

Short Communication

Occurrence and Incidence of Plant Diseases in Pali Region

A. Kumar

Regional Research Station, Central Arid Zone Research Institute, Pali 306 401, India

Pali region is in the transition zone between the arid and semi-arid areas of Rajasthan, and lies between the latitude $24^{\circ} 45' - 26^{\circ} 29' N$ and $72^{\circ} 47' - 74^{\circ} 18' E$. The annual average rainfall is about 490 mm and temperature ranges from $7^{\circ}C$ to $46^{\circ}C$. Apart from erratic rainfall, poor quality of irrigation water and depleting ground water resources, plant diseases are the major production constraints. As information on plant diseases of the region is inadequate, therefore, extensive surveys were undertaken to determine the prevalence and distribution of diseases on major crops and trees.

Surveys were conducted during 1987 to 1992 crop seasons, both in farmers' fields and at Central Research Farm of Regional Research Station, Pali. Disease incidence (%) was recorded in 100 plants of each crop in random rows in the field. The intensities of diseases were assessed, using standard rating scales suggested by James (1971), Kumar and Nath (1991a, 1991c), and classified into major, major to minor and minor. Some causal organisms were identified from CAB International Mycological Institute (IMI), Kew, UK. Pathogenicity of the fungal pathogens was established on their respective hosts using standard techniques.

In all, ninety six diseases caused by fungi, bacteria, viruses and mycoplasma like organisms (MLOs) and mineral deficiency were recorded. About 80% of them were caused by fungal pathogens. Species of *Fusarium* and *Phoma* were predominant. Some of these have been reported previously (Lodha *et al.*, 1986; Kumar and Nath, 1988, 1991a, 1991b, 1991c and Kumar, 1993). Seventeen fungal pathogens (Table 1, marked with an asterick) had not been earlier reported to be associated with their respective hosts, and

are new host records for India (Mukerji and Bhasin, 1986; Bilgrami *et al.*, 1991). *Vermiculariopsisella* sp., a sporodochial hyphomycete, parasitising live leaves of cotton, was recorded in a farmer's field of Khardi village near Marwar Junction in 1988. This fungus has not so far been recorded from India.

The survey indicated that smuts of pearl millet and sorghum, anthracnose of forage sorghum, powdery mildew of mung bean and raya, *Cercoseptoria* leaf spot of sesame, downy mildew and white rust of raya and leaf spots of cotton are the most important and widespread fungal diseases of this region. Among bacterial, viral and MLO diseases, blight of clusterbean and cowpea, citrus canker, sesamum phyllody, mosaic and leaf curl virus of chilli are the major ones. Other diseases such as downy mildew of pearl millet, leaf rust of wheat, bacterial stalk rot of raya, angular leaf spot and root rot of sesame, powdery mildew of jujube, wilt of okra, early blight and bacterial canker of tomato are the diseases of growing importance, all other diseases are of minor importance.

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Table 1. Diseases of crops and trees, and new host records of fungi

Host	Disease	Causal organism	Incidence (%)	Status ¹	CMI accession number
* CEREALS					
Sorghum (<i>Sorghum bicolor</i> (L.) Moench)	Covered kernel	<i>Sphacelotheca sorghi</i> (Link) Clinton	70	Mj	
	Smut				
	Long smut	<i>Tolyposporium ehrenbergii</i> (Kuhn) Pat.	8-46	Mn	IMI 335133
	Leaf spot	<i>Myrothecium gramineum</i> Lib.	—	Mn	IMI 35131c
Wheat (<i>Triticum aestivum</i>) L. emend, Fiori & Paol.)	Leaf spot	<i>Phoma</i> sp.	—	Mn	IMI 335131b
	Yellow ear rot (Tundu)	<i>Corynebacterium michiganense</i> pv. <i>tritici</i> (Hutchinson) Dye & Kemp	10	Mn	
LEGUMES					
Clusterbean (<i>Cyamopsis</i> <i>tetragonoloba</i> (L.) Taub.)	Root rot	* <i>Aspergillus flavus</i> Link.	—	Mn	IMI 335134
	Seedling rot	* <i>Colletotrichum truncatum</i> (Schwein) Andrus & Moore	—	Mn	IMI 348901
Mung bean (<i>Vigna radiata</i> (L.) Wilczek)	Powdery mildew	<i>Oidium</i> sp.	20-100	Mj	IMI 335126
OILSEEDS					
Castor (<i>Ricinus communis</i> L.)	Leaf spot	* <i>Fusarium</i> sp.	5-12	Mn	IMI 335705
Mustard (Raya) (<i>Brassica juncea</i> (L.) Czern & Coss.)	Bacterial stalk	<i>Erwinia carotovora</i> (Jones) Holland	10-40	Mn-Mj	
Sesame (<i>Sesamum indicum</i> L.)	Angular leaf spot	<i>Cercospora sesamicola</i> Mohanty	60	Mn-Mj	
	Leaf spot	<i>Cercoseptoria sesami</i> (Zimmerm.) Deighton (Syn. <i>Pseudocercospora sesami</i> Purkayastha & Malik)	60-80	Mj	IMI 335125
	Charcoal rot	<i>Macrophomina phaseolina</i> (Tassi) Goid.	8-96	Mn-Mj	
FRUIT CROPS					
<i>Citrus</i> <i>aurantifolia</i>	Decline (Chlorosis)	Due to phosphorus and zinc deficiency	—	Mn-Mj	
Swingle	Leaf spot	* <i>Coleophoma empetri</i> (Rostrup) Petrak.	—	Mn	IMI 337166
<i>C. jambhiri</i>	Leaf spot	* <i>Phoma exigua</i> Desm.	—	Mn	IMI 333986a
Lush (Rough lemon)	Leaf spot	* <i>Sphaeropsis</i> sp.	—	Mn	IMI 333986b
Pomegranate (<i>Punica granatum</i> L.)	Leaf spot	<i>Phoma</i> sp.	—	Mn	IMI 337167
TREES					
Babul (<i>Acacia nilotica</i> (L.) Willd ex. Del.)	Seedling rot	* <i>Fusarium</i> sp.	—	Mn	
Anjun (<i>Hardwickia binata</i> Roxb.)	Seedling rot	* <i>Fusarium solani</i> (Mart.) Sacc.	—	Mn	

(Contd.)

Table 1. (Contd.)

Host	Disease	Causal organism	Incidence (%)	Status ¹	CMI accession number
Mopane (<i>Colophospermum mopane</i> (Kirk ex Benth.) Kirk ex J. Leonard)	Leaf spot	* <i>Ascochyta</i> sp.	—	Mn	IMI 346167
Rohida (<i>Tecomella undulata</i> (Sm.) Seem.)	Leaf Spot	* <i>Phoma</i> sp.	—	Mn	IMI 333992
Kharjal (<i>Salvadora Persica</i> L.)	Leaf Spot	* <i>Alternaria</i> sp.	—	Mn	
<i>Sesbania rostrata</i> Pers.	Leaf spot	* <i>Phoma sorghina</i> (Sacc.) Boerema et al.	—	Mn	IMI 333993
OTHERS					
Cotton (<i>Gossypium</i> spp.)	Sooty mould on leaf secretions	* <i>Leptoxylum fumago</i> (Woron.) R.C. Srivastava	>50	Mn—Mj	IMI 333994a
	Leaf spot	* <i>Vermiculariopsiella</i> sp.	>50	Mn—Mj	IMI 333994b
<i>Euphorbia antisyphilitica</i> Zucc.	Stem rot	* <i>Alternaria euphorbiicola</i> Simmons & Engelhard	—	Mn	IMI 317259
<i>Jasminum auriculatum</i> Vahl.	Stem rot	* <i>Phoma macrostoma</i> Mont.	—	Mn	IMI 333995
<i>Bougainvillea glabra</i> Choisy	Leaf spot	* <i>Phoma multirostrata</i> (Mathur et al.) Doretosch & Boerman	—	Mn	IMI 346169

1 Mj : major disease, Mn—Mj : minor to major disease, Mn : minor disease.

New fungus to India.

* New host records.

— Disease incidence not recorded.

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