

Prevalence of Pigeonpea Diseases and Associated Crop Losses in Asia, Africa and the Americas*

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Abstract. Surveys were carried out to determine the prevalence of pigeonpea diseases in the major pigeonpea growing areas of Asia, Africa and the Americas between 1975 and 1980. In India, surveys in eleven states revealed that wilt, sterility mosaic, *Phytophthora* blight, *Macrophomina* stem canker and yellow mosaic were economically important diseases. Other diseases were of minor importance. Disease problems in Bangladesh, Malaysia and Nepal were of less importance. In Africa, wilt was a serious disease in Malawi (36.3%), Tanzania (20.4%) and Kenya (15.9%). Leaf spot in Kenya and Malawi; and powdery mildew in Kenya, Tanzania and Zambia were important. Other diseases were not economically important. In the Americas witches' broom, Phoma stem canker and rust were the important diseases. Annual crop losses due to the combined effect of wilt and sterility mosaic diseases in India were estimated to be worth about US\$ 113 millions. In Africa the estimated losses from wilt disease alone were over US\$ 5 millions annually.

Introduction

Pigeonpea (*Cajanus cajan* (L.) Millsp.), an important pulse (grain legume) crop in the Indian subcontinent, is also grown in Southeast Asia, Africa and the Americas. According to FAO statistics some 2.9 million hectares of pigeonpea are grown in the world with an average yield of 684 kg/ha (Parpia, 1981). More than 88% (2.6 million hectares) of the world's pigeonpea crop is grown in India, with only 8.6% grown in Africa. It is a backyard crop in most of the American countries where it is found, except in the Dominican Republic and Puerto Rico where it is grown commercially. Pigeonpea is a perennial shrub partially cross pollinated, with a quantitative short-day photo-period response. However, it can be grown as a one-year crop if circumstances demand. It has a relatively high total biological production but a low harvest index (15-30%). Pigeonpea generally has a slow rate of growth for the first 45 days, followed by maximum growth between 45 days and flowering; this is apparently due to selection for the traditional system of intercropping for some 80% of the crops is grown this way. It is a valuable food and is consumed particularly in developing tropical countries. Green seeds and tender pods are used as a vegetable, while in the form of dhal it is used in soups or eaten with rice. It can be used as a perennial forage crop for animal feed while dried stalks are used for fuel, thatching and for making both baskets and grain stores.

More than 50 pathogens have been reported to affect pigeonpea (Nene, 1980) but only a few cause economically important diseases such as wilt (*Fusarium udum* Butler) in the Indian subcontinent and Africa; sterility mosaic (SM) (virus ?) and *Phytophthora* blight (PB) (*Phytophthora drechsleri* f.sp. *cajani* Kannaiyan *et al.*) in India; witches' broom (WB) (mycoplasma ?) and rust (*Uredo cajani* Syd.) in the Americas and leaf spot (LS) (*Mycovellosiella cajani* (P. Henn.) Rangel ex Trotter) in Africa.

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India has a world mandate to improve pigeonpea. Since diseases are a major constraint to yield improvement, it was important to have some indication of the prevalence of various diseases and their economic importance in the countries of the semi-arid tropics. This was done through surveys conducted during 1975 to 1980 in Asia, Africa and the Americas

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