Recent Advances in Plant Disease Management

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India is known as an agricultural country, but the benefits of this progress are mostly confined to rural areas. Most of the population of India are live in rural areas and totally depend upon agricultural produce. Hunger and poverty continue in light of the absence of work openings, in this manner lacking pay for farming communities. Indian agriculture, fundamentally described as methods for subsistence, is changing quickly according to market demands both locally and globally. In current situation, mono-cropping-based escalated agriculture has brought about the loss of biodiversity, flare-ups of pests and diseases, pollution of soil and water, which has at last prompted stagnating agrarian generation and productivity (Bambawale *et al.*, 2008).

Achievement in disease management, as in many different backgrounds, relies upon having the correct instruments and the certainty to apply them. The key apparatus for disease management is learning and having information gives certainty. Diagnostic and warning emotionally supportive networks are confronting enormous difficulties in making significant and viable information and help accessible to farmers and market chains and guaranteeing that upstream specialists are educated regarding the genuine need issues and issues requiring goals. Chemical pesticides have reduced crop losses in several things, however, even with a considerable increase in chemical use, the proportion of crop losses and also the definite quantity of those losses from diseases seem to possess raised over time. Inappropriate and excessive chemical use to increase many times of insect pest outbreaks and extra disease loss attributable to the inadequate destruction of natural enemies of diseases, disease resistance, and comes secondary diseases. Host plant resistance, natural plant products, biopesticides, natural enemies, and science practices supply a probably viable choice for IDM. They are comparatively safe for non-target organisms and humans. Biotechnological tools like marker-assisted selection, biotechnology, and distant hybridization are used to develop resistant crop cultivars it will be better on future disease management programs. Disease modeling, call support systems, and remote sensing would contribute to scaling up and dissemination of IDM methods.

Plant pathology may be a difficult and vital science that deals with the science of disease development and knowledge to manage diseases. Society, consumers, and growers will solely be able to still have the benefit of plant pathology if the discipline can evolve acceptable disease management program which will reply to the many changes in agricultural practices in India; the nal word goal is to supply additional and safer food in total agri-cultural systems that conserve natural resources. Visible of this, a critique on current advances and rising challenges in crop disease management in the Republic of India ought to be viewed as terribly timely and acceptable.

Role of Biotechnological tools in Plant Disease Management

Different approaches in disease management have a great deal been influenced by the recent advances in biological science. Several biotechnological tools and techniques are developed by completely different plant pathogens as experimental materials. The host-pathogen interaction under various environments to convey a completely unique look to the present branch of science paradoxically viewed as 'cut and burn' technology.

Molecular Diagnosis of Plant Diseases

Conventionally, cultural ways are used to isolate and establish potential pathogens. This is often a comparatively slow method, typically requiring skilled taxonomists to dependably establish the bacterial. However, over the last 30 years, many

techniques are developed that have found application in plant-pathogen diagnosis; these embrace the utilization of being antibodies and enzyme-linked immunosorbent assay (ELISA) (Clark and Adams, 1977) and deoxyribonucleic acid-based technologies, like the polymerase chain reaction (PCR), that change regions of the pathogen's order to be amplified by many million fold, therefore increasing the sensitivity of bacterial detection. The deoxyribonucleic acid small array technology, originally designed to review organic phenomenon and generate single nucleotide polymorphism (SNP) profiles is presently a brand new and rising bacterial diagnostic technology and offers a platform for unlimited multiplexing capability (Jalali, 2008). The quick growing databases generated by genetics and systematic analysis give distinctive opportunities for the look of additional versatile, high outturn, sensitive, and specific molecular assays that may address the key limitation of the present technologies and profit plant pathology. Finally, the thus far restricted use of artificial intelligence to deoxyribonucleic acid technology will become economically possible and therefore accessible to farmers and can supply the chance of single DNA chip as sensible tool for the diagnosing of many plant pathogens.

Nanotechnology Role in Plant Disease Management

Nanotechnology offers an essential role in raising the present crop management techniques. Usually, solely a really low concentration of agrochemicals has reached the target website of crops thanks to the activity of chemicals, degradation by photolysis, chemical reaction, and microbe degradation. Hence, repetitive application is required for effective management inflicting unfavorable effects like speedy incidence of resistance and soil and pollution. Nano-formulated agrochemicals ought to be designed in such the simplest way that they hold all necessary properties like effective concentration (with high solubility, stability, and effectiveness), time controlled-release (CR) in response to bound stimuli, improved target activity and fewer eco-toxicity with safe and simple mode of delivery. Therefore, associate pressing would like is to evaluate and develop natural, perishable, and atmosphere safe nano-formulated compounds.

References

Bambawale, O. M., Saradana, H. R., & Arora, S., (2008). Expanding dimensions of plant

protections as per current needs. Crop Care, 34(2), 15–21.

Clark, M. F., & Adams, A. N., (1977). Characteristics of the microplate method of enzyme-linked immunosorbent assay (ELASA) for the detection of plant viruses. J. Gen. Virol., 34, 475–483.

Jalali, B. L., (2008). Molecular plant pathology: Where do we stand. J. Mycol. Plant Pathol., 38(3), 419-429.

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