

SCIENTIFIC NOTES

An electron microscopic study on Causal organism of White Leaf Disease of Sugarcane

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White leaf is one of the most serious diseases of sugarcane in Bangladesh. The disease was first reported in this country during 1979 (SRTI Annual Report, 1981) in varieties Co. 1158, Isd-2/54 and in the then I-112/67 (now Isd-16). The disease causes an extensive yield losses to sugarcane crop (Leu *et al.*, 1963; Talukder *et al.*, 1986). At present the disease is found almost in all commercial varieties and promising clones. Many workers (Lin and Lee, 1968, Shikata, *et al.*, 1969) reported that Mycolpasma like organism (MLO) is associated with white leaf disease (WLD) of sugarcane. Since reporting of disease in Bangladesh a little work has been done on its control and economic repercussions. But information about etiologic agent is still very scanty. Hence a study was undertaken to investigate the causal organism of WLD of sugarcane with the help of Electron microscope.

Young leaf samples of WLD infected cane (variety Misrimala) were collected from Sreepur, Gazipur. Mid rib of infected leaves were cut into small pieces (0.3 cm × 0.3 cm) with sharp blade, and 10 to 12 pieces were quickly immersed in 0.1 M buffered 2% glutaraldehyde for two hours and post fixed for one hour in 0.1 M buffered 2% Osmium tetroxide. Then dehydration of specimens were made in Ethanol series.

50%	Ethanol for	5 minutes
70%	" "	5 "
90%	" "	10 "
95%	" "	10 "
99%	" "	10 "
99.5%	" "	15 "
100%	" "	20 "

After dehydration, gold ion sputtering was done on the specimens and examined under electron microscope (JEOL Scanning). To determine the morphologies of causative agent, five electron micrograph of sieve elements from five samples were taken.

Mycoplasma like organisms (MLO) were observed in sieve elements of five samples out of 10 samples (Figures 1 & 2). No MLO were observed in the healthy samples as well as in the xylem vessels. Number of MLO varied in different elements. The MLO observed in the sieve elements of transverse and longitudinal sections were roundish to oval or ellipsoidal in shape and 200-900 nm in size. The observation are in agreement with the observation of Lin and Lee (1968) who found micoplasma like organism with roundish to ellipsoidal in shape and 80-800 nm in sizes and Shikata

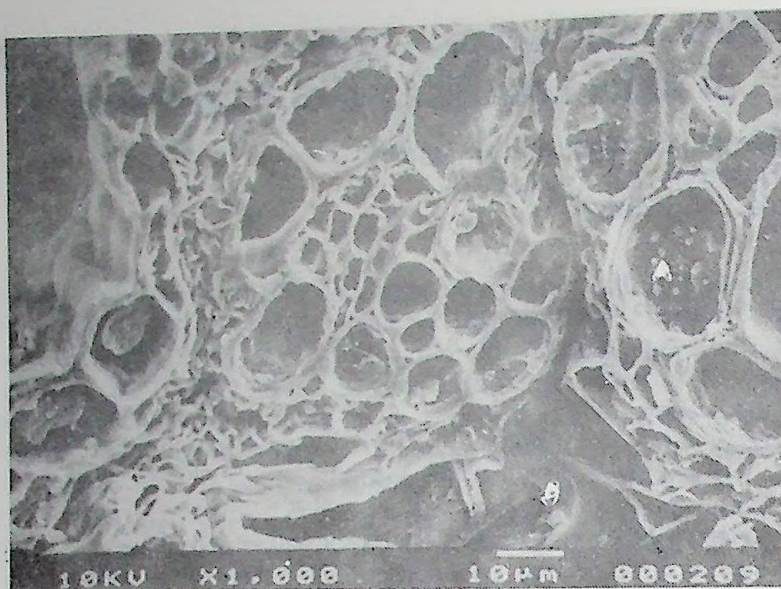


Figure 1. Transverse section of white Leaf disease infected Leaf (mid-rib) showing Mycoplasma like organism (MLO) in the phloem cells.

A = Indicate Mycoplasma like organism (MLO) cells.

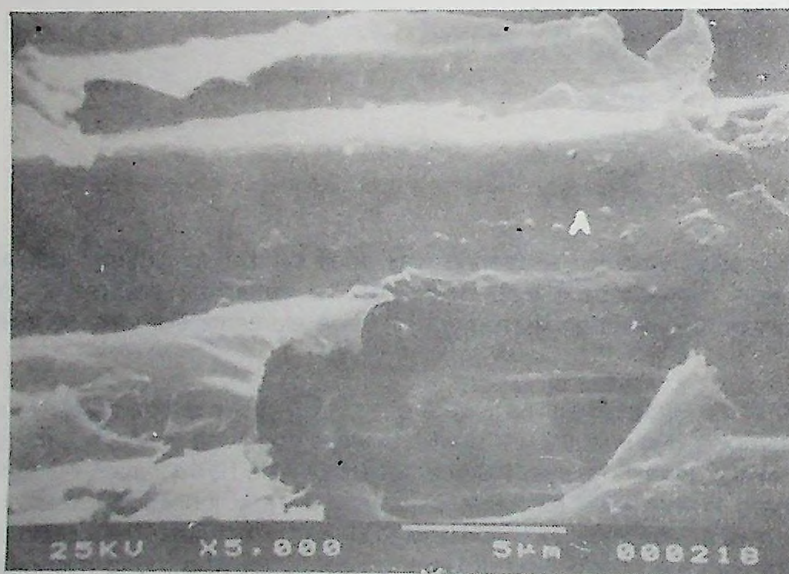


Figure 2. Longitudinal section of white Leaf disease infected leaf (mid-rib) showing Mycoplasma like organism (MLO) in the sieve tubes.

A = Indicate Mycoplasma like organism (MLO) cells.

et. al., (1969) who found spherical, ovoid and irregular shaped MLO with 90-900 nm in size in the sieve tubes of thin section from the diseased leaf of sugarcane.

From this study it is apprehended that mycoplasma like organism causes white leaf disease of sugarcane.

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