

NCCS reports first Phytoplasma whole genome sequences

By Sunderarajan Padmanabhan

New Delhi, February 19: Phytoplasmas are extremely small bacteria that differ from most other bacteria by their characteristic lack of a cell wall, and the consequent absence of a specific shape. They are parasites of plants and insects, being transmitted from one plant to another mainly by sap sucking insects. They have been associated with diseases affecting several plant species, including many economically important food crops. Sugarcane Grassy Shoot (SCGS) is one such disease associated with phytoplasma, which adversely influences this cash crop by leading to losses anywhere from 5% to 20%. The term, “grassy shoot” arises from the typical grassy appearance that results from the severe proliferation of tillers caused by the phytoplasma infecting the sugarcane. Bermuda Grass White leaf (BGWL) disease is another such destructive disease of the widely used lawn grass, which is associated with a phytoplasma.

A research group led by Dr. Amit Yadav, project scientist on the NCMR project at the National Centre for Cell Science (NCCS) in Pune, has successfully sequenced the whole genomes of the phytoplasmas associated with these two diseases. They studied these phytoplasmas using cutting-edge molecular and other tools. The sequence data obtained from these studies could prove very useful in the taxonomical characterization of other phytoplasma belonging to the same group. Moreover, the valuable insights gained from knowing the sequence of the entire genetic material or DNA (genome) of these microbes strengthen the understanding of the biology of these phytoplasmas and their role in the plant disease. This is key to addressing issues related to plant diseases associated with phytoplasmas. This is the first report of whole genome sequences of phytoplasmas from India, which were recently published in the international journal, ‘Molecular Plant-Microbe Interactions’.



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Research article: <https://apsjournals.apsnet.org/doi/abs/10.1094/MPMI-01-20-0005-A>

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