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Post-harvest diseases of some fruits and vegetables in some markets of Birbhum district in West Bengal

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Periodical surveys of post-harvest diseases of various fruits and vegetables were conducted from several markets under red and laterite zone in Birbhum district during the period of 1990-93. Market survey revealed seasonal variation in the appearence of diseases and consequent considerable percentage of loss of the various crops. Pathogens were isolated and identified and the pathogens appeared to be new records from West Bengal.

Key words : Post-harvest diseases, fruits and vegetables, pathogens, Birbhum district

INTRODUCTION

Vegetables and fruits are grown globally for their rich source of vitamins, carbohydrates, proteins and minerals (NRC, 1978) providing nutrition to millions of vegetarian and non-vegetarian Indians (Chowdhury, 1968, Herklot, 1972).In tropical and sub-tropical countries heavy loss of vegetables are found to occur during storage and transit due to post-harvest diseases (Friedman, 1960, Coursey and Booth; 1972; Bourne, 1977; Harvey, 1978). Post-harvest diseases of fruits and vegetables have been reported from different countries including India (Rao, 1965, 1966; Tandon, 1967; Ratnam and Neema, 1967; Thakur and Chenulu, 1970; Prosad and Roy, 1977; Laxminarayan and Reddy, 1980; Pathak, 1980; Ramsey *et al.*,1952; Friedman, 1960; Coursey and Booth, 1972; Bourne, 1977 and Harvey, 1978) and also from West Bengal (Chattopadhyay and Mustaffe, 1966; Mondal and Dasgupta, 1981, 1982; Guha Roy *et al.*, 1986). Comprehensive survey in some markets under red and laterite zone of Birbhum district in West Bengal were conducted during the period of 1990 to 1993.In the present report diseases observed in different market crops are listed. Some new records of fungi from some hosts have also been recorded.

MATERIALS AND METHODS

Infected fruits and vegetables were collected periodically from different markets of Birbhum

district (Tables 1 and 2). Diseased samples were placed in separate plastic bags and brought to the laboratory within 24 h of collection. The symptoms on the infected samples were studied and recorded. The causal organisms from fruits and vegetables were isolated in sterilized medium and identified. Purification and maintenance of the isolates done as suggested by Srivastava and Tandon (1966). The cultures were maintained in Potato dextrose agar and Oatmeal agar slants at 20°c with monthly subculturing. Pathogenicity of the causal organisms were tested on fruits and vegetables with or without wounding following the method of Tandon and Mishra (1969).

RESULT AND DISCUSSION

The survey of the diseases of vegetables and fruits in the seven markets of Birbhum district was conducted during the period from 1990 to 1993 and the results are shown in Tables 1 and 2. It was observed that percentage of loss during June to August was maximum and it was minimum during March to May. The pathogenicity of all the isolates were effective by inoculating both injured and uninjured fruits and vegetables except the isolate of *Aspergillus niger*, which could not initiate symptoms on uninjured lemon and Malayapple fruit. It was observed that there were seasonal variation in the prevalence or intensity of occurrence of diseases of different fruits and vegetables (Tables 1 and 2).

Table 1. Seasonal variation in the occurence of post-harvest diseases of fruits in some markets of Birbhum District

Host	Symptom	Organisms	Occurence	Infected fruits (%)	Source
1	2	3	4	5	6
Amla (*Emblica officinalis* Gear.)	Dry rot	*Penicillium islandicum* Sopp.[b]	Jan.-Mar.	18.0	Bolpur and Suri
Amra (*Spondias pinnata* (L.f.) Kuzz.	Dry rot	*Aspergillus fumigatus* [c]	Jun.-Aug.	12.0	Sekhampore, Parui and Suri
Bullock's heart (*Anona reticulata* L.)	Anthracnose	*Glomerella cingulata* Ston.[b]	*May.-Jun.*	*4.2*	Abinashpur, Parui and Suri
Custard apple (*Anona squamosa* L.)	Black rot	*Botryodiplioidia theobromae* Pat.[b]	May-Jun.	8.6	Bolpur and Suri
Grape (*Vitis vinifera* L.)	Aspergillus rot	*Aspergillus niger* V.Tiegh.[b]	Feb.-Mar.	10.0	Bolpur, Parui and Suri
Guava (*Psidium guajava* L.)	Soft rot	Phytophthora nicotianae [c]	Jun.-Aug.	15.2	Parui, Suri and Purandarpur
Jack fruit (*Artocarpus integra* (Thumb) Merr.	Black rot	*Botryodiplioidia theobromae* [c]	Jun.-Aug.	24.6	Parui, Purandarpur, Sekhampore and Suri
Jum (*Syzygium cuminii*(L.) Skeels	Anthracnose	*Glomerella cingulata* [b]	May.-Jun.	12.2	Bolpur, Parui and Suri
Leeche (*Litchi chinensis*(Gae) Sonn.	Fruit rot	*Geotrichum candidum* Link. ex.Pers [b]	May-Jun.	10.0	Suri and Bolpur
Lemon (*Citrus limonia* Ozb.)	Aspergillus rot	*Aspergillus niger*[b]	Jun.-Aug.	10.2	Bolpur and Suri

Contd..... Table - 1

1	2	3	4	5	6
Malay apple (*Syzygium malaccense*(L.) Merr. & Perr.	Aspergillus rot	*Aspergillus niger*[c]	Jun.-Jul.	10.0	Suri and Bolpur
Musk melon (*Cucumis melo* L.)	Dry rot	*Didymella bryoniae*(Au) Rehm[c]	Jun.-Apr.	11.6	Suri and Bolpur
Papaw (Ripe) (*Carica papaya* L.)	Fruit rot	*Corynespora casicola* (Berk & Curt) Wei[b]	Jul.-Oct.	11.6	Parui and Suri
Phoot (*Cucumis* var. *momordica* Duthie and Fuller	Anthracnose	*Colletotrichum dematium*[b] (Tode ex. Fr.)	Jun.-Jul.	8.2	Suri and Bolpur
Water melon (*Citrullus lanatus* L.)	Aspergillus rot	*Aspergillus niger*[c]	Apr.-Jun.	5.5	Bolpur and Suri
	Anthracnose	*Colletotrichum dematium*[b]	Apr.-Jun.		
	Dry rot	*Corynespora casicola*[c]	Apr.-Jun.		
Wood apple (*Feronia limonia* (L.) Swing	Dry rot	*Macrophomina phaseolina*[b] (Tassi) Gold	Jul.-Sep.	5.2	Suri and Bolpur

a Percentage of infected fruits was calculated on the basis of total number of fruits (average of 3 years)

b Fungi first recorded in West Bengal

c Fungi first recorded in India

Table 2. Seasonal variation in the occurence of post-harvest diseases of vegetables in some markets of Birbhum District

Host	Symptom	Organisms	Occurence	Infected vegetables[a](%)	Source
1	2	3	4	5	6
Bitter gourd (*Momotedica chanantia* L.)	Soft rot	*Phytophthora nicotianae*[c]	Jul.-Sep.	15.0	Parui, Bolpur and Suri
		Pythium aphanidermatum(Eds.) Fitz.[b]	Jun.-Oct.		
Carrot (*Daucus carota* L.)	Black rot	*Alternaria radicina*[b] Meir, Drech. & Eddy	Jun.-Jul.	15.6	Bolpur and Suri
Chilli (*Capsicum annuum* L.)	Soft rot	*Phytophthora nicotianae*[a]	Jun.-Jul.	13.3	Bolpur and Sekhampore
Cow pea (*Vigna unguiculata* (L.) Walp	Soft rot	*Phytophthora nicotianae*[c]	Jun.-Jul.	12.2	Parui, Sekhamporei and Suri
		Pythium aphanidermatum[b]	Jun.-Jul.		
Cucumber (*Cucumis sativus* L.)	Soft rot	*Phytophthora nicotianae*[c]	Jun.-Oct.	13.5	Parui and Suri
Elephant-foot yam (*Amorphophallus campanulatus* (Roxb.) Blume ex Dene)	Soft rot	*Sclerotium rolfsii* Sacc[b]	Jul.-Aug.	11.0	Bolpur and Parui
French bean (*Phaseolus vulgaris* L.)	Dry rot	*Cercospora canescens*[b] Ell & Mar	Jan.-Mar.	10.68	Suri and Bolpur

Contd..... Table - 2

1	2	3	4	5	6
	Soft rot	*Curvularia lunata*[b](Wak) Boed *Phytophthrora nicotianae*[c]	Jan.-Mar. Oct.-Nov.		
Kakrol (*Momordica cochinchinensis* Spreng)	Soft rot	*Phytophthora nicotianae*[c] *Pythium aanidermatum*[b]	Jun.-Jul.	12.0	Bolpur and Suri
Kakur (*Cucumis* var. utilissimus Dothie and Fuller)	Anthracnose	*Colletotrichum gloeosporioides*[b] Penz.	Jan.-Mar.	5.2	Bolpur and Suri
Khero (*Cucumis* sp.)	Anthracnose	*Colletotrichum gloeosporioides*[c]	Jan.-Mar.	12.0	Sekhampore and Parui
Kundi (*Coccinia* sp.)	Soft rot	*Phytophthora nicotianae*[c] *Pythium aphanidermatum*[c]	Jun.-Jul.	11.6	Bolpur and Suri
Lablab bean (*Dolichos lablab* L.)	Dry rot	*Cercospora apii* Fr.[b] *Rhizoctonia sp.*[c]	Jan.-Mar. Jan.-Mar.	15.3	Sekhampore, Parui and Purandarpur
Palwal (*Trichosanthes diocia* Roxb.)	Soft rot	*Phytophthora nicotianae*[c]	Jun.-Aug.	16.2	Sekhampore and Parui
Papaw (Green) (*Carica papaya* L.)	Soft rot	*Phytophthora nicotianae*[c]	Jun.-Sep.	11.6	Parui, Suri and Bolpur
Ridge gourd (*Luffa acutangula* Roxb.)	Soft rot Stem end rot	*Phytophthora nicotianae*[c] *Botryodiplioidia, theobromae*[c]	Jun.-Jul. Jun.-Jul.	16.0	Parui and Bolpur
Snake gourd (*Trichosanthes anguina* L.)	Soft rot	*Phytophthora nicotianae*[c] *Pythium aphanidermatum*[b]	Jun.-Jul. Jun.-Jul.	13.2	Purandarpur and Parui
Pumkin (*Cucurbita moschata* Duch.)	Soft rot	*Sclerotium rolfsii*[b]	Jun.-Jul.	11.2	Sekhampore and Parui
Squash (*Schium edule* Swar.)	Soft rot Stem end rot	*Phytophthora nicotianae*[c] *Botryodiplioidia theobromae*[c]	Jun.-Jul. Nov.-Dec.	12.9	Bolpur and Suri
Sweet pepeer (*Capsicum frutescens* L.)	Soft rot	*Pythium aphanidermatum*[b] *Phytophthora nicotianae*[b]	Jun.-Jul. Jun.-Jul.	12.2	Bolpur and Suri
Tomato (*Lycopersicon lycopersicum* (L.)Karst.)	Soft rot	*Sclerotium rolfsii*[b] *Pythium aphanidermatum*[b] *Phytophthora nicotianae*[c]	Jun.-Jul. Jun.-Jul. Jun.-Jul.	11.6	Bolpur, Parui and Suri

a Percentage of infected vegetables was calculated on the basis of total number of vegetables (average of 3 years)

b Fungi first recorded in West Bengal

c Fungi first recorded in India

It may be mentioned that of the diseases surveyed, several have been reported previously. Only those diseases have been included that have hitheerto been unreported from India and also from West Bengal.

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