



A REVIEW

Unravelling the intricacies in the management of *Fusarium* wilts of vegetable crops

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Abstract : *Fusarium* wilts or vascular wilts are seed or soil borne diseases that clog and destroy the xylem vessels that manifests as yellowing, wilting, stunting, reddish-brown xylem discolorations, clogged xylem, stem swelling and shredding leading to death. *Fusarium* spp. have dormant chlamydospores that can survive in soil for 15-30 years. The current management practice involves chemical fungicides which can be hazardous to environment and the living system. The phasing-out of chemicals stresses on the importance to a much more sustainable method of disease management. Treating large soil volumes with chemicals can lead to residues and environmental concerns. Frequent chemical use may result in resistance development, long-lasting pathogen viability and potential human and environmental health risks. Their use is decreasing due to toxicological and environmental reasons. Exclusion of disease materials, genetic methods of disease control are some of the cost-effective methods. But, there is a risk of resistance breakdown and low penetrance, which inhibit our potential to rely completely on them. Cultural methods like crop rotation, sanitation, disinfestations, adjusting the planting time, liming, soil amendments and much more have aided in disease reduction over years similar to the much acclaimed physical methods of soil sterilization and biofumigation. Biocontrol agents and botanicals are safer with minimal negative impact to environment. Novel and recent techniques employing nanotechnology and biotechnology have been too, able to control the attack. These approaches have their own benefits and limitations, and their effectiveness can vary depending on the specific *Fusarium* strain and environmental conditions. Integrated Disease Management (IDM) for *Fusarium* control involves combining various approaches to effectively combat this widespread pathogen as just one method alone is incapable to manage such a destructive pathogen. This review, therefore, aims at critically examining and shedding light on the importance of an IDM approach to tackle the pathogen.

Key Words : *Fusarium* wilts, Vegetable crops

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