

Research and Reviews: Journal of Agriculture and Allied Sciences

Overview of Plant Pathology

Rapolu Shyamsunder*

Metahelix Life Sciences Ltd, Hyderabad, Telangana, India

Review

Received: 14/04/2015

Revised: 15/05/2015

Accepted: 02/06/2015

*For Correspondence

Metahelix Life Sciences Ltd,
Hyderabad, Telangana, India, Tel:
+9642402982; **E-mail:**
rapoluss@rediffmail.com

Keywords: Agriculture, Plant
Pathology, Herbicides, Pesticides,
Biofertilizer

ABSTRACT

The supplementary issue for Plant Pathology on 'Wellness Costs and Trade-offs in Plant Disease' unites major science with applications to ailment control. A portion of the expenses and exchange offs portrayed here have a long history in the plant pathology writing while others are newfound courses in which infection and resistance are coordinated with other natural procedures.

INTRODUCTION

Arbuscular mycorrhizal fungi (AMF), a symbiotic microorganism survives in both soil and roots. Eighty% of the plant roots acts because the host for the AMF and they're known as the aspect of soil and realistic hyperlinks between soil and plant [1]. Rhizobium and Pseudomonas each species are compatible recognized microorganism to be used as knowledge microbial inoculants or biofertilizer and biopesticides [2]. Groundnut is the sixth most important oilseed crop on the earth. Groundnut kernels are consumed straight as a uncooked, roasted or boiled or oil extracted from the kernel is used as culinary oil [3]. Patrons are becoming very wellness mindful, and this angle can be supported by using governments which invest excessive stages of resources in promoting the consumption of recent fruits and veggies [4]. Anthracnose brought about by using the fungus Colletotrichum musae, is the foremost postharvest disease of banana that may influence in 30-forty% losses of marketable fruit [5].

The family cucurbitaceae includes approximately 80- genera and over 800 species of vegetation. Trichosanthese cucumerina L., in the neighborhood known as snake gourd or serpent gourd is an primary vegetable crop on this family which is most often of native of India. It is cultivated in subtropical and tropical areas [6]. Mulberry (Morus spp.) leaves varieties the one food fabric for the silkworm, Bombyx mori L. For the progress of silk industry, production of excessive quality silkworm cocoons is have to [7]. Characteristics of race non-distinct resistance in the wheat- Puccinia procedure include a non-hypersensitive and (or) partial resistance response with variable disease severity phases beneath field conditions across places and years [8]. During illness Xoo produces virulence causes

such extracellular polysaccharides (EPS), extracellular enzymes, iron chelating facet rophores and effectors of type III secretion [9].

The potato (*Solanum tuberosum* L.) has normally been grown within the highlands of Bolivia. The variety of native potatoes in this vicinity is excessive [10]. Healthful growth and development of silkworm generally relying on the first-rate of mulberry leaves. The reproduction of sericulture is declining due the reduction of mulberry production field in sericulture practicing nations, which lead to antagonistic effects on silkworm rearing and cocoon production [11]. The olive tree (*Olea europaea*), which is the species most cultivated around the Mediterranean Sea, offers significant capabilities for Morocco. Considering of his exceptional power of adaptation, the olive tree is long-established in many elements of the nation [12].

Root rot of coleus brought on with the aid of *M. Phaseolina* is broadly dispensed in many nations and it's a devastating pathogen right from the establishment of the crop [13]. Genetic resistance will also be essentially the most powerful method to manipulate pear scab. Better figuring out of the relationships between soluble sugar and phenol contents and pear scab resistance will guide in developing resistant cultivars [14].

The global chance to cocoa construction from the major cacao pests and ailments proceed to overshadow different problems of local or sporadic value [15]. Organic manage, utilizing microorganisms to repress plant diseases, offers an environmentally pleasant approach to manage agricultural phytopathogens [16].

Since the early 1990s, induction of systemic resistance by using plant growth selling rhizobacteria (PGPR) has been investigated as a viable useful method to make use of prompted resistance in agriculture [17]. Tomato (*Solanum lycopersicum* L.) is one of the most economically most important vegetation international; nonetheless, it's prone to over 200 pathogens that intent extreme destruction for this plant and consequent fine reduction within the yield [18]. Blight disorder in chickpea is caused via a fungus that exists both in sexual (*Didymella rabiei*) and asexual levels (*Ascochyta rabiei*) [19].

Mentha piperita L. Is an most important fragrant perennial herb grown for the duration of the arena, belonging to the loved ones Lamiaceae. It's largely cultivated in India and about 70% of the global annual requirement is met from vegetation raised within the critical region of the Indo-Gangetic plains [20]. *C. Carbonum* can infect the leaf, leaf sheath, husks, and ears of corn, and the differentiation of pathogenic races is established notably on the lesion characters on host leaves, such as the form and measurement of the lesion spot [21].

Ribbon plant (*Chlorophytum comosum*) is a tufted grass-like clump clump forming, ever green perennial herb belonging to the household Liliaceae [22]. Despite being excessive fed fodder crop, oat is now gaining importance because of its specified and foremost pleasant characteristics, notably lipid and protein [23]. Artificial fungicides are presently used as the major method for the manipulate of plant illnesses [24].

Phytoparasitic weeds are referred to as harmful parasites on many agricultural crops in the Mediterranean neighborhood, eastern Europe and North Africa [25]. The biocontrol exercise of *Trichoderma* is of big importance no longer handiest to agriculture and its vegetation but in addition the atmosphere as it does no longer accumulate in the meals chain and for this reason does no damage to the plants, animals and humans [26]. In horticultural elements, optimization of cultivation stipulations, similar to temperature, humidity and light-weight regimes would mitigate disorder via modulating metabolite phases, and/or cell compositions [27].

Physiological and biochemical hobbies of the host plant are drastically affected on nematode infection [28]. Pesticides ought to persist lengthy enough to manage organic targets, however will have to now not become a air pollution situation [29]. Most vegetable plants beneath covered cultivation approach suffered losses as a result of the favorable conditions for most ailments as excessive humidity and temperature [30]. The injury to crops induced

via fungal plant pathogens has required the usage of variety of antifungal control dealers^[31]. Curly top ailment (CTD) of sugar beet and several vegetation comparable to tomato, pepper, bean, cucurbits, tobacco and potato is a identified disorder affecting these plants for over a century^[32].

The significance of the palm lies correctly that not only does it give food, drink and refuge but it also supplies raw materials for a number of industries^[33]. Nutrients are major for progress and progress of vegetation and likewise microorganisms, and they're most important explanations in disorder manipulate^[34]. Aflatoxin contamination of agricultural commodities results in losses of the production particularly in phrases of bills of regulatory programmes designed to cut down risks to human and farm animals wellbeing^[35].

Actin and tubulin are extremely considerable conserved proteins in eukaryotic cells, which take part in additional protein-protein interactions than any other proteins^[36]. Yield loss is as a result of early leaf senescence and plant demise, shrunken seed and an increase in the amount of diseased seed that has lesions on its coat^[37]. Farmers get scale down yield traditionally as a result of illnesses, pests and suboptimal fertilization. The fundamental explanations in charge for the low productivity of potato and tomato are ailments and insect pests^[38]. As a common food plant in Africa, this little recognized vegetable has a advantage to improve nutrition, boost meals security, foster rural progress and help sustainable land care^[39]. Using medicinal crops could be very most important to our wellness. All drugs of the prior were extracted from medicinal vegetation^[40].

In general, garlic can rightfully be called one among nature marvel. It can inhibit and kill bacteria, fungi, parasites, diminish blood pressure, blood cholesterol and blood sugar, hinder blood clotting, defend the liver and contains antitumor properties^[41]. Potato vegetation, like different plants, are uncovered regularly to a lot of infectious viruses, economically the most important of that are Potato leafroll virus (PLRV, genus Polerovirus), Potato virus Y (PVY, genus Potyvirus), Potato virus X (PVX, genus Potexvirus) and Potato virus S (PVS, genus Carlavirus)^[42]. Primary oils are volatile healthy compounds observed in various plant tissues equivalent to fruits, leaves, vegetation, bark, stem, seeds, wood and roots^[43]. The Tomato yellow leaf curl virus (TYLCV) belongs to the Begomovirus genus within the Geminiviridae loved ones^[44].

A number of factors have contributed to the recent increase within the quantity of species in clade 6. First, developments in molecular biology and sequence evaluation provide workable possible choices to morphospecies concepts used in normal taxonomic systems such as the taxonomy key of Phytophthora species developed through Waterhouse^[45]. A customary characteristic of many exceptional types of plant pathogens is the secretion of a type of extracellular effectors or elicitor molecules into the plant apoplast^[46]. Nonetheless, seed medication alone might be inefficient and would usually require comply with-up purposes of contact or systemic foliar fungicides^[47]. Olive is one of the timber which have a couple of advantages and virtually all of its constituents are used. Its principal merchandise are oil and conserve^[48]. Production of mango is suffering from a colossal quantity of fungal pathogens^[49]. More often than not, infections are initiated at wound websites on trunks and canes induced by freezing temperatures or different cultural practices^[50].

REFERENCES

1. [Chandrasekeran et al. Diversity of Arbuscular Mycorrhizae Fungi from Orchard Ecosystem. J Plant Pathol Microbiol. 2014;5:230.](#)
2. [Arora NK et al. Comparative Study of Different Carriers Inoculated with Nodule Forming and Free Living Plant Growth Promoting Bacteria Suitable for Sustainable Agriculture. J Plant Pathol Microb. 2014;5:229.](#)

3. [Gebreselassie R et al. On Farm Pre Harvest Agronomic Management Practices of Aspergillus Infection on Groundnut in Abergelle, Tigray. J Plant Pathol Microb. 2014;5:228.](#)
4. [Eissa HA et al. Impact of \$\gamma\$ -Irradiation on Aroma Flavour, Bio-Active Constituents and Quality Attributes of Water Melon Juice. J Plant Pathol Microb. 2014;5:227.](#)
5. [Bazie S et al. Antifungal Activity of Some Plant Extracts against \(*Colletotrichum Musae*\) the Cause of Postharvest Banana Anthracnose. J Plant Pathol Microb. 2014;5:226.](#)
6. [Kumar S et al. Characterization and Confirmation of Papaya ringspot virus-W Strain Infecting *Trichosanthes cucumerina* at Tamil Nadu, India. J Plant Pathol Microb. 2014;5:225.](#)
7. [Ul-Haq S et al. Antifungal Properties of Phytoextracts of Certain Medicinal Plants Against Leaf Spot Disease of Mulberry, *Morus* spp. J Plant Pathol Microb. 2014;5:224.](#)
8. [Shah SJA et al. Characterization of Slow Rusting Resistance against *Puccinia striiformis* f. sp. *tritici* in Candidate and Released Bread Wheat Cultivars of Pakistan. J Plant Pathol Microb. 2014;5:223.](#)
9. [Sylvestre Gerbert Dossa C et al. Biochemical Approach for Virulence Factors Identification in *Xanthomonas Oryzae* Pv. *Oryzae*. J Plant Pathol Microb. 2014;5:222.](#)
10. [Morante MC. First Report of *Passalora concors* \(Casp.\) Causing *Cercospora* Leaf Blotch in the Andean Region of Cochabamba, Bolivia. J Plant Pathol Microb. 2014;5:221.](#)
11. [Sajad UH et al. Nutrigenic Efficiency Change and Cocoon Crop Loss due to Assimilation of Leaf Spot Diseased Mulberry Leaf in Silkworm, *Bombyx mori* L. J Plant Pathol Microbiol. 2014;5:220.](#)
12. [Soumia D et al. Assessment of the Tolerance Level of Three Olive Intercroppings \(Tomato, Eggplant and Pepper\) vis-à-vis *Verticillium dahliae* Klebahn, at Seed and Cutting Stage. J Plant Pathol Microb. 2014;5:219.](#)
13. [Vanitha S and Ramjegathesh R. Bio Control Potential of *Pseudomonas fluorescens* against Coleus Root Rot Disease. J Plant Pathol Microb. 2014;5:216.](#)
14. [Hua Y et al. Correlations between Soluble Sugar and Phenol Contents in Leaves and Pear Scab Resistance. J Plant Pathol Microbiol. 2014;5:213.](#)
15. [Akrofi AY et al. Pink Disease Caused by *Erythricium salmonicolor* \(Berk. & Broome\) Burdsall: An Epidemiological Assessment of its Potential Effect on Cocoa Production in Ghana. J Plant Pathol Microb. 2014;5:215.](#)
16. [Essghaier Bet al. Antimicrobial Behavior of Intracellular Proteins from Two Moderately Halophilic Bacteria: Strain J31 of *Terribacillus halophilus* and Strain M3-23 of *Virgibacillus marismortui*. J Plant Pathol Microb. 2014;5:214.](#)
17. [arfour SA and Al-Saman MA. Root-rot and Stem-canker Control in Faba Bean Plants by Using Some Biofertilizers Agents. J Plant Pathol Microb. 2014;5:218.](#)
18. [Upadhyay P et al. Differential Expression of Pathogenesis Related Protein Genes in Tomato during Inoculation with *A. Solani*. J Plant Pathol Microb. 2014;5:217.](#)
19. [Ali H et al. Genetic and Pathogenic Variability of *Ascochyta rabiei* Isolates from Pakistan and Syria as Detected by Universal Rice Primers. J Plant Pathol Microb. 2013;4: 212](#)
20. [Muthukumar A and Venkatesh A. Occurrence, Virulence, Inoculum Density and Plant Age of *Sclerotium rolfsii* Sacc. Causing Collar Rot of Peppermint. J Plant Pathol Microb. 2013;4:211.](#)
21. [Zhang JX et al. Cultural Characteristics and Pathogenic Variations among *Cochliobolus carbonum* Isolates in Yunnan Province of China. J Plant Pathol Microb. 2013;4: 210.](#)
22. [Muthukumar A and Venkatesh A. Exploitation of Fungal and Endophytic Bacteria for the Management of Leaf Blight of Ribbon Plant. J Plant Pathol Microb. 2013;4:209.](#)

23. [Ruwali Y et al. Screening for Resistance to Crown Rust in Oat Genotypes through Morphological and Molecular Parameters. J Plant Pathol Microb. 2013;4:208.](#)
24. [Ademe A et al. Evaluation of Antifungal Activity of Plant Extracts against Papaya Anthracnose \(*Colletotrichum gloeosporioides*\). J Plant Pathol Microb. 2013;4:207.](#)
25. [El-Halmouch Y et al. The Potential of Cell-free Cultures of *Rhizobium leguminosarum*, *Azotobacter chroococcum* and Compost Tea as Biocontrol Agents for Faba Bean Broomrape \(*Orobanche crenata* Forsk.\). J Plant Pathol Microb. 2013;4:205.](#)
26. [Shahid M et al. Morphological, Molecular Identification and SSR Marker Analysis of a Potential Strain of *Trichoderma/Hyphocrea* for Production of a Bioformulation. J Plant Pathol Microb. 2013;4:204.](#)
27. [Kim K et al. . The Effect of Blue-light-emitting Diodes on Antioxidant Properties and Resistance to *Botrytis cinerea* in Tomato. J Plant Pathol Microb. 2013;4:203](#)
28. [Akhtar A et al. Study on Black Gram\(*Vigna mungo* L.\) Infected with *Meloidogyne incognita* under the Influence of *Pseudomonas fluorescens*, *Bacillus subtilis* and Urea. J Plant Pathol Microb. 2013;4:202.](#)
29. [Afify AEMMR et al. Stimulating of Biodegradation of Oxamyl Pesticide by Low Dose Gamma Irradiated Fungi. J Plant Pathol Microb. 2013;4:201](#)
30. [Abdel-Kader MM et al. Biological and Chemical Resistance Inducers Approaches for Controlling Foliar Diseases of Some Vegetables under Protected Cultivation System. J Plant Pathol Microb. 2013;4:200.](#)
31. [El-Khateeb AY et al. Phytochemical Analysis and Antifungal Activity of Fruit Leaves Extracts on the Mycelial Growth of Fungal Plant Pathogens. J Plant Pathol Microb. 2013;4:199.](#)
32. [Almasi MA et al. Visual Detection of Curly Top Virus by the Colorimetric Loop-Mediated Isothermal Amplification. J Plant Pathol Microb. 2013;4:198.](#)
33. [Sultana S . In vitro Evaluation of Some Selected Fungicides against *Pestalotia palmarum* \(Cooke.\) Causal Agent of Grey Leaf Spot of Coconut. J Plant Pathol Microb. 2013;4:197](#)
34. [Yousef SAM et al. New Strategy for Managing Damping-off and Root Rot Disease of Cucumber Caused by *Rhizoctonia solani* by Seed Soaking in Formula of Antioxidant with Micronutrients. J Plant Pathol Microb. 2013;4:196](#)
35. [Olwari F et al. Tolerance Levels of Peanut Varieties against *Aspergillus flavus* Infection. J Plant Pathol Microb. 2013;4:195.](#)
36. [Martins IM et al. Isolation and Sequencing of *Actin1*, *Actin2* and *Tubulin1* Genes Involved in Cytoskeleton Formation in *Phytophthora cinnamomi*. J Plant Pathol Microb. 2013;4:194](#)
37. [Mohammed A . An Overview of Distribution, Biology and the Management of Common Bean Anthracnose. J Plant Pathol Microb. 2013;4:193](#)
38. [Amin M et al. Field Evaluation of New Fungicide, Victory 72 WP for Management of Potato and Tomato Late Blight \(*Phytophthora infestans* \(Mont\) de Bary\) in West Shewa Highland, Oromia, Ethiopia. J Plant Pathol Microb. 2013;4:192](#)
39. [Ibiam OFA and Nwigwe I . The Effect of Fungi Associated with Leaf Blight of *Solanum aethiopicum* L. in the Field on the Nutrient and Phytochemical Composition of the Leaves and Fruits of the Plant. J Plant Pathol Microb. 2013;4:191](#)
40. [Abdel-Shafi S . Preliminary Studies on Antibacterial and Antiviral Activities of Five Medicinal Plants. J Plant Pathol Microb. 2013;4:190](#)

41. [Siyoum Z and Yesuf M . Searching and Evaluating of Cost Effective Management Options of Garlic White rot \(*Sclerotium cepivorum* Berk\) in Tigray, Northern Ethiopia. J Plant Pathol Microb. 2013;4:189](#)
42. [Almasi MA and Dehabadi SH . Colorimetric Immunocapture Reverse Transcription Loop-Mediated Isothermal Amplification Assay for Rapid Detection of the Potato virus Y. J Plant Pathol Microb. 2013;4:188](#)
43. [Ghnaya AB et al. Comparative Chemical Composition and Antibacterial Activities of Myrtus communis L. Essential Oils Isolated from Tunisian and Algerian Population. J Plant Pathol Microb. 2013;4:186](#)
44. [Almasi MA et al. Immunocapture Loop Mediated Isothermal Amplification for Rapid Detection of Tomato Yellow Leaf curl Virus \(TYLCV\) without DNA Extraction. J Plant Pathol Microb. 2013;4:185.](#)
45. [Yang X et al. *Phytophthora mississippiae* sp. nov., a New Species Recovered from Irrigation Reservoirs at a Plant Nursery in Mississippi. J Plant Pathol Microb. 2013;4: 180.](#)
46. [Vijesh Kumar IP et al. . Amplification, Cloning and In silico Prediction of Full Length Elicitin Gene from *Phytophthora capsici*, the Causal Agent of Foot Rot Disease of Black Pepper. J Plant Pathol Microb. 2013;4: 181.](#)
47. [Mohammed A et al. Effect of Integrated Management of Bean Anthracnose \(*Colletotrichum lindemuthianum* Sacc. and Magn.\) Through Soil Solarization and Fungicide Applications on Epidemics of the Disease and Seed Health in Hararghe Highlands, Ethiopia. J Plant Pathol Microb. 2013;4:182.](#)
48. [Soltani T et al. Chemical control of Root-Knot Nematode \(*Meloidogyne javanica*\) On Olive in the Greenhouse conditions. J Plant Pathol Microb 4: 183.](#)
49. [Kamle M et al. A Species-Specific PCR Based Assay for Rapid Detection of Mango Anthracnose Pathogen *Colletotrichum gloeosporioides* Penz. and Sacc. J Plant Pathol Microb. 2013;4:184.](#)
50. [Chebil S et al. Occurrence of *Agrobacterium Vitis* Carrying Two Opine-Type Plasmids in Tunisian Vineyards. J Plant Pathol Microb. 2013;4:175.](#)