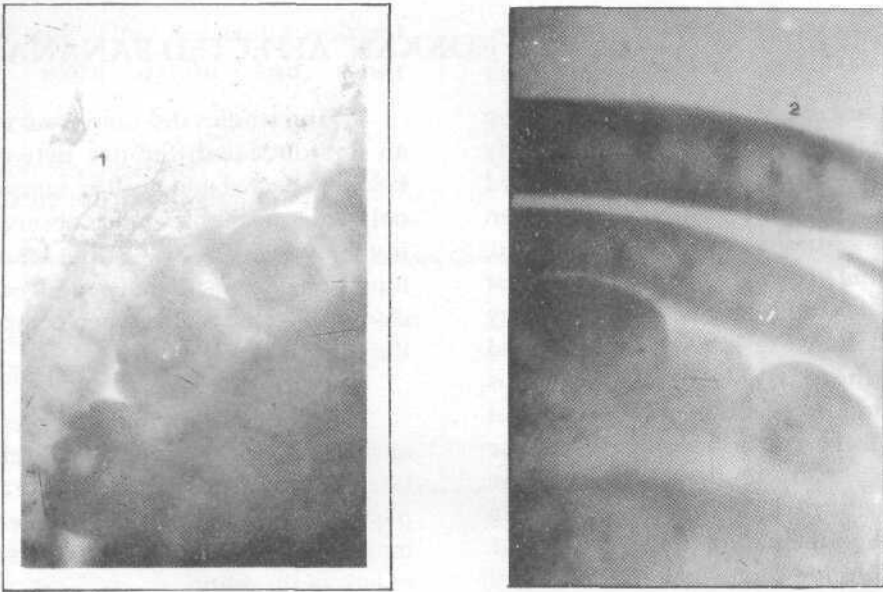


Fig. 1. Anatomical differences in the ovary (x 50) 1. Healthy 2. Kokkan

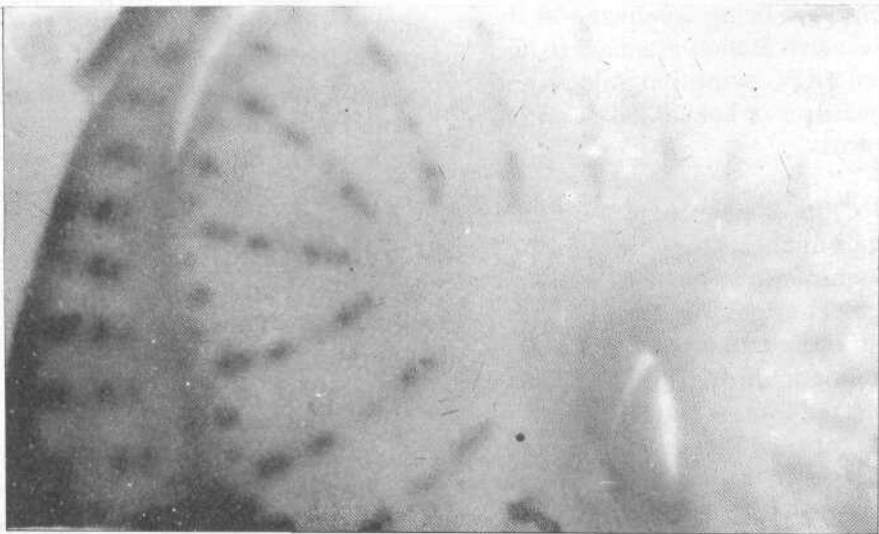


Fig. 2. Starch granules in kokkan flower primordia (x 50)

REFERENCE

- Samraj, J., Menon, M.R., Chrisludas, S.P. and Salhyarajan, P.K. 1966. Kokkan - a new disease of banana (*Musa paradisiaca* Linn.). *Agric. Res. J. Kerala* 4(1): 116