

## FIELD SCREENING OF BANANA GERMPLASM AGAINST KOKKAN DISEASE

The banana cultivation in Kerala is being threatened by many viral and fungal diseases, the most important ones being bunchy top and sigatoka leaf spot. Another important problem faced by the banana farmers of Kerala is a disease of unknown etiology known as kokkan. The disease was first reported by Samraj *et al.* (1966) in banana variety Nendran. Like sigatoka leaf spot of banana, infection by kokkan also causes severe yield decline producing poor, deformed and under-developed bunches.

The symptoms appear first on the leaf sheath as longitudinal, irregular, reddish / pinkish streaks of varying sizes. At a later stage, the pseudostem becomes abnormally red in colour and spongy in texture. The affected plants bear leaves of almost normal size, but the outer leaf sheaths get detached gradually from the pseudostem. The streaks are often found in the peduncle and bracts also. The affected plants produce poorly developed bunches. The fingers will be short and undersized having an ash grey colour and are of poor quality.

The trials conducted at the Banana Research Station, Kannara, Trichur showed that the suckers from the kokkan affected plants carried the disease and were found to produce kokkan bunches (Anon., 1987). Extensive survey conducted on this revealed that the disease is now seen in almost all districts of Kerala and has become a fast spreading menace to the banana crop. Besides Nendran, other varieties have also started showing symptoms of kokkan. Thus a field screening of the banana germplasm available at the Banana Research Station, Kannara was done in order to find out the varieties other than Nendran which showed susceptibility to kokkan disease.

A total of 152 varieties of banana belonging to AA, AAA, AAAA, AB, AAB, ABB, ABBB and BB genomic groups and one ornamental species *viz.*, *Musa ornata* were screened against kokkan during the third, fifth and seventh month after planting in 1987-88, 1988-89, 1990-91 and 1991-92.

Scoring was done following the procedures approved by the Work Group Meeting on Kokkan held during December, 1987 at the Kerala Agricultural University headquarters. The disease incidence was scored based on pinkish streaks / discolouration as the initial symptom and necrotic streaks at the advanced stage of the disease in addition to the other symptoms such as unusual separation of leaf sheath, travellers' palm appearance and bunch characters. The pinkish streaks were graded as follows:

- 0 : No streaks / discolouration
- 1 : Faint discolouration (streaks not distinguishable)
- 2 : Modera discolouration (streaks distinguishable)
- 3 : Deep discolouration (streaks prominent)

Further necrotic streaks appearing from the third month stage were noticed and the grading was done as follows:

- 0 : No necrosis
- 1 : 1 to 5 Necrotic streaks
- 2 : 6 to 10 Necrotic streaks
- 3 : 11 to 15 Necrotic streaks
- 4 : 16 to 25 Necrotic streaks
- 5 : 25 Necrotic streaks

The varieties found susceptible in each of the above mentioned genomic groups are presented in Table 1. In the AA group, which consists of short duration varieties like Pisang Lilin and table varieties like Kadali, none of the varieties was found to be affected. Out of the varieties screened in the AAA group only two *viz.*, Lacatan and Chenkadali were found susceptible to kokkan. In the AAAA group, the only one variety Bodies Altafort was screened which showed no symptoms of kokkan. In the AB group, Njalipooan, Agniswar and Vannan were found to be susceptible. It may be noted that Njalipooan, an important dessert variety of Kerala which is suitable for growing in coconut gardens under partial shade conditions is found to be tolerant to bunchy top disease but showed

Table 1. Banana varieties affected by kokkan disease

Genomic groups							
AA	AAA	AAAA	AAB	ABB	ABBB	BB	Others
-	Lacatan Chenkadali	Njalipoovan Agniswar Vannan	Nendran Palayankodan Thiruvananthapuram Thekkan Thulladan Dakshin Sagar Mysore Ethan Kodappanillakunnan CO-1	Kalibow Chetti Bainsa Lambi Karpooravally Singhial Karimbontha Beula Birbutia Basrai Kanchikela Chakkia Monthan Nallabontha Chandrabale Neyvannan	Hybrid Sawai	Elavazha	<i>Musa ornata</i>  Agniswar x Pisang Lilin  Mannan x Pisang Lilin

susceptibility in this case. The susceptibility was observed not only in the variety Agniswar, but also in the hybrid progenies of Agniswar x Pisang Lilin. In the AAB Group, in which many commercial varieties are included, eight varieties were found susceptible including Nendran and Palayankodan (Mysore Poovan). The variety Thiruvananthapuram was found to be severely affected, where all the five plants available were kokkan plants. Thekkan Thulladan, which has a good bunch weight, Kodappanillakunnan, which is a dessert variety with good TSS and CO-1 which is a hybrid were also found susceptible to kokkan. Sixteen culinary varieties included under ABB group showed susceptibility to kokkan disease. Among this Karpooravally,

Kanchikela, Chetti and Monthan are very popular varieties in Kerala. Among the two varieties screened in both AB BB and BB groups one in each genomic group viz., Hybrid Sawai (AB BB) and Elavazhai (BB) were found to be affected.

The ornamental species *Musa ornata* and two hybrids viz., Agniswar x Pisang Lilin and Mannan x Pisang Lilin were susceptible to kokkan.

Among the 152 varieties screened, 34 varieties showed kokkan symptoms. But the varieties having 'B' genome were found to be more susceptible to kokkan. The pure *auminata* varieties were less susceptible.

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