



## Research Article

## Notes on phytoplasma diseases from Dakshin Dinajpur district of West Bengal, India

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**Abstract:** Phytoplasmas are pleomorphic prokaryotes located in the sieve elements of the phloem of different infected plant species. In this communication the author first time from West Bengal, India reports phytoplasma diseases of four different plants (*Datura stramonium*, *Ziziphus oenoplia*, *Catharanthus roseus* and *Solanum melongena*) belong to different families based on symptoms and grafting experiments.

**Keywords:** Phytoplasma; phyllody; Dakshin Dinajpur; West Bengal; India

### Introduction

Phytoplasmas, earlier known as mycoplasma like organisms (MLOs), were discovered by a group of Japanese Scientists (Doi *et al.*, 1967). These are very small, wall-less, pleomorphic prokaryotes located in the sieve elements of the phloem of infected plant species. They severely affect herbaceous and woody plants exhibiting symptoms of virescence/phyllody, sterility of flowers, witches' broom, abnormal and generalized stunting (Jung *et al.*, 2012). Phytoplasma diseases are traditionally detected by studying the characteristic symptoms induced in the host plants. Molecular tools are now used to identify and differentiate phytoplasmas. Using the molecular techniques, different phytoplasmas have been characterized from as many as 45 plant species in India. Phytoplasma groups in India showed a wide geographical distribution especially in Northern and Southern parts of India (Mall *et al.*, 2011, Rao *et al.*, 2011). In this communication the author first time from West Bengal reports phytoplasma diseases of four different species belonging to three different families.

In the present investigation on the occurrence of phytoplasma diseases in plants of Dakshin Dinajpur district of West Bengal, India, the author observed phytoplasma diseases in four different plant species, viz. *Catharanthus roseus* (L.) G. Don (Apocynaceae), *Datura stramonium* L. & *Solanum melongena* L. (Solanaceae) and *Ziziphus oenoplia* (L.) Mill. (Rhamnaceae). Dakshin Dinajpur is located in

between 26°35'15" and 26°10'15"N latitude and 89°30" and 87°48'37"E longitude and is situated in the northern part of West Bengal, India. The presence of phytoplasmas was diagnosed by studying the characteristic symptoms expressed on previously mentioned four different infected plant species (Figure 1). Symptoms of the disease appeared in the form of severe reduction in leaf size and shortening of internodes. These ultimately resulted in crowding of leaves on leaf bearing branches and generalized stunted growth in all the four plant species mentioned above. Phyllody was observed both in *D. stramonium* (Fig. 1a) and *Z. oenoplia* (Fig. 1b) and these plants never bloomed. Moreover, *Z. oenoplia* expressed witches' broom appearance by proliferation of axillary buds. Infected *C. roseus* plant produced very small flowers (Fig. 1c) and *S. melongena* plant produced very small fruits (Fig. 1d). Twigs from all the four diseased plants (scion) were wedge-grafted to mature healthy suitable host plants. Grafts were established successfully in 70-75% plants in *D. stramonium*, *Z. oenoplia* and *S. melongena*. Successful graft was not developed in *C. roseus* plant; this may be due to non-woody habit of the plant. Disease symptoms appeared in all three hosts within 45-60 days after grafting. Since no report of phytoplasma infection has been documented from the eastern part of India (Mall *et al.*, 2011, Rao *et al.*, 2011) thus this article for the first time reports phytoplasma infection on the basis of symptoms on host plants as well as grafting experiments.

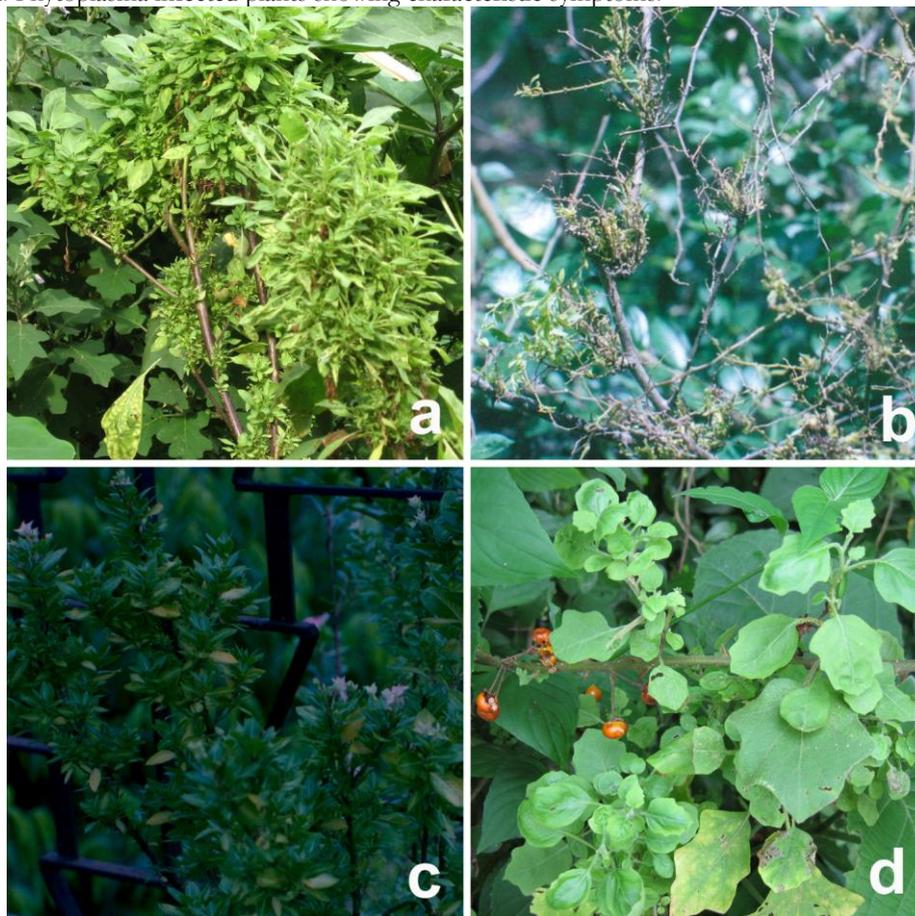
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**Figure 1:** Phytoplasma infected plants showing characteristic symptoms.a) *Datura stramonium*, b) *Ziziphus oenoplia*, c) *Catharanthus roseus* d) *Solanum melongena***Acknowledgement**

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