

Chapter 11

Diseases of Potato: A Major Constraint to Potato Production

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ABSTRACT

Potato production is seriously compromised due to prevalence of a number of diseases and they are the major constraints in potato production resulting in significant yield reduction. Integrated disease management of potato includes regular inspection for healthy seed or nursery, crop production, correct identification of the problem, cultural practices (crop rotation, sanitation etc.), biological control, soil fumigation (if necessary), seed or nursery stock treatment and disinfestations of cutting tools. Due to the ever increasing number of new fungicide resistant fungal pathogens, proper and timely diagnosis of potato diseases is becoming paramount to effective disease management, and growers need up-to-date information to help make important decisions on optimal use and timing of pesticides and other control options.

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INTRODUCTION

Potato (*Solanum tuberosum* L.) is a herbaceous perennial plant in the family Solanaceae which is grown for its edible tubers. The importance of potato as a food crop was duly recognized soon after its introduction in Europe in the 16th century. Potato (*Solanum tuberosum* L.) is one of mankind's most valuable food crops (FAO, 2004). It is the most important vegetable crop in terms of quantities produced and consumed worldwide (FAO, 2005). In volume of production it ranks fourth in the world after wheat (*Triticum aestivum* L.), rice (*Oryza sativa* L.), and maize (*Zea mays* L.) (Bowen, 2003). It remains an essential crop in Europe where per capita production is still the highest in the world, but the most rapid expansion over the past few decades has occurred in Southern and Eastern Asia. However, the local importance of the potato is variable and changing rapidly. Potato has become an integral part of much of the world's cuisine providing a balanced source of starch, vitamins and minerals to many communities across the globe. Potato can produce more food per unit area per unit time than the conventional cereal crops. Potatoes have the potential to relieve the pressure of increasing cereal prices on the poorest people and contribute significantly to food security particularly in the under developed and developing countries. Potato production and consumption is accelerating in most of the developing countries including India primarily because of increasing industrialization.

Potatoes in India are grown under varied climatic conditions ranging from tropics, subtropics to temperate highlands. Consequently, the spectrum of insect-pests and diseases is very large. All of them put together have the potential to limit potato production upto 85% depending upon the weather/region. Potato production is seriously compromised due to prevalence of a number of diseases and they are the major constraints in potato production resulting in significant yield reduction. Full potential of potato crop can only be realized if the diseases of potato are kept under control. Successful production of quality potato can be undertaken only in those areas and fields which are free from serious soil borne pathogens like wart, bacterial wilt, black scurf and common scab. Commercial production of most potatoes is primarily through vegetative propagation by means of lateral buds formed on the tuber, a modified stem. Through such vegetative propagation, many diseases are transmitted from generation to generation. Suppression of such diseases and reduction of yield losses due to disease are a necessary part of increasing the food supply. Diseases of potato assume significance for the fact that late blight of potato laid the foundation of plant pathology. Late blight is the disease that triggered the Irish potato famine of the 1840s. Between 1800 and 1845, severe food shortages had occurred in various parts of Ireland. However, during the famine, the crop failure became national for the first time, affecting the entire country at once. It also was

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