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Phyllody Disease of Black Pepper (*Piper nigrum* L.) *

Two new diseases of unknown etiology of black pepper are on the increase in Kerala in recent years. Little leaf disease is one such disease and is noticed in Idukki and Wynad districts from 1976. The symptoms are similar to those reported from Sri Lanka (Randombage and Bandara, 1984) and Malaysia (Kueh, 1979). Malformation of black pepper leaves reported from Neriya Mangalam, Kerala appears to be similar to little leaf disease (Paily et al., 1981).

The second disease is a 'Phyllody' disease noticed in two pepper plantations in Puthadi Panchayat area of Wynad district, Kerala for the first time during October 1986. This disease appeared to be entirely different from little leaf disease mentioned earlier. Both antholysis *i. e.*, transformation of normal flower to a completely vegetative branch and phyllody symptoms were noticed in this disease. The plants in early stage of infection appear normal and showed the regular bearing. However, they produced few abnormal spikes which were typical of 'Phyllody' diseases. Varying degrees of malformation of spikes were noticed among the infected vines (Fig. 1). The affected plants exhibited the following symptoms:

(1) The entire spike was malformed. The stalk of the affected spike increased in length considerably. The young affected spikes also exhibited light brownish tinge initially compared to normal ones, and some of the flower buds were aborted. The bracts and the flowers were transformed in varying degrees to small leaf like structures. Occasionally the leaf like structures showed varying degrees of fusion forming bifid or trifoliate structures (Fig. 1).

(2) The floral buds of the affected spikes were transformed into small branches with nodes and internodes similar to fruiting laterals. The size of such laterals varied (Fig. 2).

Each such miniature lateral in turn produced leaves of different sizes. The whole deformed structure looked like a tuft of leaves giving witches broom appearance.

(3) Fruiting laterals (either secondary or tertiary) also showed further degrees of malformation. Each such deformed structure showed a main axis which in turn produced lateral branches (Fig. 3). These lateral branches (1-1.5 cm in length) produced aborted

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Fig. 1. Different kinds of malformation of spikes

flower buds or small leaf like structures (Fig. 4).

(4) Malformation of such miniature secondary or tertiary fruiting laterals was also noticed. It looked like a deformed spike on which closely packed leaf like structures appear resembling a micro brush (Fig. 1). The stalks of such malformed structures showed poorly developed nodes indicating that it is a deformed fruiting lateral.

The malformations observed showed varying intensities in the affected vines. Some of the infected

vines noticed during 1986 appeared more or less normal during 1988 and produced both normal as well as malformed floral structures. The berries in the severely affected vines appeared yellowish, oblong and slender instead of dark green and round. However, the stalks of such spikes did not show any elongation and were normal. Some of the affected vines showed foliar yellowing and small leaves. Such vines showed considerable reduction in length of the fruiting laterals bearing the malformed structures. The affected vines showed conspicuous tufts of malformed

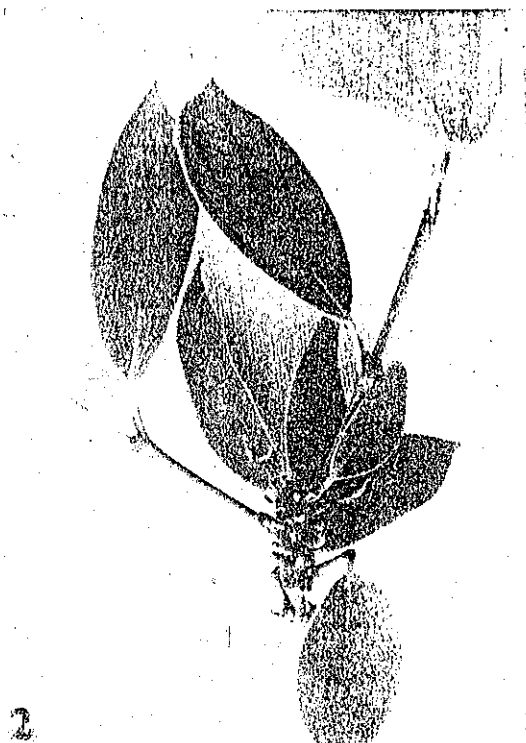


Fig. 2. Shoots emerging from deformed spikes



Fig. 3. Deformed fruiting lateral

branches giving a witches broom appearance with severe yellowing symptoms that were well discernible from a distance. According to the farmers some of the severely affected vines succumbed to the disease.

The affected plants showed the association of many leaf hoppers. Many phyllody diseases have been reported to be associated with MLO's (Nienhaus and Sikora, 1979). Further investigation are in progress to identify the nature and

etiology of the disease.

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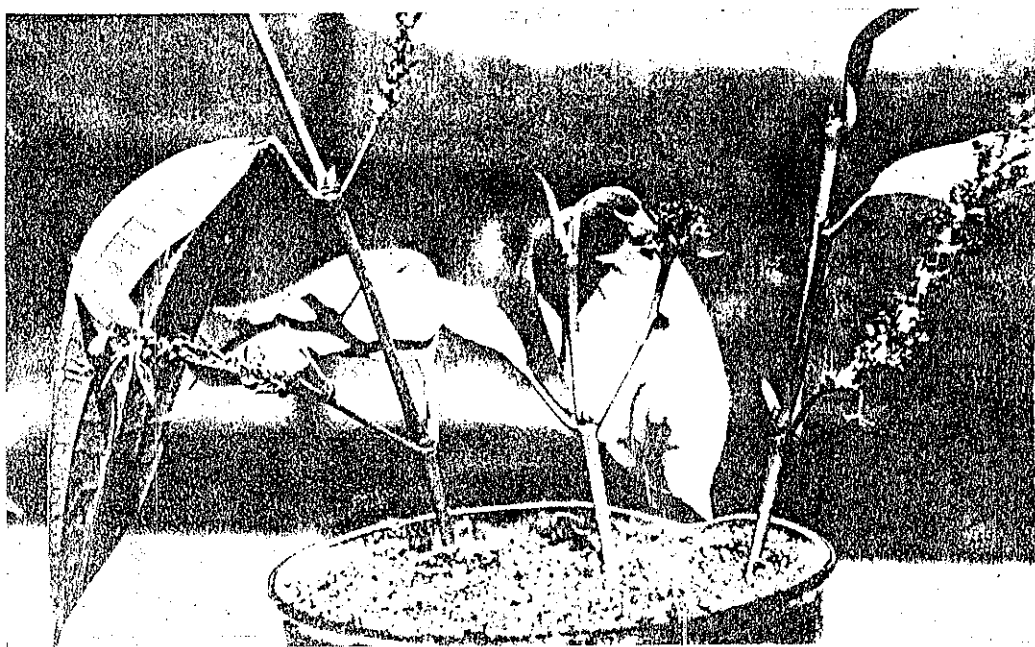


Fig. 4. Malformation of floral buds in the spikes

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