

## **Chapter 4: Impact of plant health on global food security: A holistic view**

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### **Abstract:**

Plant pests and diseases are responsible for losses of 20 to 40% of global food production. Pests and diseases possess a major threat to plant health affecting crop growth, productivity and increase in production cost. They also indirectly affect the quality and nutritional status of foods in the form of post harvest losses. Insect pests and diseases are able to rapidly adapt to changing climatic conditions, host plants and pesticides and are posing a major risk to the current pest management approaches. In recent years, plant health is generally considered as a single disease term with single step solution but it has to be addressed in a more integrated-holistic way for a sustainable healthy environment. Plant health includes mainly yield related components, food quantity and biodiversity and it integrates plant protection with plant hygiene, trade, food quality and ecology. The changing climatic conditions and global trading are thwarting the goals of plant health thereby threatening the global food security agenda. Integrated Plant health management (IPHM) approach aims to grow healthy plants with a most appropriate monitoring and evaluation system. The advancement in agricultural research including technological innovations, molecular biology tools, bio-control agents, nano- based sensors has greater potential to contribute to the significance of plant health management in developing more specific and targeted products with minimal reliance on chemical pesticides. The present chapter is an effort to provide information relevant to the impact of plant health on crop productivity, challenges associated with plant health, advancement in diagnostic techniques and the role of integrated plant health system to achieve the goals of food security.