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WEEDS DIVERSITY IN EASTERN U.P. (GORAKHPUR) ASSOCIATED WITH PHYTOPLASMA.

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ABSTRACT

Phytoplasma causes diseases on several weed plants and resulted in serious losses on weeds diversity. Therefore, phytoplasma diseases are reduces plants production and lowers its quantum and quality and gaining importance because of unspecific symptoms, serious losses and epidemiological thought in the Eastern U.P. The identification of phytoplasma disease was previously mostly relied on identification of symptoms but sometimes it is too difficult to identify the diseased plants because of absence of peculiar symptoms in infected plants thought the tenure of the crop. For this purpose an authentic characterization methodology is required for quick and authentic diagnosis of phytoplasmas at early stages of infection. Since limited attempts have been made on identification and characterization of the phytoplasma occurring on weed plants in Eastern U.P.

KEYWORDS: Phytoplasma cause, the phytoplasma occurring, diagnosis of phytoplasmas.

INTRODUCTION

There are references to diseases now known to be caused by phytoplasmas as far back as 1603 for Mulberry dwarf disease in Japan .Numerous yellow-type of plants diseases were originally thought to be caused by viruses. The first demonstration that the etiological agents of these diseases could be wall-less prokaryotes rather than viruses (Doi *et al.*, 1967), considering their infective spreading, symptomatology, and transmission by insects.. In 1967 phytoplasmas were discovered in ultrathin sections of plant phloem tissue and named mycoplasma-like organisms (MLOs), because they physically resembled mycoplasmas (Doi *et al.*, 1967). The organisms were renamed phytoplasmas in 1994 at the 10th congress of the International Organization of Mycoplasmology (Hogenhout *et al.*, 2008) .This discovery led

to find of a new group of plant pathogens related to bacteria which were pleomorphic, wall-less prokaryotes occurred in many plant species affected by yellows-type diseases. Phytoplasma are specialized bacteria that are obligate parasites of plant phloem tissue and transmitted through insects (vectors). They were first discovered in 1967, and were named mycoplasma-like organisms or MLOs (Doi *et al.,* 1967).They cannot be cultured ***in- vitro*** in cell-free media. Up to date satisfaction of Koch's postulates has not been achieved, but indirect proof, such as phytoplasma symptoms eliminating after tetracycline treatments, antibiotic sensitivity. Of Phytoplasma' are sensitive to antibiotics of the tetracycline group, but not to penicillin (Ishiie *et al.,* 1967). It confirmed that they are associated with many plant diseases worldwide. Phytoplasmas have been documented in more than 100 weeds plant species, including dicotes and monocots an important parameter for the epidemiology of phytoplasma diseases is the wide host range of phytoplasmas. Overlapping plant hosts and vectors also give ample opportunities for phytoplasmas to interact and exchange genetic information. Some phytoplasmas and spiroplasmas share host plants, genetic exchange might also occur between these mollicutes. Phytoplasmas have been detected in most organs of infected plants, where they colonize in the sieve tubes of the phloem. Infestations of floral tissue by phytoplasmas have been observed but it is believed that seed transmission is generally not possible because the sieve tubes lack a direct connection to the seed.

MATERIALS AND METHODS

Survey for phytoplasma diseases on Weeds

From the different geographical regions of Gorakhpur and its adjoining areas, showing a numerous weeds plants associated with phytoplasma, white leaf disease on *Cynodon dactylon* L., Pers., witches brooms on *Datura stramonium* L., witches brooms on *Parthenium hysterosporus* L'. , little leaf and yellowing leaf disease on *Calatropis prosera* L., witches brooms on *Cannabis sativa* L., witches brooms on *Acalypha indica* L., white leaf disease on *Dichanthium annulatum* L., yellowing leaf disease on *Achyranthes aspera* L., stunting and phyllody, disease on *Ranunculus scleratus* L., and yellowing leaf disease on *Ageratum conyzoides* L., white leaf disease on *Oplismenus burmannii* L., symptoms showing or affected plants or samples will be observed. The different regions like University campus Gorakhpur, fields and road side of Gorakhpur and its adjoining areas, most type of symptoms founds in little leaf, whiting and yellowing, witches brooms, stunting and phyllody, etc. symptoms showing suspected, infected samples will be identified on the basis of morphological changes on the healthy plants.

RESULT AND DISCUSSION

On the basis of changes on morphological character , and abnormal symptoms which showing different types of characteristics symptoms on healthy plants of this region and the literature survey ,these weeds are severally affected by phytoplasma infection seriously in this region. During survey in the different region of Gorakhpur in eastern U.P., many weeds are directly used for medicinal purposes. white leaf disease on *Cynodon dactylon* L., Pers., witches brooms on *Datura stramonium* L., little leaf and yellowing leaf disease on *Calatropis prosera* L., witches brooms on *Cannnabis sativa* L., yellowing leaf disease on Achyranthus aspera L., are associated with medicinal as well as directly associated to our methology. Witches brooms on *Parthenium hysterosporus* L'. , yellowing leaf disease on *Ageratum conzoides* L. and allian and invasive weeds on this region ,which are associated with phytoplasma are beneficial effect on our surrounding but due to infected with phytoplasma which are causes infection of other healthy plants in their surrounding, these are harmful aspects. Witches brooms on *Acalypha indica* L., are used as a medicinal plants. Stunting and phyllody, disease on *Ranunculus scleratus* L. are import ants aquatic weeds which provided, shelter, and substratum of aquatic organisms. White leaf disease on *Oplismenus barmanii* L., are importants contributions for biodiversity managements and escape of soil erosion. So all weeds are important for our life in direct and indirect ways, but its life are dangerous, and loss of its diversity due to phytoplasma infections, all weeds are studied in eastern U.P. form the year between 2006-2013. All weeds are found in this region in maximum dominance, which are severally affected by phytoplasma.

The allows detecting genetic variability not always related do geographical strain distribution but possibly related to ability of phytoplasmas to rapidly evolve and modify genome in short time and therefore to be able to induce severe epidemic within cyclic.

Yellowing leaf disease on Achyranthes aspera L.,

Yellowing leaf disease on *Ageratum conyzoides,* L.,

Witches brooms on *Dichantium annulatum* L.,

White leaf disease on *Cynodon dactylon* L., Pers.,

Witches brooms on *Datura stramonium* L.,

Stunting and phyllody, disease on *Ranunculus scleratus* L.,

Witches brooms on *Cannabis sativa* L.,

White leaf disease on *Oplismenus burmannii* L.,

Little leaf and yellowing leaf disease on *Calatropis prosera* L.,

Witches brooms on *Acalypha indica* L.,

Witches brooms on *Parthenium hysterosporus* L. ,

CONCLUSION

Phytoplasma associated to weeds are still in their infancy, several tasks could be fulfilled in order to acquire a clear knowledge of the situations for control of disease spreading. The identification of complete phytoplasma genome, after its full annotation, will provide more precise basis for taxonomy, but it will be necessary to do it for several other phytoplasmas in order to achieve comparative genomic analysis that could allow a deeper understanding about physiology of these organisms.

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