

# **RESULTS AND DISCUSSION**

Fruits and vegetables contain essential ingredients required for good health. This is one reason behind the top value of fruit and green vegetables placed by nutritionists. Today's fast life also changes dietary habits, this is another factor responsible for increase in the importance of fruits and vegetables. The quality and prize is due to their flavours, aroma. As a result of the attacks of fungi, the quality of fruits decreases and cause loss to fruit seller.

Diseased pre-harvested fruits are responsible for degradation of quality, flavours and market value. Soft skinned fruits are easily damaged than hard skinned fruits during transit and storage. This reason is responsible for susceptibility of fruits to post harvest rot diseases. So soft skinned fruits require careful handling than tough-skinned fruits. But many times, peoples purchase fruit and store in kitchens. Due to long term storage, fruits get infected. These infected fruits thrown out by peoples in dust bins. This activity of man increases the air and soil born inoculum of post-harvest fungi. Many of storage diseases of fruits and vegetables are initiated by the concentration of fungal spores present in air (Sumia Fatima et al., 2006).

Satara is placed at the foot of Sahyadri ranges. It has particular topography and climate. It provides many types of fruits and vegetables. Fruits like apple, custard apple, banana, guava, orange, pear, mango, citrus, strawberry and vegetables like spinach, bitter gourd, brinjal, tomato, drumstick, carrot, radish, beet root, pumpkin, cucurbits and beans were easily available in Satara markets. Out of these apple, banana, citrus, orange, brinjal, tomato and beans were commonly consumed. Therefore, it was thought worth to study the mycoflora associated with fruits around the Satara city, to know the fact regarding the fungal species present on the fruit. The actual picture of the mycoflora was necessary for the protection of these fruits.

Along with identity of fungal types, it was also tried to know the abundance of these fungi, the total number of fungi.

During the last few decades, many workers have tried to study the fruit rot diseases. In present investigation, study on the mycoflora of horticultural and vegetable fruits was done. For isolation of the fungi on fruits, humid chamber method and agar plate method were used. It was found that the agar plate method gives better results than humid chamber method in some fruits. Agar plate method is very useful to explore the number of different types of fungi. All these aspects give good idea about the nature of fungal flora on fruits.

**MYCOFLORA ASSOCIATED  
WITH  
HORTICULTURAL FRUITS**

Fruits are oldest food of man. They are protective foods for the maintenance of human health. Fruits like apple, banana were rich source of energy giving carbohydrate. Apart from their carbohydrate content, fruits are more valuable for minerals, vitamins and energy. Several vitamins are found in different fruits. Vitamin A is found in abundantly in mango, papaya persimmon etc. Vitamin B is plenty in banana and dried apricot. Good source of vitamin C are citrus fruits, mango, papaya etc. (Singh, 1992). The horticultural fruits considered for the exploration of associated mycoflora during present study include apple, sour lime, mandarin orange, sweet orange and banana.

#### **Apple (*Pyrus malus* L.) :-**

The Apple is a fruit of the temperate zones and only reaches perfection in their cooler regions. It is native to Britain. It belongs to Rosaceae. The temperature between 21- 24°C is required for active growth. Apples grow best on a well-drained, loam soils having a depth of 45 cm and a pH range of 5.5 - 6.5. The soil should be free from hard substrata and water-logged conditions. Soils with heavy clay or compact subsoil are to be avoided (Singh, 1995).

Sanderson and Spotts (1995) investigated post harvest decay of apple fruit by species of *Penicillium*. Sholberg and Haag (1996) studied incidence of post harvest pathogens of stored apples. Post harvest fruit rot of apple is also studied by Kim and Xiao (2006). Kampp (1994) reported that the bacteria and yeast isolates were tested as biochemical agent of *Botrytis cinerea* and *Penicillium expansum* on apple and pears.

The fruits were examined under naked eye showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by humid chamber and agar plate method. In agar plate method, infected part of fruit was inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber method. Then mycoflora developed was observed. Results are recorded in the table no. (1). The fungi isolated on incubated fruits and culture plates were identified by using standard keys & books. The identification was done on the basis of morphology, colour and characters of the pathogens.

Five genera with 13 species were found on apple fruit. Three genera of fungi with 7 species and 4 fungi with 6 species were recorded by humid chamber method and Czapekdox's medium were respectively. *Aspergillus niger*, *Penicillium atramentosum*, *P. brefeldianum*, *P. chrysogenum*, *P. expansum*, *P. oxalicum*, *Rhizopus combodia* were isolated only on humid chamber method. Fungi observed only on Czapekdox medium were *Alternaria brassicicola*, *Aspergillus fonsecaeus*, *A. japonicus*, *A. phaeocephalus* and *Drechslera australiensis*, *P. janthinellum*.

Rosenberger(1999) controlled the fungi *Colletotrichum gloeosporioides*, *C. acutatum*, *Botryosphaeria obtusa*, *B. dothidea*, *Botrytis cinerea*, *Penicillium expansum* and *Alternaria alternate* which cause post harvest decay in apples.

*Penicillium expansum* found on apple fruit in the present investigation was also reported by Rosenberger(1999).

#### **Sour Lime (*Citrus aurantifolia* Swingle.) :-**

Sour lime is one of the important fruit. In Hindi, it is known as 'Neembu'. It belongs to family Rutaceae. It is native of India. It is found in most parts of the tropics. In India, it is cultivated in Tamil Nadu, Maharashtra, West Bengal, Punjab, Madhya Pradesh, Andhra Pradesh, Delhi, Uttar Pradesh. Karnataka, Gujarat. It is cultivated in the plains and up to 1200 m elevation.

Fruits are more or less round or oval, smooth having thin rind (papery) attached lightly. The immature fruits are dark green in colour which changes to light yellow when ripe. The colour of the pulp is light greenish yellow; taste is acidic. It requires tropical climate. Sour lime is successfully cultivated in west and south India where winters are free from frost and the annual rainfall does not exceed an average of 75 cm (Singh, 1995).

Bamba and Sumbali (2006) studied the differential toxigenic behaviour of *Alternaria alternata* isolates from citrus fruits. Jain, Sharma, Jain and Jat (2004) studied the incidence of post harvest Aspergillus Fruit Rot of Lime (*Citrus aurantifolia* Swingle) in vegetable market. Rozy Bamba and Geeta Sumbali (2004) studied the loss assessment and some new unrecorded pathogens on citrus fruits.

The fruits examined under naked eye showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by humid chamber and agar plate method. In agar plate method, infected part of fruit was

inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber method. Then mycoflora developed was observed and results are recorded in the table no. (2).

Six different fungi with 22 species at post harvest stage were isolated from sour lime. From these, 5 genera and 12 species were found to be developed in humid chamber method there are *Aspergillus alliaceus*, *A. amstelodami*., *A. chevalieri* *A. fumigatus*, *A. niger*, *A. parasiticus*, *Cladosporium spp.*, *Cladosporium herbarum*, *Trichothecium roseum*, *Penicillium camemberti*, *P. simplicissimum*, *P. lilacinum*, *Septonema bombayense*, and 2 genera with 8 species were isolated on agar plate method, there were *A. awamori*, *A. fonsecaeus*, *A. japonicus*, *A. lutesceus*, *A. oryzae*., *A. ustus*, *A. violaceo-fuscus*, *F. oxysporium*. However, *Aspergillus namus* and *A. niger* were observed on both methods.

Bamba and Sumbali (2004), isolated new pathogens causing post-harvest fruit rot of sour lime viz. *Aspergillus flavus*, *A. terreus*, *A. sulphureusa*, *A. nidulans*, *A. niger*, *penicillium italicum*, *P. purpurogenum*, *Altrenaria alternata*, *Colletotrichum gloeosporiodes*, *Fusarium solani*, *Geotrichum candidum*.

The similar pattern was also observed by Bamba and Sumbali (2004). In addition, in the present investigation 2 species of *Cladosporium*, single species of each *Trichothecium*, *Penicillium*, *Septonema bombayense* were found growing on sour lime fruit.

#### **Mandarin Orange (*Citrus reticulata* Blanco.) :-**

The mandarin group includes all types of loose jacket oranges commonly called Santra. At present, mandarins are commercially grown in India. Botanical name of mandarin orange is *Citrus reticulata* Blanco. It belongs to family Rutaceae. It is originated from China. It requires subtropical and tropical climate and grow well in submontance tracts with elevation from 600-1100m, and rainfall from 75 – 250 cm. (Singh, 1995).

Rao (1966) observed some fungal genera from mandarin orange which cause fruit rot such as *Penicillium italicum*, and *P. digitatum*. et al. (1991) studied new fruit rot disease of orange caused by *Botryosphaeria ribis*. Naqui and Dass (1994) studied the assessment of post harvest disease losses in Nagpur mandarin. Dhaliwa et al.

(2002) studied the efficacy of different essential oils against Mandarin Fruit Rot. Naqui (2004) studied the assessment of post harvest losses and their management in Nagpur mandarin.

The fruits were examined under naked eye. There showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by humid chamber and agar plate method. In agar plate method, infected part of fruit was inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber method. Then mycoflora developed was observed and results are recorded in the table no. (3).

On the mandarin orange fruits, 3 different fungal genera with 10 species at post harvest stage were isolated. From these, 3 fungi with 5 species were found by humid chamber method such as *Aspergillus alutaceus*, *A. niger*, *Penicillium corylophilum*, *P. crustosum*, *Rhizopus oryzae* which were not developed on agar plate. Four species of *Aspergillus* observed only on Czapekdox medium were *Aspergillus amstelodami*, *A. fonsecaeus*, *A. namus*, *A. versicolor* as well as *Aspergillus awamori* were observed in both methods.

Verma and Tikoo, (2004) isolated fungi like *Penicillium digitatum*, *P. italicum*, *P. chrysogenum*, *Aspergillus flavus*, *A. niger*, *Alternaria alternata*, *Fusarium moniliforme*, *Rhizopus stolonifer* from mandarin orange.

The species that found in the present investigation, *Aspergillus niger* was on mandarin orange fruit. Follows similar pattern, which was observed by Verma and Tikoo, (2004). In addition, in the present investigation species of *Penicillium corylophilum*, *P. crustosum*, *Rhizopus oryzae* were found growing on mandarin orange.

#### **Sweet Orange (*Citrus sinensis* Osback.)**

The sweet orange (tight skinned orange), commonly known as mosambi, malta and sathgudi is an important citrus fruit of India. It belongs to family Rutaceae. Origin place of sweet orange is China and Indochina. It is commercially grown in Maharashtra, Punjab, Rajasthan and Andhra Pradesh. It requires dry and semi-arid conditions coupled with distinct summer and winter season with low annual precipitation. In general, low humidity and severe winter result in good colour development and external appearance in fruits (Ryall and Pentzer, 1982).

Rao (1966) has given account of the market and storage diseases of citrus in South Africa. *P. ulaiense* causing post harvest disease of citrus was studied by Lesar, Pelser, Schutte (1995). Naqui (2001) studied plant pathogens posing problems in citrus and its products.

The fruits were examined under naked eye showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by humid chamber and agar plate method. In agar plate method, infected part of fruit was inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber method. Then mycoflora developed was observed and results are recorded in the table no. (4).

On Sweet Orange fruit, 10 different fungal genera with 38 species at post harvest stage were isolated. In this study equal number of fungi were observed with incubation method (16) than agar plate method (16). From these *Aspergillus niger*, *A. phaeocephalus*, *A. quercinus*., *Cladosporium uredinicola*, *Penicillium javanicum*, *P. oxalicum* were dominant types developed with both the methods.

*Actinomucor spp* , *A. amstelodami*, *A. phoenicis*, *A. violaceo-fuscus*, *A. versicolor*, *Fusarium avenaccum*, *F. rosae*, *Mucor javanicus* , *M. albo-alter*, *M. luteus*, *Penicillium atramentosum*, *Rhizopus arrhizas*, *R. artocarpi*, *R. combodia*, *R. nigricans*, *Torula spp.* were isolated by humid chamber method.

Some fungi isolated on Czapekdox medium were *Alternaria pluriseptata*, *Aspergillus alutaceus*, *A. awamori*, *A. flavus*, *A. japonicus*, *A. nidulans*, *A. lutescens*, *A. oryzae*, *A. sydowi*, *Cladosporium gallicola*, *C. nigrellum*, *C. elatum*, *P. rubrum*, *P. simplicissimum*, *P. minio-luteum*, *Pyricularia ebbelsii*.

Bamba and Sumbali (2004) studied fungi associated with sweet orange. These are *Aspergillus niger*, *Penicillium italicum*, *P. chrysogenum*, *Colletotricum gloeosporioides*, *Fusarium solani*, *Geotricum candidum*.

*Colletotricum gloeosporioides*, *Geotricum candidum* observed by Bamba and Sumbali (2004) were not found on sweet orange fruits in present investigation.

Comparative account of mycoflora associated with citrus fruits recorded in table no.(5). It shows twelve fungal genera with 55 species. *A. amstelodami*, *A. awamori*, *A. niger* were the common species of citrus fruits. Maximum number (28) of fungal pathogens recorded on sweet orange fruit were *Actinomucor spp.*, *Alternaria pluriseptata*, *Aspergillus flavus*, *A. nidulans*, *A. phaeocephalus*, *A. phoenicis*, *A. quercinus*, *A. sydowi*, *Cladosporium elatum*, *C. gallicola*, *C. nigrellum*, *C.*



*uredinicola*, *Fusarium avenaccum*, *F. rosae*, *Mucor albo-alter*, *M. javanicus*, *M. luteus*, *Penicillium atramentosum*, *P. javanicum*, *P. minio-luteum*, *P. oxalicum*, *P. rubrum*, *Pyricularia ebbelsii*, *Rhizopus artocarpi*, *R. arrhizas*, *R. combodia*, *R. nigricans*, *Torula herbarum* and on the sour lime eleven pathogens observed were *A. chevalieri*, *A. fumigatus*, *A. parasiticus*, *A. ustus*, *Cladosporium spp.*, *Cladosporium herbarum*, *F. oxysporum* Schl. ex Fries f. *niveum*, *Penicillium camemberti*, *P. lilacinum*, *Septonema bombayense*, *Trichothecium roseum*. Whereas only three fungi found on mandarin orange were *Penicillium corylophilum*, *P. crustosum*, *Rhizopus oryzae*.

Whereas only three fungi found on mandarin orange were *Penicillium corylophilum*, *P. crustosum*, *Rhizopus oryzae*. *Trichothecium roseum* and *Pyricularia ebbelsii* were found only on sour lime, sweet orange respectively.

#### **Banana Fruit (*Musa paradisiaca* L.)**

Banana is another important fruit in India. Botanical name of Banana fruit is *Musa paradisiaca*. It is from family Musaceae. Edible bananas originated in the Indo-Malaysian region reaching to northern Australia. It requires suitable temperature 26.67°C. The banana plant grows and fruits under very poor conditions but will not flourish and be economically productive without deep, well-drained soils such as loam, rocky sand, marl, red laterite, volcanic ash, sandy clay, even heavy clay—but not fine sand which holds water (Singh, 1995).

Alam, Alam, Zaman (1993) reported post infection changes in protein content and protease activities in banana fruits infected with *Fusarium roseum*. Odebode and Sanusi (1996) studied the influence of fungi associated with fungi on nutritional content during storage. Bhagwan and Meshram (2003) studied the effect of temperature and relative humidity on post harvest rots of banana fruits. Rawal (2003) reported, fungal diseases of tropical fruits and their management. Chillet, Huber studied the relation between ripening and the development of Banana Anthracnose caused by *Colletotrichum musae*.

The fruits were examined under naked eye showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by humid chamber and agar plate method. In agar plate method, infected part of fruit was

inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber method. Then mycoflora developed was observed and results are recorded in the table no. (6).

On banana fruits, 7 fungal genera with 14 species were isolated at post harvest stage. Out of these, 6 genus with 10 species were observed by humid chamber method viz., *Alternaria palandui*, *Aspergillus amstelodami*, *A. flavus*, *Cladosporium spp.*, *Cladosporium herbarum*, *Fusarium dimerum*, *F. monoliforme*, *F. roseum*, *Mastigosporium spp.*, *Piricularia ebbelsii*. However, *Aspergillus fonsecaeus*, *A. niger* were observed on both methods. Only two genera like *Aspergillus repens*, *Penicillium oxalicum* were recorded on Czapekdox medium.

Bandyopadhyay and Chauduri (2004) isolated nine fungal species, belonging to *Aspergillus*, *Fusarium* and *Penicillium*, from post harvest banana fruits. Rawal(2003) *Fusarium oxysporium* f. sp. *Cubensis*, *Cercospora musae*, *Colletotrichum gloeosporioides*, *Botrydiplodia theobromae* were observed on Banana fruit.

*Cercospora musae*, *Colletotrichum gloeosporioides*, *Botrydiplodia theobromae* were not found on banana fruit in the present study which were observed by Rawal (2003).

Study of mycoflora associated with horticultural fruits by humid chamber method were recorded in table no.(7). It shows thirteen genera with 50 species. *Aspergillus niger* is the common species of all horticultural fruits. Maximum number of fungal genus (18) reported on sweet orange which were, *Actinomucor spp*, *A. phaeocephalus*, *A. phoenicis*, *A. quercinus*, *A. versicolor*, *A. violaceo-fuscus*, *Colletotrichum uredinicola*, *Fusarium avenaccum*, *F. rosae*, *M. albo-alter*, *Mucor javanicus*, *M. luteus*, *P. javanicum*, *Rhizopus artocarpi*, *R. arrhizas*, *R. combodia*, *R. nigricans*, *Torula herbarum*. However, *Penicillium atramentosum*, *P. brefeldianum*, *P. expansum*, *P. chrysogenum* and *Aspergillus awamori*, *Penicillium corylophilum*, *P. crustosum*, *Rhizopus oryzae* were the minimum number (4) of pathogens found on apple and mandarin orange fruits respectively.

Nine number of fungal pathogens recorded on sour lime which were, *Aspergillus alliaceus*, *A. chevalieri*, *A. fumigatus*, *A. nanus*, *A. parasiticus*, *Trichothecium roseum*, *P. lilacinum*, *P. simplicissimum*, *Septonema bombayense*. On

the banana fruit, eight number of pathogens like *Alternaria palandui*, *A. flavus*, *A. fonsecaeus*, *F. dimerum*, *F. monoliforme*, *F. roseum*, *Mastigosporium album* and *Piricularia ebbelsii* were recorded.

Study of mycoflora associated with horticultural fruits by agar plate method were recorded in the table no. (8). It shows seven genera with 33 species. *A. fonsecaeus* was observed on all fruits except sweet orange. Some pathogens specific to host. Pathogens which specific to sour lime were *Aspergillus ustus*, *A. violaceofuscus*, *Fusarium oxysporium* and *Alternaria brassicicola*, *Penicillium janthinellum*, *Drechslera australiensis* specific to apple. *Aspergillus amstelodami*, *A. versicolor* and *A. repens*, *Penicillium oxalicum* reported on mandarin orange, Banana fruits respectively. In the present study, most of the fungi were detected on sweet orange fruit. Five genus with 15 species were noted on sweet orange fruit. Among them, 5 species of *Penicillium*, 4 species of *Aspergillus*, 4 species of *Cladosporium*, and each species *Alternaria*, *Piricularia* were recorded.

Comparative study of mycoflora associated with horticultural fruits were recorded in the table no. (9). It shows 14 genera with 67 species. *Aspergillus niger* was the common species of horticultural fruits. *A. amstelodami* and *A. fonsecaeus* were observed on most of the fruits. Twenty three pathogens were recorded only on sweet orange fruit were, *Actinomucor spp.*, *Alternaria pluriseptata*, *A. nidulans*, *A. phoenicis*, *A. quercinus*, *A. sydowi*, *Cladosporium elatum*, *C. gallicola*, *C. nigrellum*, *C. uredinicola*, *Fusarium avenaccum*, *F. rosae*, *Mucor albo-alter*, *M. javanicus*, *M. luteus*, *Penicillium javanicum*, *P. minio-luteum*, *P. rubrum*, *Rhizopus arrhizas*, *R. artocarpus*, *R. nigricans*, *Pyricularia ebbelsii*, *Torula herbarum*. Ten number of pathogens were *Aspergillus alliaceus*, *A. chevalieri*, *A. fumigatus*, *A. parasiticus*, *A. ustus*, *Fusarium oxysporum*, *Penicillium camemberti*, *P. lilacinum*, *Septonema bombayense*, *Trichothecium roseum* shows sour lime as a host fruit.

On the banana fruit, only seven pathogens which *Alternaria palandui*, *A. repens*, *Fusarium dimerum*, *F. monoliforme*, *F. roseum*, *Mastigosporium album*, *Piricularia spp.* were found and *Alternaria brassicicola* *Drechslera australiensis*, *P. brefeldianum*, *P. chrysogenum*, *P. expansum*, *P. janthinellum*, these are six number of pathogens were observed only on apple fruit.

In the present study, only two pathogens like *Penicillium corylophilum*, *P. crustosumi* were occur only on mandarian orange.

**Table No. 1 - Mycoflora Associated With Apple Fruit**

<b>Sr. No.</b>	<b>Name of Fungus</b>	<b>Incubation</b>	<b>Czapeks medium</b>
1.	<i>Alternaria brassicicola</i> (Schw.) Wiltshire	---	+
2.	<i>Aspergillus fonsecaeus</i> Thom & Raper	---	+
3.	<i>A. japonicus</i> Saito	---	+
4.	<i>A niger</i> van Teigh	+	---
5.	<i>A. phaceocephalus</i> Durieu and Montagne	---	+
6.	<i>Drechslera australiensis</i> (Bugn.) Subram & Jain	---	+
7.	<i>Penicillium atramentosum</i> Thom.	+	---
8.	<i>P. brefeldianum</i> Dodge	+	---
9.	<i>P. chrysogenum</i> Thom	+	---
10.	<i>P. expansum</i> Link ex Fries	+	---
11.	<i>P. janthinellum</i> Biourge	---	+
12.	<i>P. oxalicum</i> Currie and Thom.	+	---
13.	<i>Rhizopus combodia</i> Vuillemin	+	---

**Table No. 2 - Mycoflora Associated With Sour lime Fruit**

Sr. No.	Name of Fungus	Methods	
		Incubation	Czapeks medium
1.	<i>A. alliaceus</i> Thom & Church.	+	---
2.	<i>A. amstelodami</i> (Mang) Thom & Church.	+	---
3.	<i>A. awamori</i> Nakazawa	---	+
4.	<i>A. chevalieri</i> (Mang.) Thom & Church	+	---
5.	<i>A. fonsecaeus</i> Thom & Raper	---	+
6.	<i>A. fumigatus</i> Fres.	+	---
7.	<i>A. japonicus</i> Saito	---	+
8.	<i>A. nanus</i> Mont.	+	+
9.	<i>A niger</i> van Teigh	+	+
10.	<i>A. lutescens</i> Bain ex Thom & Church	---	+
11.	<i>A. parasiticus</i> Speare.	+	---
12.	<i>A. oryzae</i> (Ahlburg.) Cohn.	---	+
13.	<i>A. ustus</i> (Bain) Thom & Church	---	+
14.	<i>A. violaceo-fuscus</i> Gasperini	---	+
15.	<i>Cladosporium spp.</i>	+	---
16.	<i>Cladosporium herbarum</i> (Pers.) Link. ex Fr.	+	---
17.	<i>F. oxysporum</i> Schl. ex Fries f. <i>niveum</i> (E. F. Sm.) Snyder & Hansen	---	+
18.	<i>Penicillium camemberti</i> Thom.	+	---
19.	<i>P. simplicissimum</i> (Oud.) Thom.	+	---
20.	<i>P. lilacinum</i> Thom	+	---
21.	<i>Septonema bombayense</i> Subram	+	---
22.	<i>Trichothecium roseum</i> Link	+	---

**Table No. 3 - Mycoflora Associated With Mandarin Orange Fruit**

Sr. No.	Name of Fungus	Methods	
		Incubation	Czapeks medium
1.	<i>Aspergillus alutaceus</i> Thom & Church	+	---
2.	<i>A. amstelodami</i> (Mang) Thom & Church.	---	+
3.	<i>A. awamori</i> Nakazawa	+	+
4.	<i>A. fonsecaeus</i> Thom & Raper	---	+
5.	<i>A. nanus</i> Monta	---	+
6.	<i>A. niger</i> van Teigh.	+	---
7.	<i>A. versicolor</i> van Tiraboschi	---	+
8.	<i>Penicillium corylophilum</i> Dier.	+	---
9.	<i>P. crustosum</i> Thom	+	---
10.	<i>Rhizopus oryzae</i> Went and Gerl.	+	---

**Table No. 4 - Mycoflora Associated With Sweet Orange Fruit**

Sr. No	Name of Fungus	Methods	
		Incubation	Czapeks medium
1.	<i>Actinomucor spp.</i>	+	---
2.	<i>Alternaria pluriseptata</i> (Karst. Et Har.) Jorstad	---	+
3.	<i>Aspergillus alutaceus</i> . Berk. Curt.	---	+
4.	<i>A. amstelodami</i> (Mang) Thom and Church	+	---
5.	<i>A. awamori</i> Nakazawa.	---	+
6.	<i>A. flavus</i> Link	---	+
7.	<i>A. japonicus</i> Saito	---	+
8.	<i>A. nidulans</i> (Eidam) Wint.	---	+
9.	<i>A. niger</i> van Teigh	+	+
10.	<i>A. lutescens</i> Bain ex Thom & Church	---	+
11.	<i>A. oryzae</i> (Ahlburg.) Cohn.	---	+
12.	<i>A. phaeocephalus</i> Durieu and Montagne	+	+
13.	<i>A. phoenicis</i> (Corda) Thom.	+	---
14.	<i>A. quercinus</i> (Bainier) Thom and Church.	+	+
15.	<i>A. sydowi</i> (bain, and Sart. ) Thom. and Church.	---	+
16.	<i>A. violaceo-fuscus</i> Gasperini	+	---
17.	<i>A. versicolor</i> Tiraboschi.	+	---
18.	<i>Cladosporium uredinicola</i> Speg.	+	+
19.	<i>C. gallicola</i> B. Sutton.	---	+
20.	<i>C. nigrellum</i> Ellis & Evert.	---	+
21.	<i>C. elatum</i> (Harz) Nannfeldt.	---	+
22.	<i>Fusarium avenaccum</i> (Fries) Sacc.	+	---
23.	<i>F. rosae</i> Link.	+	---
24.	<i>Mucor albo-alter</i>	+	
25.	<i>M. javanicus</i> Wehmer.	+	---
26.	<i>M. luteus</i> Gleditsch.	+	---

27.	<i>Penicillium atramentosum</i> Thom.	+	---
28.	<i>P. javanicum</i> van Beyma.	+	+
29.	<i>P. minio-luteum</i> Dierckx.	---	+
30.	<i>P. oxalicum</i> Currie and Thom.	+	+
31.	<i>P. rubrum</i> Stoll.	---	+
32.	<i>P. simplicissimum</i> (Oud.) Thom.	---	+
33.	<i>Pyricularia ebbelsii</i> M. B. Ellis	+	---
34.	<i>Rhizopus arrhizas</i> Fischer.	+	---
35.	<i>R. artocarp</i> i Raciorski.	+	---
36.	<i>R. combodia</i> Vuillemin.	+	---
37.	<i>R. nigricans</i> Ehrenb.	+	---
38.	<i>Torula herbarum</i> (Pers.) Link ex Fries.	+	---



**Table No.5 – Comparative Study of Mycoflora Associated With Citrus Fruits.**

Sr. No.	Name of Fungus	Sour Lime	Mandarin Orange	Sweet Orange
1.	<i>Actinomucor spp.</i>	---	---	+
2.	<i>Alternaria pluriseptata</i> (Karst. Et Har.) Jorstad.	---	---	+
3.	<i>Aspergillus alutaceus</i> Thom & Church.	---	+	+
4.	<i>A. alliaceus</i> Thom & Church.	+	---	---
5.	<i>A. amstelodami</i> (Mang) Thom & Church.	+	+	+
6.	<i>A. awamori</i> Nakazawa	+	+	+
7.	<i>A. chevalieri</i> (Mang.) Thom & Church.	+	---	---
8.	<i>A. flavus</i> Link.	---	---	+
9.	<i>A. fonsecaeus</i> Thom & Raper.	+	+	---
10.	<i>A. fumigatus</i> Fres.	+	---	---
11.	<i>A. japonicus</i> Saito.	+	---	+
12.	<i>A. nanus</i> Mont.	+	+	---
13.	<i>A. nidulans</i> (Eidam) Wint.	---	---	+
14.	<i>A. niger</i> van Teigh.	+	+	+
15.	<i>A. lutescens</i> Bain ex Thom & Church.	+	---	+
16.	<i>A. parasiticus</i> Speare.	+	---	---
17.	<i>A. phaeocephalus</i> Durieu and Montagne.	---	---	+
18.	<i>A. phoenicis</i> (Corda) Thom.	---	---	+
19.	<i>A. quercinus</i> (Bainier) Thom and Church.	---	---	+
20.	<i>A. oryzae</i> (Ahlburg.) Cohn.	+	---	+

21.	<i>A. sydowi</i> (bain, and Sart. ) Thom. And Church.	---	---	+
22.	<i>A. ustus</i> (Bainer) Thom & Church.	+	---	---
23.	<i>A. versicolor</i> van Tiraboschi.	---	+	+
24.	<i>A. violaceo-fuscus</i> Gasperini.	+	---	+
25.	<i>Cladosporium spp.</i>	+	---	---
26.	<i>C. gallicola</i> B. Sutton.	---	---	+
27.	<i>C. elatum</i> (Harz) Nannfeldt.	---	---	+
28.	<i>Cladosporium herbarum</i> (Pers.) Link. ex Fr.	+	---	---
29.	<i>C. nigrellum</i> Ellis & Evert.	---	---	+
30.	<i>Cladosporium uredinicola</i> Speg.	---	---	+
31.	<i>Fusarium avenaccum</i> (Fries) Sacc.	---		+
32.	<i>F. oxysporum</i> Schl. ex Fries f. <i>niveum</i> (E. F. Sm.) Snyder & Hansen	+	---	---
33.	<i>F. rosae</i> Link.	---	---	+
34.	<i>Mucor albo-alter</i>	---	---	+
35.	<i>M. javanicus</i> Wehmer.	---	---	+
36.	<i>M. luteus</i> Gleditsch.	---	---	+
37.	<i>Penicillium atramentosum</i> Thom.	---	---	+
38.	<i>Penicillium camemberti</i> Thom.	+	---	---
39.	<i>Penicillium corylophilum</i> Dier.	---	+	---
40.	<i>P. crustosum</i> Thom.	---	+	---
41.	<i>P. javanicum</i> van Beyma.	---	---	+
42.	<i>P. lilacinum</i> Thom.	+	---	---
43.	<i>P. minio-luteum</i> Dierckx.	---	---	+
44.	<i>P. oxalicum</i> Currie and Thom.	---	---	+
45.	<i>P. rubrum</i> Stoll.	---	---	+
46.	<i>P. simplicissimum</i> (Oud.) Thom.	+	---	+
47.	<i>Pyricularia ebbelsii</i> M. B. Ellis	---	---	+

48.	<i>Rhizopus artocarp</i> Raciorski.	---	---	+
49.	<i>R. arrhizas</i> Fischer.	---	---	+
50.	<i>R. combodia</i> Vuillemin.	---	---	+
51.	<i>R. nigricans</i> Ehrenb.	---	---	+
52.	<i>Rhizopus oryzae</i> Went and Gerl.	---	+	---
53.	<i>Septonema bombayense</i> Subram.	+	---	---
54.	<i>Torula herbarum</i> (Pers.) Link ex Fries.	---	---	+
55.	<i>Trichothecium roseum</i> Link.	+	---	---

**Table No. 6 - Mycoflora Associated With Banana Fruit**

Sr. No.	Name of Fungi	Methods	
		Incubation	Czapeks medium
1.	<i>Alternaria palandui</i> Ayyangar.	+	---
2.	<i>Aspergillus amstelodami</i> (Mang.) Thom & Church.	+	---
3.	<i>A. flavus</i> Link.	+	---
4.	<i>A. fonsecaeus</i> Thom & Church.	+	+
5.	<i>A. niger</i> van Teigh.	+	+
6.	<i>A. repens</i> (Corda) de Bary.	---	+
7.	<i>Cladosporium herbarum</i> (Pers.) Link.	+	---
8.	<i>Cladosporium spp.</i>	+	---
9.	<i>Fusarium dimerum</i> Penzig.	+	---
10.	<i>F. monoliforme</i> Sheldon.	+	---
11.	<i>F. roseum</i> Link.	+	---
12.	<i>Mastigosporium album</i> Riess.	+	---
13.	<i>Penicillium oxalicum</i> Currie & Thom.	---	+
14.	<i>Piricularia ebbelsii</i> M. B. Ellis.	+	---

**Table No. 7 – Study of Mycoflora Associated With Horticultural Fruits By Humid Chamber Method.**

Sr. No	Name of Fung us	Apple	Sour Lime	Mandarin Orange	Sweet Orange	Banana
1.	<i>Actinomucor spp.</i>	---	---	---	+	---
2.	<i>Alternaria palandui</i> Ayyangar.	---	---	---	---	+
3.	<i>Aspergillus alutaceus</i> Berk & Church.	---	+	+	---	---
4.	<i>Aspergillus alliaceus</i> Thom & Church.	---	+	---	---	---
5.	<i>A. amstelodami</i> (Mang) Thom & Church.	---	+	---	+	+
6.	<i>A. awamori</i> Nakazawa.	---	---	+	---	---
7.	<i>A. chevalieri</i> (Mang.) Thom & Church	---	+	---	---	---
8.	<i>A. flavus</i> Link.	---	---	---	---	+
9.	<i>A. fonsecaeus</i> Thom & Church.	---	---	---	---	+
10.	<i>A. fumigatus</i> Fres.	---	+	---	---	---
11.	<i>A. nanus</i> Mont.	---	+	---	---	---
12.	<i>A niger</i> van Teigh.	+	+	+	+	+
13.	<i>A. parasiticus</i> Speare.	---	+	---	---	---
14.	<i>A. phaceocephalus</i> Durieu and Montagne.	---	---	---	+	---
15.	<i>A. phoenicis</i> (Corda) Thom.	---	---	---	+	---
16.	<i>A. quercinus</i> (Bainier) Thom and Church.	---	---	---	+	---
17.	<i>A. versicolor</i> Tiraboschi.	---	---	---	+	---
18.	<i>A. violaceo-fuscus</i> Gasperini.	---	---	---	+	---
19.	<i>Cladosporium spp.</i>	---	+	---	---	+
20.	<i>C.</i>	---	+	---	---	+

	<i>herbarum</i> (Pers.) Link. ex Fr.					
21.	<i>C. uredinicola</i> Speg.	---	---	---	+	---
22.	<i>Fusarium</i> <i>avenaccum</i> (Fries) Sacc.	---	---	---	+	---
23.	<i>F. dimerum</i> Penzig.	---	---	---	---	+
24.	<i>F. monoliforme</i> Sheldon.	---	---	---	---	+
25.	<i>F. rosae</i> Link.	---	---	---	+	---
26.	<i>F. roseum</i> Link.	---	---	---	---	+
27.	<i>Mastigosporium</i> <i>album</i> Riess.	---	---	---	---	+
28.	<i>Mucor albo-alter.</i>	---	---	---	+	---
29.	<i>M. javanicus</i> Wehmer.	---	---	---	+	---
30.	<i>M. luteus</i> Gleditsch.	---	---	---	+	---
31.	<i>Penicillium</i> <i>atramentosum</i> Thom.	+	---	---	---	---
32.	<i>P. brefeldianum</i> Dodge.	+	---	---	---	---
33.	<i>P. expansum</i> Link ex Fries.	+	---	---	---	---
34.	<i>P. camemberti</i> Thom.	---	+	---	+	---
35.	<i>P. chrysogenum</i> Thom.	+	---	---	---	---
36.	<i>Penicillium</i> <i>corylophilum</i> Dier.	---	---	+	---	---
37.	<i>P. crustosum</i> Thom.	---	---	+	---	---
38.	<i>P. javanicum</i> van Beyma.	---	---	---	+	---
39.	<i>P. lilacinum</i> Thom	---	+	---	---	---
40.	<i>P. oxalicum</i> Currie and Thom.	+	---	---	+	---
41.	<i>P. simplicissimum</i> (Oud.) Thom.	---	+	---	---	---
42.	<i>Piricularia</i> <i>ebbelsii</i> M. B.	---	---	---	---	+

	Ellis.					
43.	<i>Rhizopus artocarp</i> Raciorski.	---	---	---	+	---
44.	<i>R. arrhizas</i> Fischer.	---	---	---	+	---
45.	<i>R. combodia</i> Vuillemin.	+	---	---	+	---
46.	<i>R. nigricans</i> Ehrenb.	---	---	---	+	---
47.	<i>Rhizopus oryze</i> Went and Gerl.	---	---	+	---	---
48.	<i>Septonema bombayense</i> Subram.	---	+	---	---	---
49.	<i>Torula herbarum</i> (Pers.) Link ex Fries.	---	---	---	+	---
50.	<i>Trichothecium roseum</i> Link.	---	+	---	---	---

**Table No. 8 – Study of Mycoflora Associated With Horticultural Fruits By Agar Plate Method.**

Sr. No	Name of Fungus	Apple	Sour Lime	Mandarin Orange	Sweet Orange	Banana
1.	<i>Alternaria brassicicola</i> (Schw.) Wiltshire.	+	--	--	--	--
2.	<i>Alternaria pluriseptata</i>	--	--	--	+	--
3.	<i>Aspergillus alutaceus</i> . Berk. Curt.	--	--	--	+	--
4.	<i>A. amstelodami</i> (Mang) Thom & Church.	--	--	+	--	--
5.	<i>Aspergillus awamori</i> Nakazawa.	--	+	+	+	--
6.	<i>A. flavus</i> Link.	--	--	--	+	--
7.	<i>A. fonsecaeus</i> Thom & Raper.	+	+	+	--	+
8.	<i>A. japonicus</i> Saito.	+	+	--	+	--
9.	<i>A. nanus</i> Mont.	--	+	+	--	--
10.	<i>A. nidulans</i> (Eidam) Wint.	--	--	--	+	--
11.	<i>A. niger</i> van Teigh.	+	--	--	+	+
12.	<i>A. lutescens</i> Bain ex Thom & Church.	--	+	--	+	--
13.	<i>A. oryzae</i> (Ahlburg.) Cohn.	--	+	--	+	--
14.	<i>A. phaeocephalus</i> Durieu and Montagne.	+	--	--	+	--
15.	<i>A. quercinus</i> (Bainier) Thom and Church.	--	--	--	+	--
16.	<i>A. repens</i> (Corda) de Bary.	--	--	--	--	+
17.	<i>A. sydowi</i> (bain, and Sart. ) Thom. And Church.	--	--	--	+	--
18.	<i>A. ustus</i> (Bainier) Thom & Church.	--	+	--	--	--
19.	<i>A. versicolor</i> van Tiraboschi.	--	--	+	--	--
20.	<i>A. violaceo-fuscus</i> Gasperini.	--	+	--	--	--
21.	<i>Cladosporium elatum</i> (Harz) Nannfeldt.	--	--	--	+	--
22.	<i>C. gallicola</i> B. Sutton.	--	--	--	+	--
23.	<i>C. nigrellum</i> Ellis & Evert.	--	--	--	+	--
24.	<i>C. uredinicola</i> Speg.	--	--	--	+	--



25.	<i>Drechslera australiensis</i> (Bugn.) Subram & Jain.	+	---	---	---	---
26.	<i>F. oxysporum</i> Schl. ex Fries f. <i>niveum</i> (E. F. Sm.) Snyder & Hansen.	---	+	---	---	---
27.	<i>P. janthinellum</i> Biourge.	+	---	---	---	---
28.	<i>P. javanicum</i> van Beyma.	---	---	---	+	---
29.	<i>P. minio-luteum</i> Dierckx.	---	---	---	+	---
30.	<i>P. oxalicum</i> Currie and Thom.	---	---	---	+	+
31.	<i>P. rubrum</i> Stoll.	---	---	---	+	---
32.	<i>P. simplicissimum</i> (Oud.) Thom.	---	---	---	+	---
33.	<i>Piricularia ebbelsii</i> M. B. Ellis.	---	---	---	+	---

**Table No.9 – Comparative Study of Mycoflora Associated With Horticultural Fruits**

Sr. No.	Name of Fungus	Apple	Sour Lime	Mandan Orange	Sweet Orange	Banana
1.	<i>Actinomucor spp.</i>	---	---	---	+	---
2.	<i>Alternaria brassicicola</i> (Schw.) Wiltshire.	+	---	---	---	---
3.	<i>A. palandui</i> Ayyangar.	---	---	---	---	+
4.	<i>Alternaria pluriseptata</i>	---	---	---	+	---
5.	<i>Aspergillus alliaceus</i>	---	+	---	---	---
6.	<i>Aspergillus alutaceus</i> . Berk. Curt.	---	---	+	+	---
7.	<i>A. amstelodami</i> (Mang) Thom & Church.	---	+	+	+	+
8.	<i>A. awamori</i> Nakazawa.	---	+	+	+	---
9.	<i>A. chevalieri</i> (Mang.) Thom & Church.	---	+	---	---	---
10.	<i>A. flavus</i> Link.	---	---	---	+	+
11.	<i>A. fonsecaeus</i> Thom & Raper.	+	+	+	---	+
12.	<i>A. fumigatus</i> Fres.	---	+	---	---	---
13.	<i>A. japonicus</i> Saito.	+	+	---	+	---
14.	<i>A. lutescens</i> Bain ex Thom & Church.	---	+	---	---	---
15.	<i>A. nanus</i> Mont.	---	+	+	---	---
16.	<i>A. nidulans</i> (Eidam) Wint.	---	---	---	+	---
17.	<i>A. niger</i> van Teigh.	+	+	+	+	+
18.	<i>A. oryzae</i> (Ahlburg.) Cohn.	---	+	---	+	---
19.	<i>A. parasiticus</i> Speare.	---	+	---	---	---
20.	<i>A. phaeocephalus</i> Durieu and Montagne.	+	---	---	+	---
21.	<i>A. phoenicis</i> (Corda) Thom.	---	---	---	+	---

22.	<i>A. quercinus</i> (Bainier) Thom and Church.	---	---	---	+	---
23.	<i>A. repens</i> (Corda) de Bary.	---	---	---	---	+
24.	<i>A. sydowi</i> (bain, and Sart. ) Thom. And Church.	---	---	---	+	---
25.	<i>A. ustus</i> (Bainer) Thom & Church.	---	+	---	---	---
26.	<i>A. versicolor</i> van Tiraboschi.	---	---	+	+	---
27.	<i>A. violaceo-fuscus</i> Gasperini.	---	+	---	+	---
28.	<i>Cladosporium spp.</i>	---	+	---	---	+
29.	<i>C. elatum</i>	---	---	---	+	---
30.	<i>C. gallicola</i>	---	---	---	+	---
31.	<i>Cladosporium herbarum</i> (Pers.) Link. ex Fr.	---	+	---	---	+
32.	<i>C. nigrellum</i>	---	---	---	+	---
33.	<i>Cladosporium uredinicola</i>	---	---	---	+	---
34.	<i>Drechslera australiensis</i> (Bugn.) Subram & Jain.	+	---	---	---	---
35.	<i>Fusarium avenaccum</i> (Fries) Sacc.	---	---	---	+	---
36.	<i>Fusarium dimerum</i> Penzig.	---	---	---	---	+
37.	<i>F. monoliforme</i> Sheldon.	---	---	---	---	+
38.	<i>F. oxysporum</i> Schl. ex Fries f. niveum (E. F. Sm.) Snyder & Hansen.	---	+	---	---	---
39.	<i>F. rosae</i> Link.	---	---	---	+	---
40.	<i>F. roseum</i> Link	---	---	---	---	+
41.	<i>Mastigosporium album</i> Riess.	---	---	---	---	+
42.	<i>Mucor albo-alter</i>	---	---	---	+	---
43.	<i>M. javanicus</i> Wehmer.	---	---	---	+	---
44.	<i>M. luteus</i> Gleditsch.	---	---	---	+	---
45.	<i>Penicillium atramentosum</i> Thom.	+	---	---	+	---

46.	<i>P. brefeldianum</i> Dodge	+	---	---	---	---
47.	<i>P. camemberti</i> Thom.	---	+	---	---	---
48.	<i>P. chrysogenum</i> Thom	+	---	---	---	---
49.	<i>Penicillium corylophilum</i> Dier.	---	---	+	---	---
50.	<i>P. crustosum</i> Thom.	---	---	+	---	---
51.	<i>P. expansum</i> Link ex Fries	+	---	---	---	---
52.	<i>P. janthinellum</i> Biourge	+	---	---	---	---
53.	<i>P. javanicum</i> van Beyma	---	---	---	+	---
54.	<i>P. lilacinum</i> Thom	---	+	---	---	---
55.	<i>P. minio-luteum</i> Dierckx	---	---	---	+	---
56.	<i>P. oxalicum</i> Currie and Thom.	+	---	---	+	+
57.	<i>P. rubrum</i> Stoll	---	---	---	+	---
58.	<i>P. simplicissimum</i> (Oud.) Thom.	---	+	---	+	---
59.	<i>Piricularia ebbelsii</i> M. B. Ellis	---	---	---	---	+
60.	<i>Rhizopus arrhizas</i> Fischer.	---	---	---	+	---
61.	<i>R. artocarp</i> i Raciorski	---	---	---	+	---
62.	<i>R. combodia</i> Vuillemin	+	---	---	+	---
63.	<i>R. nigricans</i> Ehrenb.	---	---	---	+	---
64.	<i>R. oryzae</i> Went and Gerl.	---	---	+	---	---
65.	<i>Septonema bombayense</i> Subram	---	+	---	---	---
66.	<i>Stigmina caffra</i> (Wakefield).	---	---	---	+	---
67.	<i>Torula herbarum</i> (Pers.) Link ex Fries	---	---	---	+	---
68.	<i>Trichothecium roseum</i> Link	---	+	---	---	---

## **EXPLANATION OF PLATE - I**

**Fig. No. 1 -3**

### **Apple**

**1) A) Normal fruit**

**B) Abnormal fruit**

**2) Humid chamber method**

**1) *Rhizopus combodia* Vuillemin**

**3) Agar plate method**

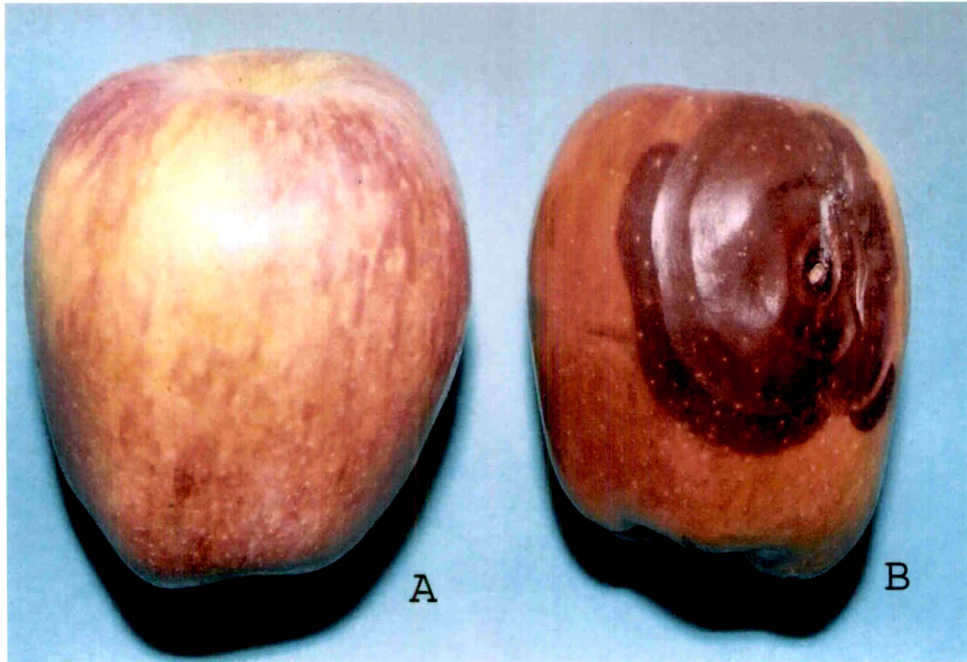
**2) *Aspergillus niger* Van Teigh**

**3) *Alternaria brassicicola* (Schw.) Witshire**

# PLATE NO. I

Fig.no.1 to 3

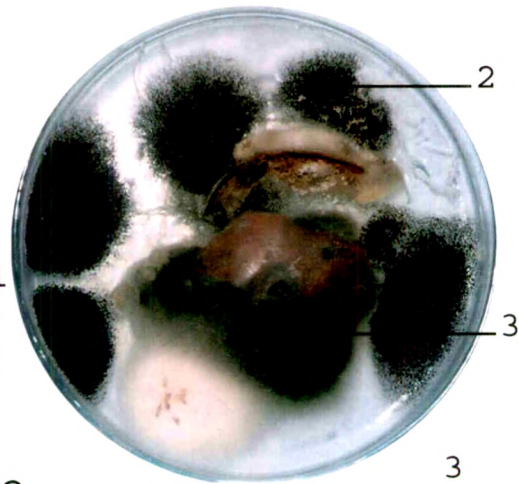
Apple



1



2



3

## EXPLANATION OF PLATE - II

Fig. No. 4 - 6

**Sour lime**

4) A) Normal fruit

B) Abnormal fruit

5) **Humid chamber Method**

1) *Aspergillus niger* Van Teigh

2) *Penicillium simplicissimum* (Oud.) Thom

6) **Agar plate Method**

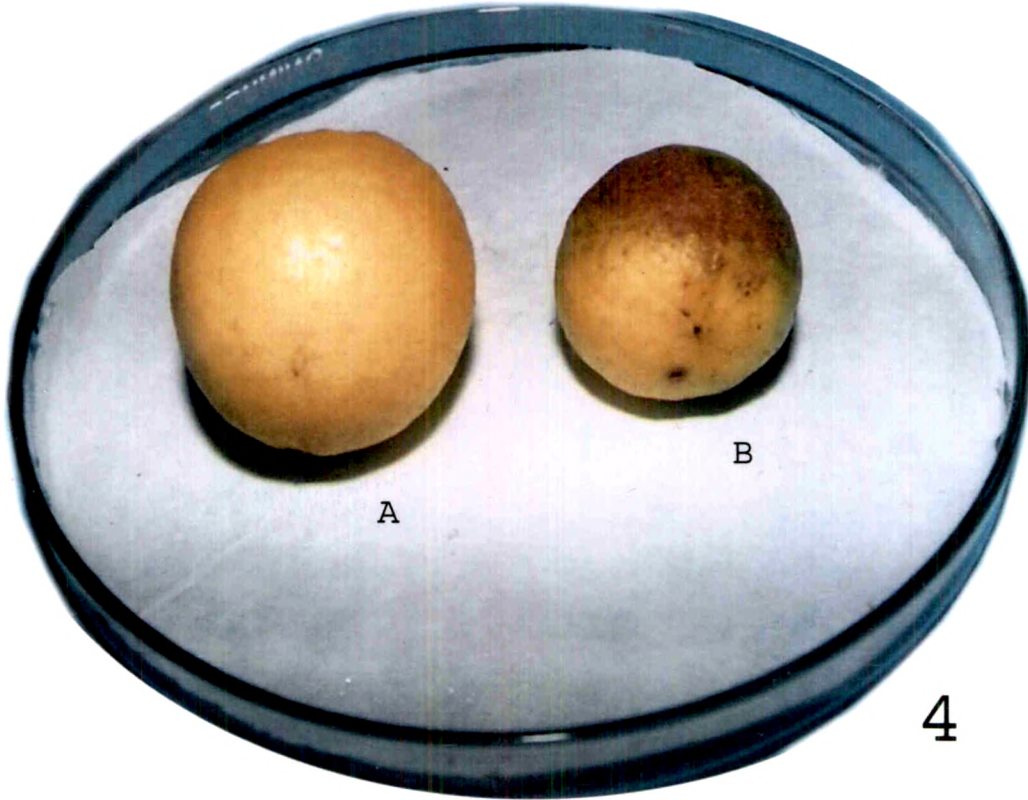
3) *Aspergillus awamori* Nadazawa.



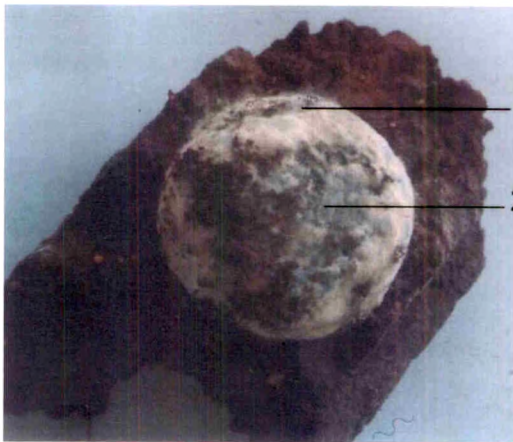
# PLATE NO. II

Fig.no.4 to 6

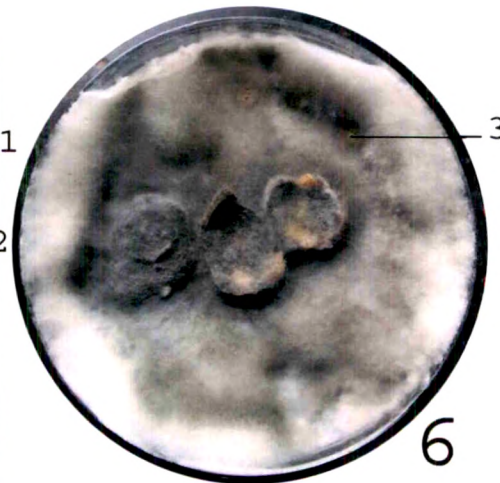
Sourlime



4



5



6

50



## **EXPLANATION OF PLATE – III**

**Fig. No. 7 - 9**

### **Mandarin Orange**

**7) A) Normal fruit**

**B) Abnormal fruit**

**8) Humid chamber Method**

**1) *Aspergillus niger* Van Teigh.**

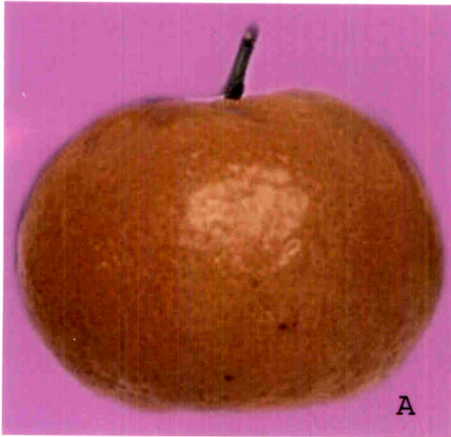
**9) Agar plate Method**

**3) *Aspergillus niger* Van Teigh.**

# PLATE NO. III

Fig.no.7 to 9

Mandarin Orange



7



8



9

## **EXPLANATION OF PLATE – IV**

**Fig. No. 10 - 12**

### **Sweet Orange**

**10) A) Normal fruit**

**B) Abnormal fruit**

**11) Humid chamber Method**

1) *Penicillium oxalicum* Currie and Thom.

2) *Aspergillus niger* Van Teigh.

3) *Aspergillus quercinus* (Bainier ) Thom and church.

**12) Agar plate Method.**

4) *A. flavus* Link.

5) *A. japonicus* Saito.

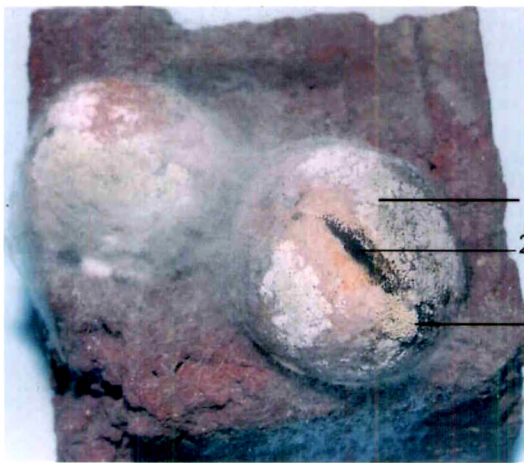
# PLATE NO. IV

Fig. no.10 to 12

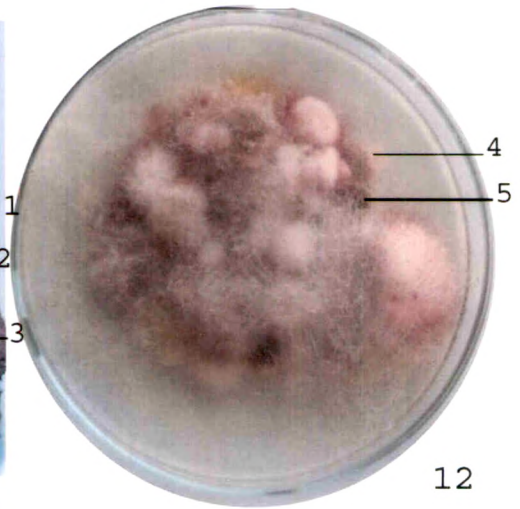
Sweet Orange



10



11



12

54

## **EXPLANATION OF PLATE – V**

**Fig. No. 13 - 15**

### **Banana**

**13) A) Normal fruit**

**B) Abnormal fruit**

**14) Humid chamber Method.**

1) *Cladosporium herbarum* (Pers.) Link.

2) *Aspergillus niger* Van Teigh.

3) *A. flavus* Link.

4) *Fusarium dimerum* Penzig.

**15) Agar plate Method.**

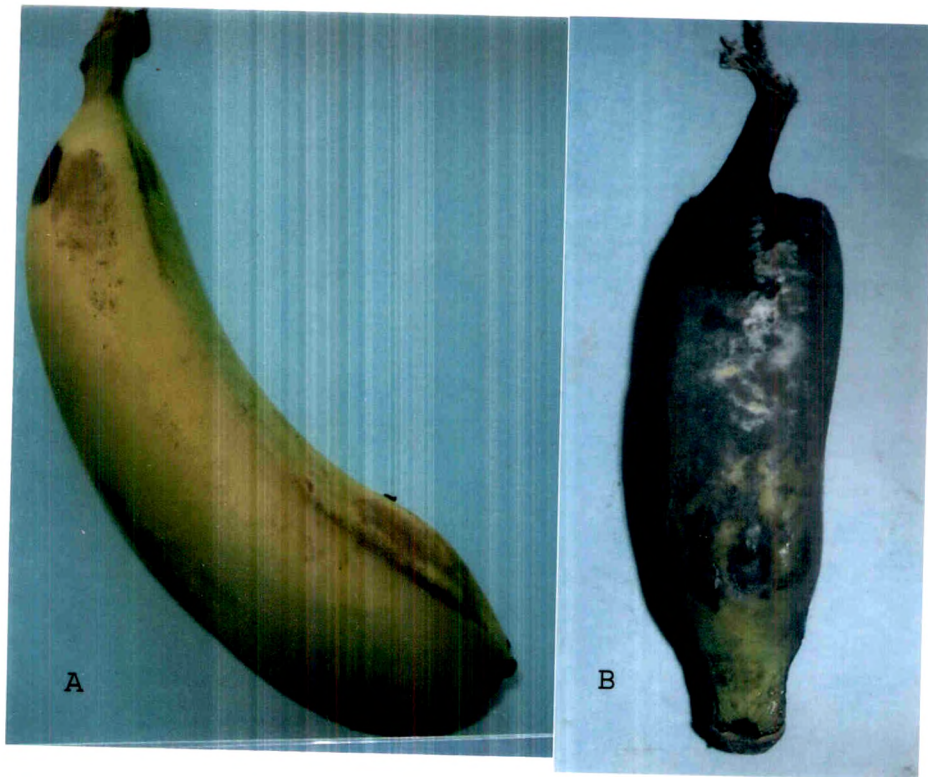
5) *Aspergillus niger* van Teigh.



# PLATE NO. V

Fig.no.13 to 15

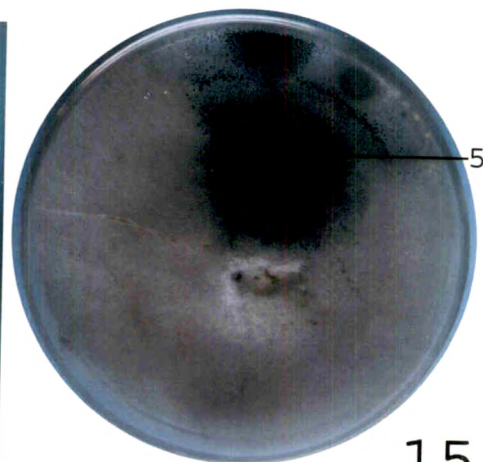
Banana



13



14



15

# MYCOFLORA ASSOCIATED WITH VEGETABLE FRUITS

Vegetable fruits are rich and comparatively cheaper source of vitamins and minerals. It provides taste, palatability, large amount of fibers, when consumed in sufficient quantities. They also promote digestion. Leguminous vegetables, potato, onion etc. are good source of carbohydrates, and large amount of proteins are found in leguminous vegetables like peas and beans, leafy vegetables, garlic etc. Vegetables like tomato, carrot, sweet potato contain vitamins A. While vitamin C is present in green chillies, cauliflower, cabbage, bitter gourd etc. (Bose and Som, 1986). The horticultural fruits considered for the exploration of associated mycoflora during present study include pea pods, cluster bean, french bean, lablab, chilli, tomato, brinjal, okra, coconut.

#### **Pea pods (*Pisum sativum* L.):-**

Green pea is used as vegetables. It is grown for green fodder. It belongs to family Fabaceae. Asiatic centre is the origin of pea. It is cultivated in Greece, Switerland, India. It requires a moderate cool climate. Higher temperature is harmful for growth and development. It is very much nutritive and contains 22-24 per cent fat and appreciable proportion of calcium, iron, phosphorus and vitamins B1, B2 (Yadav, 1992).

Butler and Jones (1986) and Kapoor and Singh (1999) have reported the fungi on pea pods.

The fruits were examined under naked eye showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by humid chamber and agar plate method. In agar plate method, infected part of fruit was inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber method. Then mycoflora developed was observed and results are recorded in the table no. (10).

Only 3 species of *Alternaria* such as *A. amaranthi* , *A. carthami*, *A. phragmospora* were found on pea pod in humid chamber method Some fungi observed only on agar plate method these were, *Alternaria ricini*, *Aspergillus fonsecaeus* , *A. oryzae*..

Butler and Jones (1986) listed the fungi on pea pod such as *Ascochyta pisi*, *A. pinodella*, *Mycophaerella pinodes*. Kapoor and Singh (1999) have recorded *Mycophaerella pinodes* and *Sclerotinia sclerotiorum* on pea pods.



*Alternaria amaranthi*, *A. carthami*, *A. phragmospora*, *A. ricini* and *Aspergillus fonsecaeus*, *A. oryzae* found on pea pods in the present investigation were not observed by Butler and Jones (1986) and Kapoor and Singh (1999).

#### **Cluster bean pods (*Cyamopsis tetragonolobus* L.)**

The cluster bean is one of the vegetable in India. It belongs to family Leguminosae. Origin of cluster bean is India. The crop can be used as soil improvement and as a medicine. It is grown in Rajasthan and haryana. It requires well drained sandy loam soil. It is a typical tropical vegetable crop preferring warm climate (Bose and Som, 1986).

Mukerji and Bhasin (1986) listed the pathogens on cluster beans causing pod rot.

The fruits were examined under naked eye showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by humid chamber and agar plate method. In agar plate method, infected part of fruit was inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber method. Then mycoflora developed was observed and results are recorded in the table no. (11).

Only two different fungal species like *Aspergillus fonsecaeus*, *Fusarium moniliforme* were observed by humid chamber method. Some fungi like *Alternaria chlamydospora*, *A. palandui*, *Aspergillus awamori*, *A. chevalieri*, *A. japonicus*, *A. quercinus*, *A. versicolor*, *Fusarium lateritium* were isolated on Czapekdox medium.

Mukerji and Bhasin (1986) were given *Fusarium spp.* which causes pod rot.

In addition to *Fusarium spp.* observed by Mukerji and Bhasin (1986), 6 species of *Aspergillus*, 2 species of *Alternaria* were found on cluster bean in the present investigation.

#### **Lablab (*Lablab purpureus* L.):-**

Lablab belongs to Leguminosae family. It is grown throughout the country. In India, it is grown as a field crop in Madhya Pradesh, Maharashtra, Andrapradesh and Tamil Nadu. It is used as a vegetables and dry seeds are also use as pulse. It is also grown for green fodder. It is adapted to tropical and subtropical regions. It requires

dry land with 630-890 mm rainfall. It requires cool climate for development of the pods.

Butler and Jones (1986), reported anthracnose of lablab caused by *Colletotrichum lindemuthianum*.

The fruits were examined under naked eye showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by humid chamber and agar plate method. In agar plate method, infected part of fruit was inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber method. Then mycoflora developed was observed and results are recorded in the table no. (12).

Eight different fungal genera with 29 species were isolated on bean pods. From these, *Alternaria amaranthi*, *A. citri*, *A. humicola*, *Aspergillus quercinus*, *Curvularia trifoli*, *Endophragmiella cambrensis*, *Pyricularia ebbelsii* were observed only by humid chamber method. Fungi such as *Alternaria brassicicola*, *A. burnsii*, *A. carthami*, *A. palandui*, *Aspergillus awamori*, *A. amstelodami*, *A. chevalieri*, *A. flavus*, *A. insecticola*, *A. lutescens*, *A. niger*, *A. nidulans*, *A. oryzae*, *A. phaeocephalus*, *A. repens*, *A. sclerotiorum*, *Cladosporium herbarum*, *Rhizopus artocarp*, *R. combodia*, *R. oryzae* were occur on agar plate method.

As well as *Aspergillus fonscaeus* was found on both the methods.

Seven species of *Alternaria*, 13 species of *Aspergillus*, 3 species of *Rhizopus* and a single species of each *Curvularia*, *Endophragmiella*, *Pyricularia*, *Cladosporium* were found growing with lablab fruits in the present investigation which were not observed by Butler and Jones (1986).

#### **French bean pods (*Phaseolus vulgaris* L.) :-**

The French bean is one of the most important vegetable It is nutritious vegetable. It is grown for tender vegetable in india. Original place of french bean is Southern Mexico and Central America. It belong to leguminosae family. Clay loamy soils are best for obtaining high yields of pods. It requires minimum temperature about 18-20°C for seed germination and growth (Bose and Som, 1986).

Mercer, Wood and Greenwood (1970) studied the effect of orange extract and other aditives on anthracnose of french beans caused by *Colletotrichum*

*lindemuthianum*. Butler (1973) reported bean anthracnose caused by *Colletotrichum lindemuthianum*.

The fruits were examined under naked eye showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by humid chamber and agar plate method. In agar plate method, infected part of fruit was inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber method. Then mycoflora developed was observed and results are recorded in the table no. (13).

Five fungal genera with 9 species were isolated on french bean pods. *Curvularia lunata*, *Fusarium incarnatum*, *F. udum*, *Mucor javanicus* were observed by humid chamber method as well as fungi observed only on Czapekdox medium were *Aspergillus fonsecaeus*, *Cladosporium herbarum*, *Fusarium avenaceum*, *F. decemcellulare*, *F. nivale*.

The mycoflora developed with both methods and was not similar the species recorded were difficult in these methods.

Mercer, Wood and Greenwood (1970) and Butler (1973) observed *Colletotrichum lindemuthianum* on french bean which was not found in the present investigation.

#### **Chilli (*Capsicum annum* L.)**

Chillies are one of the most valuable crops in India. It is originated from America. It belongs to family Solanaceae. Different varieties are grown for vegetables, spices, sauces and pickles. The crop is grown practically all over India. Among the most important states, Andhra Pradesh, Maharashtra, Mysore and Madras, account for three- fourths of the total area. The other States having large areas under cultivation are Madhya Pradesh, the Punjab and Bihar (Chaudhury, 1979).

Rao (1967), reported a new storage disease of chillies (*Capsicum annum* L.) caused by *Helminthosporium* spp. Patil, Korekar, Peshney (1993) studied the effect of dieback and fruit rot on the yield of chilli. Lakshmesha, Aradhya and Lakshmidevi (2002) have studied the post harvest management of Anthracnose of Capsicum. Singh, Akhter and Chaube (2003) studied Anthracnose of chillies caused by fungus *Colletotrichum capsici*.

The fruits were examined under naked eye showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by

humid chamber and agar plate method. In agar plate method, infected part of fruit was inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber method. Then mycoflora developed was observed and results are recorded in the table no. (14).

Seven different fungal genus with 14 species were observed by two methods i.e. humid chamber method and agar plate method. From these *Alternaria amaranthi*, *Aspergillus carbonarius*, *A. pulverulentus*, *Colletotrichum capsici*, *Fusarium lateritium* were isolated by humid chamber method and *Alternaria burnsii*, *A. tenuis* Auct, *A. chevalieri*, *A. phaeocephalus*, *Cladosporium herbarum*, *Drechslera australiensis*, *F. decemcellulare*, *F. chlamyosporum*, *Penicillium javanicum* were observed on Czapekdox medium.

Kolte and Sapkal (1994) isolated *Colletotrichum capsici* from chilli. In 1995, Urchida; Aragaki; Ogata identified *Leveillula taurica* from *Capsicum annum* which was not found on chilli fruits in the present investigation.

#### **Tomato (*Lycopersicon esculentum* Mill)**

The tomato is one of the most important “protective foods” both because of its special nutritive value and also because of its wide spread production. It is from solanaceae family. Peruvian and Mexican regions is origin place of tomato. It was introduced into India by the Portuguese though there is no definite record of when and how it came. Tomato is used for soup, salad, pickles and in many other ways. Tomato is grown in all types of soil from sand to heavy clay. Tomato is a warm season crop. It requires relatively long season to produce a profitable crop and 15 to 20°C.

Sharma (1994) studied prevalence of post harvest diseases of tomato in Himachal Pradesh. Gullino, Minuto, Garibaldi (1995) reported fungal diseases of tomato grown in green house. Sood and Sharma (2003) studied efficacy of some physical methods in the management of fruit rot of tomato caused by *Alternaria spp.* Pandey (2006) recorded that *Colletotrichum capsici* is a new fruit rot pathogen of tomato in Uttar Pradesh. Jia Liu et al. (2007) studied the effects of chitosan on control of post harvest diseases and physiological responses of tomato fruit.

The fruits were examined under naked eye showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by humid chamber and agar plate method. In agar plate method, infected part of fruit was

humid chamber and agar plate method. In agar plate method, infected part of fruit was inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber method. Then mycoflora developed was observed and results are recorded in the table no. (16).

In this case, six fungal genera with 18 species were isolated from eggplant fruit. From these, only 4 fungal genus with 7 species viz., *Alternaria alternate*, *Cladosporium fulvum*, *Mucor janssenii*, *Rhizopus nigricans*, *R. nodosus*, *R. stolonifer*, *R. oryzae*., were isolated by humid chamber method as well as 3 genera with 11 species *Alternaria citri*, *Aspergillus awamori*, *A. candidus*, *A. chevalieri*, *A. fonsecaeus*, *A. namus*, *A. oryzae*, *A. repens*, *A. versicolor*, *A. violaceo-fuscus*, *Fusarium nivale* detected on agar plate method.

Fungal pathogens like *Alternaria alternata*, *Ascochyta lycopersicon*, *Chaetomium globosum* Kunze., *Chrysosporium pruinatum*, *Cladosporium fulvum*, *Corynespora cassicola*, *Epicoccum nigrum*, *Phomopsis vexans*, *Rhizopus nodosus*, *R. oryzae*, *R. stolonifer*, *Trichothecium roseum* were listed by Mukerji and Bhasin (1986).

Pathogens *Ascochyta lycopersicon*, *Chaetomium globosum* Kunze., *Chrysosporium pruinatum*, *Cladosporium fulvum*, *Corynespora cassicola*, *Epicoccum nigrum*, *Phomopsis vexans*, *Rhizopus nodosus*, *R. oryzae*, *R. stolonifer*, *Trichothecium roseum* were not found on brinjal fruit in the present study, which were observed by Mukerji and Bhasin (1986).

#### **Okra (*Abelmoschus esculentus* L. Moench.)**

Okra (bhendi) is an annual vegetable crop. It belongs to Malvaceae family. It is originated from ethiopian region. It is grown in tropical and subtropical parts of the world. It is used as a vegetable. It is also grown other states of India viz., Maharashtra, Karnataka, Gujrat. Sandy to clay soil supplied with enough organic matter and with good drainage to okra plant. It requires warm, moist season.

Tohyama, Hayashi, Taniguchi, Naruse, Ozawa, Shishiyama, Tsuda (1995) reported a new post-harvest diseases of okra pods caused by *Alternaria alternata*. Reddy (2003) isolated some pathogens which are responsible for diseases of bhendi at pre and post harvest stage.

The fruits were examined under naked eye showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by

humid chamber and agar plate method. In agar plate method, infected part of fruit was inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber method. Then mycoflora developed was observed and results are recorded in the table no. (17).

Six different fungi viz., *Botrytis cinerea*, *Choanephora cucurbitarum*, *Cladosporium spp.*, *Fusarium scirpi*, *Mucor mucedo*, *Rhizopus combodia*, *Staphylotrichum cocosporum* isolated by humid chamber method and 4 fungal genus with 6 species were isolated by Czapekdox medium viz., *Aspergillus awamori*, *A. oryzae*, *A. versicolor*, *Drechslera australiensis*, *Penicillium corylophilum*, *Mucor racemosus*. *Fusarium oxysporum* was recorded on both Cz and humid chamber method.

Reddy (2003) isolated some pathogens like *Lesiodiplodia theobromae*, *Colletotrichum gloeosporioides*, *Pestalotiopsis versicolour*, *Alternaria alternata* and *Fusarium oxysporum* which are responsible for diseases of bhendi at pre and post harvest stage.

The two species of *Aspergillus*, *Mucor*, *Fusarium* and each species of *Botrytis*, *Choanephora*, *Cladosporium*, *Drechslera*, *Penicillium*, *Staphylotrichum* were found on okra fruit which were not observed by Reddy (2003).

#### **Coconut (*Cocos nucifera* L.):-**

The coconut is important for vegetable oils and coir. It is a tropical crop and it is cultivated through out the tropics. Origin of *C. nucifera* is Southeast Asia. It's cultivation restricted to costal belts of tropical countries. India, Ceylon, Malaya, Java, Philippines, Brazil are among the most important coconut growing countries of the world. In India, it is called as "Kalpavriksha" and cultivated in Goa, Kerala, Andaman and Nicobar, Maharashtra and Karnataka. It requires a hot, moist climate and sandy loams, lignite sandy soil, alluvial soils are suited to the coconut cultivation. It requires well distributed rainfall about 30" ( Aiyer, 1982).

Mukerji and Bhasin (1986) listed the fungal pathogens on the coconut fruit

The fruits were examined under naked eye showed abnormalities like discoloration and imparted different rotting smell. The fruit mycoflora was studied by humid chamber and agar plate method. In agar plate method, infected part of fruit was inoculated on Cz medium and fruits were incubated 4 – 5 days in the humid chamber

method. Then mycoflora developed was observed and results are recorded in the table no. (18).

Eight different fungal genera with 13 species at post harvest stage were isolated from coconut fruit. Out of these, 8 genus with 11 species were observed only on humid chamber method such as *Alternaria alternata*, *Aspergillus fonsecaeus*, *A. nanus*, *A. phoenicus*, *Curvularia lunata*, *Dendrophiopsis spp.*, *Fusarium spp.*, *Mucor hiemalis*, *M. rouxianus*, *M. javanicus*, *Penicillium variabile*, *Septinema bombayense*.

*Aspergillus fonsecaeus*, *A. niger* were observed on humid chamber as well as agar plate methods.

*Alternaria alternata*, *Curvularia lunata*, *Diplodia epicoccos*, *Fusarium spp.*, *Penicillium spp.* which were the pathogens given by Mukerji and Bhasin (1986) on coconut fruits.

*Alternaria alternata* and *Curvularia lunata* were found on cocconut fruit in the present investigation and were also observed by Mukerji and Bhasin (1986).

Comparative account of mycoflora associated with vegetable fruits by humid chamber method were recorded in the table no.(19). Twenty genera with 60 species were isolated on vegetable fruits by humid chamber method. Thirteen fungal pathogens shows tomato as a host, these were *Actinomucor spp.*, *A. solani*, *A. flavus*, *Corynespora casiicola*, *Cladosporium variabile*, *Drechslera australiensis*, *Fusarium equiseti*, *F. nivale*, *F. roseum*, *Mucor spp.*, *Penicillium minio-luteum*, *Rhizopus arrhizus*, *Scolecobasidiella avellanea*. Pathogens which were *Aspergillus nanus*, *A. niger*, *A. phoenicus*, *Dendrophiopsis spp.*, *Fusarium spp.*, *Mucor hiemalis*, *M. rouxianus*, *Penicillium variabile*, *Septinema bombayense* recorded only on coconut fruit. Six pathogens found on lablab were *Alternaria citri*, *A. humicola*, *Aspergillus quercinus*, *Cladosporium herbarum*, *Trichothecium roseum*, *Pyricularia ebbelsii*. Only on the brinjal fruit, there presence of pathogens were *Cladosporium fulvum*, *Rhizopus nodosus*, *R. stolonifer* and *Aspergillus carbonarius*, *A. pulverulentus*, *Fusarium lateritium* detected on chilli. The fruits like french bean shows *Colletotrichum lindemuthianum*, *F. incarnatum*, *F. udum* and pea detected pathogens were *Alternaria carthami*, *Fusarium oxysporum* Schl. ex Fries f. pisi, *F. semitectum*. However, *F. moniliforme* was recorded only on cluster bean.

Comparative study of mycoflora associated with vegetable fruits by agar plate method were recorded in the table no.(20). It shows seven genera with 43 species were recorded. Pathogens like *Alternaria citri*, *Aspergillus candidus*, *A. nanus* were

specific to chilli. *A. parasiticus* recorded on tomato fruit which was totally absent on other vegetable fruits. However, chilli fruits shows only *A. tenuis* and *Penicillium javanicum*. Pathogen like *Alternaria brassicicola*, *A. carthami*, *Aspergillus insecticola*, *A. lutescens*, *A. sclerotiorum*, *Rhizopus artocarpi*, *R. combodia*, *R. oryzae* were recorded only on lablab and fungi observed on cluster bean were *Alternaria chlamydospora*, *Aspergillus japonicus*, *A. quercinus*. However, *Mucor racemosus*, *Penicillium corylophilum* and *Alternaria ricini* were observed only on okra and pea fruit respectively. It was studied that, no records of pathogen only on French bean and coconut by agar plate method.

Comparative study of mycoflora associated with vegetable fruits were in the table no. (21). It shows twenty fungal genera with 89 species. Pathogens like *Alternaria alternata*, *Aspergillus awamori*, *A. chevalieri*, *A. oryzae*, *Drechslera australiensis* were found on most other vegetables. Many of the pathogens were specific to fruit viz, *Actinomucor spp.* and *Corynespora cassicola* recorded on Tomato, *Botrytis cinerea* on okra and *Pyricularia ebbelsii*, *Trichothecium roseum* were detected on only on okra, lablab fruit etc.

Twenty three genera with 115 species were recorded in the comparative study of mycoflora associated with horticultural and vegetable fruits. It was recorded in table no. (22). *Aspergillus fonsecaeus*, *A. amstelodami*, *A. awamori*, *A. niger* were observed on most of the horticultural and vegetable fruits. Pathogens like *Aspergillus alliaceus*, *A. fumigatus*, *A. ustus*, *Penicillium liliacinum* observed only on sour lime fruit and *Alternaria pluriseptata*, *A. sydowi*, *Cladosporium elatum*, *C. gallicola*, *C. nigrellum*, *C. uredinicola*, *Fusarium rosae*, *Mucor albo – alter*, *Penicillium rubrum*, *P. simplicissimum*, *Pyricularia ebbelsii*, *Torula herbarum* specific to sweet orange fruit. Only on banana fruit, pathogens which were *Fusarium dimerum*, *Mastigospodium album* recorded. Four species of *Penicillium* viz, *P. brefeldianum*, *P. chrysogenum*, *P. expansum*, *P. janthinellum* occur only on apple fruit. Pathogens which were *Botrytis cineria*, *Fusarium scirpi*, *Mucor mucedo*, *M. racemosus*, *Staphylotrichum cocosporum* and *Aspergillus carbonarius*, *A. pulvelentus*, *Fusarium chlamydosporum* detected on okra, chilli fruit respectively. Pathogens observed only on french bean were *Fusarium incarnatum*, *F. udum* and *Cladosporium fulvum*, *Rhizopus nodosus*, *R. stolonifer* specific to brinjal fruit. Only on the tomato fruit, presence of pathogens were, *Alternaria solani*, *Corynespora cassicola*, *Cladosporium variabile*, *Fusarium equiseti*, *F. merismoides*, *F. oxysporum* Schl. Ex Fries f.



**Table No. 10 - Mycoflora Associated With Pea Fruit.**

Sr. No.	Name of Fungus	Methods	
		Incubation	Czapecks medium
1.	<i>Alternaria alternata</i> (Fr.) Keissler.	+	---
2.	<i>Alternaria amaranthi</i> (Peck.)	+	---
3.	<i>A. carthami</i> Chowdhuri.	+	---
4.	<i>A. ricini</i> (Yoshii) Hansford.	---	+
5.	<i>A. phragmospora</i> Emden.	+	---
6.	<i>Aspergillus fonsecaeus</i> Thom & Raper.	---	+
7.	<i>A. oryzae</i> (Ahburg in Korschelt) Cohn.	---	+
8.	<i>Curvularia lunata</i> (Wakker) Boedijn.	+	---
9.	<i>Fusarium oxysporum</i> Schl. ex Fries f. pisi (V.Hall) Snyder & Hansen.	+	---
10.	<i>F. semitectum</i> Berk. & Rav.	+	---

**Table No.11 – Mycoflora Associated With Cluster bean fruit.**

Sr. No.	Name of Fungus	Methods	
		Incubation	Czapeks medium
1.	<i>Alternaria chlamydospora</i> Mouch.	---	+
2.	<i>A. palandui</i> Ayyangar	---	+
3.	<i>Aspergillus awamori</i> Nakazawa	---	+
4.	<i>A. chevalieri</i> (Mang.) Thom & Church	---	+
5.	<i>A. fonsecaeus</i> Thom & Raper	+	---
6.	<i>A. japonicus</i> Saito	---	+
7.	<i>A. quercinus</i> (Bain) Thom and Church.	---	+
8.	<i>A. versicolor</i> (Vuill.) Tiraboschi	---	+
9.	<i>Fusarium lateritium</i> Nees ex Fries	---	+
10.	<i>F. moniliforme</i> Sheldon	+	---

**Table No. 12 - Mycoflora Associated With Lablab Fruit .**

Sr. No.	Name of Fungus	Methods	
		Incubation	Czapeks medium
1	<i>Alternaria amaranthi</i> (Peck.)	+	---
2	<i>A. brassicicola</i> (Schwein.)	---	+
3	<i>A. burnsii</i> Uppal, Potel & Kamat.	---	+
4	<i>A. citri</i> Eltus and Pierce and Pierce.	+	---
5	<i>A. carthami</i> Chowdhury.	---	+
6	<i>A. humicola</i> Oudemans.	+	---
7	<i>A. palandui</i> Ayyangar.	---	+
8	<i>Aspergillus awamori</i> Nakazawa.	---	+
9	<i>A. amstelodami</i> (Mang) Thom and Church.	---	+
10	<i>A. chevalieri</i> (Mang.) Thom and Church.	---	+
11	<i>A. flavus</i> Link.	---	+
12	<i>A. fonsecaeus</i> Galmarini.	+	+
13	<i>A. insecticola</i> Subram.	---	+
14	<i>A. lutescens</i> (Bainier) Thom et Church.	---	+
15	<i>A. niger</i> van Teigh.	---	+
16	<i>A. nidulans</i> (Eidam) Winter.	---	+
17	<i>A. oryzae</i> (Ahburg in Korschelt) Cohn.	---	+
18	<i>A. phaeocephalus</i> Durieu and Montagne.	---	+
19	<i>A. quercinus</i> (Bain) Thom and Church.	+	---
20	<i>A. repens</i> (Corda) Sacc.	---	+
21	<i>A. sclerotiorum</i> Huber.	---	+
22	<i>Cladosporium herbarum</i> (Pers.) Link.	+	+

23	<i>Colletotrichum capsici</i> (Sud.) Butler & Bisby.	+	---
24	<i>Curvularia trifoli</i> (Kauff.) Boedijn.	+	---
25	<i>Pyricularia ebbelsii</i> MB Ellis.	+	---
26	<i>Rhizopus artocarp</i> i Raciborski.	--	+
27	<i>R. combodia</i> Vuillemin.	--	+
28	<i>R. oryzae</i> Went et Gerlings.	--	+
29	<i>Trichothecium roseum</i> Link.	+	---

**Table No.13 – Mycoflora Associated With French bean Fruit.**

Sr. No	Name of Fungus	Methods	
		Incubation	Czapeks medium
1.	<i>Aspergillus fonsecaeus</i> Thom & Raper.	---	+
2.	<i>Cladosporium herbarum</i> (Pers.) Link .	---	+
3.	<i>Curvularia lunata</i> Wakker) Boedijn .	+	---
4.	<i>Fusarium avenaceum</i> (Fries) Sacc .	---	+
5.	<i>F. decemcellulare</i> Brick .	---	+
6.	<i>F. incarnatum</i> (Roberge) Sacc.	+	---
7.	<i>F. nivale</i> (Fries) Cesati.	---	+
8.	<i>F. udum</i> Butler.	+	---
9.	<i>Mucor javanicus</i> Wehmer.	+	---

**Table No.14 – Mycoflora Associated With Chilli Fruit.**

Sr. No.	Name of Fungus	Methods	
		Incubation	Czapeks medium
1.	<i>Alternaria amaranthi</i> (Peck) van Hook	+	—
2.	<i>Alternaria burnsii</i> Uppal, Potel & Kamat	—	+
3.	<i>A. tenuis</i> Auct.	—	+
4.	<i>Aspergillus carbonarius</i> (Bain.) Thom	+	—
5.	<i>A. chevalieri</i> (Mang.) Thom and Church.	—	+
6.	<i>A. phaeocephalus</i> Durieu and Montagne	—	+
7.	<i>A. pulverulentus</i> (McAlpine)	+	—
8.	<i>Cladosporium herbarum</i> (Pers.) Link	—	+
9.	<i>Colletotrichum capsici</i> (Syd.) Butler & Bisby	+	—
10.	<i>Drechslera australiensis</i> (Bugn.) Subram & Jain	—	+
11.	<i>Fusarium lateritium</i> Nees ex Fries	+	—
12.	<i>F. decemcellulare</i> Brick	—	+
13.	<i>F. chlamydosporum</i> Wr. & Rg.	—	+
14.	<i>Penicillium javanicum</i> van Beyma	—	+

**Table No.15 – Mycoflora Associated With Tomato Fruit.**

Sr. No	Name of Fungus	Method	
		Incubation	Czapeks medium
1.	<i>Actinomucor spp.</i>	+	---
2.	<i>Alternaria alternata</i> (Fr.) Keissler .	+	---
3.	<i>A. phragmospora</i> Emden .	+	---
4.	<i>A. solani</i> (Ell. & Mart.) Sorauer .	+	---
5.	<i>Aspergillus amstelodami</i> (Mang.) Thom & Church.	---	+
6.	<i>A. chevalieri</i> ( Mang.) Thom & Church.	---	+
7.	<i>A. flavus</i> Link .	+	+
8.	<i>A. nidulans</i> (Eidam) Wint.	---	+
9.	<i>A. parasiticus</i> Speare .	---	+
10.	<i>A. violaceo-fuscus</i> Gasperini .	---	+
11.	<i>Corynespora casiicola</i> (Berk & Curt). Wei	+	---
12.	<i>Colletotrichum capsici</i> (Syd.) Butler & Bisby .	+	---
13.	<i>Cladosporium variabile</i> (Cooke) de Varies .	+	---
14.	<i>Choanephora cucurbitarum</i> (Berk. & Rav.) Thaxt.	+	---
15.	<i>Drechslera australiensis</i> (Bugn.) Subram & Jain .	+	---
16.	<i>Fusarium avenaceum</i> (Fries) Sacc .	---	+
17.	<i>Fusarium equiseti</i> (Corda) Sacc .	+	---
18.	<i>F. oxysporum</i> Schl. Ex Fries f. lycopersici (Sacc.) Snyder & Hansen .	---	+
19.	<i>F. merismoides</i> Corda.	---	+
20.	<i>F. nivale</i> (Fries) Cesati.	+	+
21.	<i>F. roseum</i> Link .	+	---
22.	<i>Mucor spp.</i>	+	---
23.	<i>M. janssenii</i> Lendner .	+	---
24.	<i>Penicillium javanicum</i> van Beyma .	+	---
25.	<i>P. minio-luteum</i> Dierckre.	+	---
26.	<i>Rhizopus arrhizus</i> Fischer .	+	---

27.	<i>R. artocarp</i> i Raciborski .	+	---
28.	<i>R. nigricans</i> Ehrenb.	+	---
29.	<i>R. oryzae</i> Went and Gerl.	+	---
30.	<i>Scoleceobasidiella avellanea</i> (Sappa and Mosca)	+	---



**Table No.16 – Mycoflora Associated With Brinjal Fruit.**

Sr. No.	Name of Fungus	Methods	
		Incubation	Czapeks medium
1.	<i>Alternaria alternata</i> (Fr.) Keissler .	+	—
2.	<i>A. citri</i> Ellis and Pierce .	---	+
3.	<i>Aspergillus awamori</i> Nakazawa.	---	+
4.	<i>A. candidus</i> Link ex Fries .	---	+
5.	<i>A. chevalieri</i> (Mang.) Thom & Church.	---	+
6.	<i>A. fonsecaeus</i> Thom & Raper .	---	+
7.	<i>A. namus</i> Monta .	---	+
8.	<i>A. oryzae</i> (Ahburg in Korschelt) Cohn.	---	+
9.	<i>A. repens</i> (Corda) de Bary.	---	+
10.	<i>A. versicolor</i> (Vuill.) Tiraboschi .	---	+
11.	<i>A. violaceo-fuscus</i> Gasperini .	---	+
12.	<i>Cladosporium fulvum</i> Cooke .	+	---
13.	<i>Fusarium nivale</i> (Fries) Cesati ,	---	+
14.	<i>Mucor janssenii</i> Lendner .	+	---
15.	<i>Rhizopus nigricans</i> Ehrenb.	+	---
16.	<i>R. nodosus</i> Nomyslowski .	+	---
17.	<i>R. oryzae</i> Went and Gerl.	+	---
18.	<i>R. stolonifer</i> (Ehrenb. ex Fr.) Lind .	+	---

**Table No.17 – Mycoflora Associated With Okra Fruit.**

Sr. No.	Name of Fungus	Methods	
		Incubation	Czapeks medium
1.	<i>Aspergillus awamori</i> Nakazawa.	---	+
2.	<i>A. oryzae</i> (Ahburg in Korschelt) Cohn.	---	+
3.	<i>A. versicolor</i> (Vuill) Tiraboschi.	---	+
4.	<i>Botrytis cinerea</i> Pers. ex Fries.	+	---
5.	<i>Choanephora cucurbitarum</i> (Berk. & Rav.) Thaxt.	+	---
6.	<i>Cladosporium spp.</i>	+	---
7.	<i>Drechslera australiensis</i> (Bugn.) Subram & Jain.	---	+
8.	<i>Fusarium oxysporum</i> Schl. ex Fries.	+	+
9.	<i>F. scirpi</i> Lamb. et Fautr.	+	---
10.	<i>Mucor mucedo</i> (Linne) Brefeld.	+	---
11.	<i>Mucor racemosus</i> Fresenius.	---	+
12.	<i>Penicillium corylophilum</i> Dierckx.	---	+
13.	<i>Rhizopus combodia</i> Vuillemin.	+	---
14.	<i>Staphylotrichum cocosporum.</i>	+	---

**Table No.18 – Mycoflora Associated With Coconut Fruit.**

Sr. No.	Name of Fungus	Methods	
		Incubation	Czapeks medium
1.	<i>Alternaria alternata</i> (Fr.) Keissler.	+	---
2.	<i>Aspergillus fonsecaeus</i> Thom. & Raper.	+	+
3.	<i>A niger</i> van Teigh.	+	+
4.	<i>A. namus</i> Monta.	+	---
5.	<i>A. phoenicis</i> Thom.	+	---
6.	<i>Curvularia lunata</i> Wakker) Boedijn.	+	---
7.	<i>Dendrophopsis spp.</i>	+	---
8.	<i>Fusarium spp.</i>	+	---
9.	<i>Mucor hiemalis</i> Wehma.	+	---
10.	<i>M. rouxianus</i> (Calmette) Wehma.	+	---
11.	<i>M. javanicus</i> Wehmer.	+	---
12.	<i>Penicillium variabile</i> Sopp.	+	---
13.	<i>Septinema bombayense</i> Subram.	+	---

**Table No.19 – Comparative Study of Mycoflora Associated With Vegetable Fruit By Humid Chamber Method**

Sr. No	Name of Fungus	Pea pod	Cluster bean	French bean	Lablab	Chilli	Tomato	Brinjal	Okra	Coconut
1	<i>Actinomucor spp.</i>	--	--	--	--	--	+	--	--	--
2	<i>Alternaria alternata</i> (Fr.) Keissler.	+	--	--	--	--	+	+	--	+
3	<i>A. amaranthi</i> (Peck) van Hook.	+	--	--	+	+	--	--	--	--
4	<i>A. carthami</i> Chawdhuri.	+	--	--	--	--	--	--	--	--
5	<i>A. citri</i> Eltus and Pierce and Pierce.	--	--	--	+	--	--	--	--	--
6	<i>A. humicola</i> Oudemans.	--	--	--	+	--	--	--	--	--
7	<i>A. phragmospora</i> Emden.	+	--	--	--	--	+	--	--	--
8	<i>A. solani</i> (Ell. & Mart.)	--	--	--	--	--	+	--	--	--
9	<i>Aspergillus carbonarius</i> (Bain.) Thom.	--	--	--	--	+	--	--	--	--
10	<i>A. flavus</i> Link.	--	--	--	--	--	+	--	--	--
11	<i>A. fonsecaeus</i> Thom & Raper.	--	+	--	+	--	--	--	--	+
12	<i>A. namus</i> Monta.	--	--	--	--	--	--	--	--	+
13	<i>A niger</i> van Teigh.	--	--	--	--	--	--	--	--	+
14	<i>A. phoenicus</i> Thom.	--	--	--	--	--	--	--	--	+
15	<i>A. pulverulentus</i> (McAlpine)	--	--	--	--	+	--	--	--	--
16	<i>A. quercinus</i> (Bain) Thom and Church.	--	--	--	+	--	--	--	--	--
17	<i>Botrytis cinerea</i> Pers. ex Fries.	--	--	--	--	--	--	--	+	--
18	<i>Corynespora casiicola</i>	--	--	--	--	--	+	--	--	--
19	<i>Choanephora cucurbitarum</i> (Berk. & Rav.) Thaxt.	--	--	--	--	--	+	--	+	--
20	<i>Colletotrichum capsici</i> (Syd.) Butler & Bisby.	--	--	--	+	+	+	--	--	--
21	<i>Cladosporium spp.</i>	--	--	--	--	--	--	--	+	--
22	<i>Cladosporium herbarum</i> (Pers.) Link.	--	--	--	+	--	--	--	--	--

23	<i>Cladosporium fulvum</i> Cooke.	---	---	---	---	---	---	+	---	---
24	<i>Cladosporium variabile</i> (Cooke) de Varies.	---	---	---	---	---	+	---	---	---
25	<i>Curvularia lunata</i> Wakker) Boedijn.	+	---	+	+	---	---	---	---	+
26	<i>Dendrophiopsis spp.</i>	---	---	---	---	---	---	---	---	+
27	<i>Drechslera australiensis</i> (Bugn.) Subram & Jain.	---	---	---	---	---	+	---	---	---
28	<i>Fusarium spp.</i>	---	---	---	---	---	---	---	---	+
29	<i>Fusarium equiseti</i> (Corda) Sacc.	---	---	---	---	---	+	---	---	---
30	<i>F. incarnatum</i> (Roberge) Sacc.	---	---	+	---	---	---	---	---	---
31	<i>Fusarium lateritium</i> Nees ex Fries.	---	---	---	---	+	---	---	---	---
32	<i>F. moniliforme</i> Sheldon.	---	+	---	---	---	---	---	---	---
33	<i>F. nivale</i> (Fries) Cesati.	---	---	---	---	---	+	---	---	---
34	<i>Fusarium oxysporum</i> Schl. ex Fries.	---	---	---	---	---	---	---	+	---
35	<i>Fusarium oxysporum</i> Schl. ex Fries f. pisi (V.Hall) Snyder & Hansen.	+	---	---	---	---	---	---	---	---
36	<i>F. roseum</i> Link.	---	---	---	---	---	+	---	---	---
37	<i>F. semitectum</i> Berk. & Rav.	+	---	---	---	---	---	---	---	---
38	<i>F. scirpi</i> Lamb. et Fautr.	---	---	---	---	---	---	---	+	---
39	<i>F. udum</i> Butler.	---	---	+	---	---	---	---	---	---
40	<i>Mucor spp.</i>	---	---	---	---	---	+	---	---	---
41	<i>Mucor hiemalis</i> Wehma.	---	---	---	---	---	---	---	---	+
42	<i>M. janssenii</i> Lendner.	---	---	---	---	---	+	+	---	---
43	<i>M. javanicus</i> Wehmer.	---	---	+	---	---	---	---	---	+
44	<i>M. mucedo</i> (Linne) Brefeld.	---	---	---	---	---	---	---	+	---
45	<i>M. rouxianus</i> (Calmette) Wehma.	---	---	---	---	---	---	---	---	+
46	<i>Penicillium javanicum</i> van Beyma.	---	---	---	---	---	+	---	---	---
47	<i>P. minio-luteum</i> Dierckre.	---	---	---	---	---	+	---	---	---
48	<i>P. variabile</i> Sopp.	---	---	---	---	---	---	---	---	+
49	<i>Pyricularia ebbelsii</i> MB Ellis.	---	---	---	+	---	---	---	---	---
50	<i>R. artocarp</i> i Raciborski.	---	---	---	---	---	+	---	---	---
51	<i>Rhizopus arrhizus</i> Fischer.	---	---	---	---	---	+	---	---	---
52	<i>Rhizopus combodia</i> Vuillemin.	---	---	---	---	---	---	---	+	---
53	<i>R. nigricans</i> Ehrenb.	---	---	---	---	---	+	+	---	---
54	<i>R. nodosus</i> Nomyslowski.	---	---	---	---	---	---	+	---	---

55	<i>R. oryzae</i> Went and Gerl.	--	--	--	--	--	+	+	--	--
56	<i>R. stolonifer</i> (Ehrenb. ex Fr.) Lind.	---	---	---	---	---	---	+	---	---
57	<i>Septinema bombayense</i> Subram.	--	--	--	--	--	--	--	--	+
58	<i>Scoleceobasidiella avellanea</i> (Sappa and Mosca)	--	--	--	--	--	+	--	--	--
59	<i>Staphylotrichum cocosporum</i>	--	--	--	--	--	--	--	+	--
60	<i>Trichothecium roseum</i> Link.	--	--	--	+	--	--	--	--	--

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**Table No.20 – Comparative Study of Mycoflora Associated With Vegetable Fruit By Agar Plate Method**

Sr No.	Name of Fungus	Pea pod	Cluster bean	French bean	Lablab	Chilli	Tomato	Brinjal	Okra	Coconut
1	<i>Alternaria brassicicola</i> (Schwein.)	---	---	---	+	---	---	---	---	---
2	<i>A. burnsii</i> Uppal, Potel & Kamat.	---	---	---	+	+	---	---	---	---
3	<i>A. carthami</i> Chowdhury.	+	---	---	+	---	---	---	---	---
4	<i>A. citri</i> Ellis and Pierce.	---	---	---	---	---	---	+	---	---
5	<i>A. chlamydospora</i> Mouch.	---	+	---	---	---	---	---	---	---
6	<i>A. palandui</i> Ayyangar.	---	+	---	+	---	---	---	---	---
7	<i>A. ricini</i> (Yoshii) Hansford.	+	---	---	---	---	---	---	---	---
8	<i>A. tenuis</i> Auct.	---	---	---	---	+	---	---	---	---
9	<i>Aspergillus amstelodami</i> (Mang) Thom and Church.	---	---	---	+	---	+	---	---	---
10	<i>A. awamori</i> Nakazawa.	---	+	---	+	---	---	+	+	---
11	<i>A. candidus</i> Link ex Fries.	---	---	---	---	---	---	+	---	---
12	<i>A. chevalieri</i> (Mang.) Thom and Church.	---	+	---	+	+	+	+	---	---
13	<i>A. flavus</i> Link.	---	---	---	+	---	+	---	---	---
14	<i>A. fonsecaeus</i> Thom & Raper.	+	---	+	+	---	---	+	---	+
15	<i>A. japonicus</i> Saito.	---	+	---	---	---	---	---	---	---
16	<i>A. insecticola</i> Subram.	---	---	---	+	---	---	---	---	---
17	<i>A. lutescens</i> (Bainier) Thom et Church.	---	---	---	+	---	---	---	---	---
18	<i>A. namus</i> Monta.	---	---	---	---	---	---	+	---	---
19	<i>A. nidulans</i> (Eidam) Winter.	---	---	---	+	---	+	---	---	---
20	<i>A. niger</i> van Teigh.	---	---	---	+	---	---	---	---	+
21	<i>A. oryzae</i> (Ahburg in Korschelt) Cohn.	+	---	---	+	---	---	+	+	---

22	<i>A. parasiticus</i> Speare.	---	---	---	---	---	+	---	---	---
23	<i>A. phaeocephalus</i> Durieu and Montagne.	---	---	---	+	+	---	---	---	---
24	<i>A. quercinus</i> (Bain) Thom and Church.	---	+	---	---	---	---	---	---	---
25	<i>A. repens</i> (Corda) Sacc.	---	---	---	+	---	---	+	---	---
26	<i>A. sclerotiorum</i> Huber.	---	---	---	+	---	---	---	---	---
27	<i>A. versicolor</i> (Vuill) Tiraboschi.	---	+	---	---	---	---	+	+	---
28	<i>A. violaceo-fuscus</i> Gasperini.	---	---	---	---	---	+	+	---	---
29	<i>Cladosporium</i> <i>herbarum</i> (Pers.) Link.	---	---	+	+	+	---	---	---	---
30	<i>Drechslera</i> <i>australiensis</i> (Bugn.) Subram & Jain.	---	---	---	---	+	---	---	+	---
31	<i>Fusarium</i> <i>avenaccum</i> (Fries) Sacc.	---	---	+	---	---	+	---	---	---
32	<i>F. decemcellulare</i> Brick.	---	---	+	---	+	---	---	---	---
33	<i>F. chlamydosporum</i> Wr. & Rg.	---	---	---	---	+	---	---	---	---
34	<i>Fusarium lateritium</i> Nees ex Fries.	---	+	---	---	---	---	---	---	---
35	<i>F. merismoides</i> Corda.	---	---	---	---	---	+	---	---	---
36	<i>F. nivale</i> (Fries) Cesati.	---	---	+	---	---	+	+	---	---
37	<i>F. oxysporum</i> Schl. ex Fries	---	---	---	---	---	+	---	+	---
38	<i>Mucor racemosus</i> Fresenius.	---	---	---	---	---	---	---	+	---
39	<i>Penicillium</i> <i>corylophilum</i> Dierckx.	---	---	---	---	---	---	---	+	---
40	<i>P. javanicum</i> van Beyma.	---	---	---	---	+	---	---	---	---
41	<i>Rhizopus artocarp</i> Raciborski.	---	---	---	+	---	---	---	---	---
42	<i>R. combodia</i> Vuillemin.	---	---	---	+	---	---	---	---	---
43	<i>R. oryzae</i> Went et Gerlings.	---	---	---	+	---	---	---	---	---



**Table No.21 – Comparative Study of Mycoflora Associated With Vegetable Fruit.**

Sr. No.	Name of Fungus	Pea pod	Cluster bean	French bean	Lablub	Chilli	Tomato	Brinjal	Okra	Coconut
1.	<i>Actinomucor spp.</i>	---	---	---	---	---	+	---	---	---
2.	<i>Alternaria alternata</i> (Fr.) Keissler.	+	---	---	---	---	+	+	---	+
3.	<i>Alternaria amaranthi</i> (Peck) van Hook.	+	---	---	+	+	---	---	---	---
4.	<i>A. brassicicola</i> (Schwehn.)	---	---	---	+	---	---	---	---	---
5.	<i>A. burnsii</i> Uppal, Potel & Kamat.	---	---	---	+	+	---	---	---	---
6.	<i>A. carthami</i> Chowdhury.	+	---	---	+	---	---	---	---	---
7.	<i>A. chlamydospora</i>	---	+	---	---	---	---	---	---	---
8.	<i>A. citri</i> Eltus and Pierce and Pierce.	---	---	---	+	---	---	+	---	---
9.	<i>A. humicola</i> Oudemans.	---	---	---	+	---	---	---	---	---
10.	<i>A. palandui</i> Ayyangar.	---	+	---	+	---	---	---	---	---
11.	<i>A. phragmospora</i>	+	---	---	---	---	+	---	---	---
12.	<i>A. ricini</i>	+	---	---	---	---	---	---	---	---
13.	<i>A. solani</i> (Ell. & Mart.)	---	---	---	---	---	+	---	---	---
14.	<i>A. tenuis</i> Auct.	---	---	---	---	+	---	---	---	---
15.	<i>A. spergillus amstelodami</i> (Mang) Thom and Church.	---	---	---	+	---	+	---	---	---
16.	<i>A. awamori</i> Nakazawa .	---	+	---	+	---	---	+	+	---
17.	<i>A. candidus</i> Link ex Fries.	---	---	---	---	---	---	+	-	---
18.	<i>A. carbonarius</i> (Bain.) Thom.	---	---	---	---	+	---	---	---	---
19.	<i>A. chevalieri</i> (Mang.) Thom and Church.	---	+	---	+	+	+	+	---	---
20.	<i>A. insecticola</i> Subram.	---	---	---	+	---	---	---	---	---
21.	<i>A. flavus</i> Link.	---	---	---	+	---	+	---	---	---

22	<i>A. lutescens</i> (Bainier) Thom et Church.	---	---	---	+	---	---	---	---	---
23	<i>A. fonsecaeus</i> Thom & Raper.	+	+	+	+	---	---	+	---	+
24	<i>A. japonicus</i> Saito.	---	+	---	---	---	---	---	---	---
25	<i>A. nidulans</i> (Eidam) Winter.	---	---	---	+	---	+	---	---	---
26	<i>A. niger</i> van Teigh.	---	---	---	+	---	---	---	---	+
27	<i>A. namus</i> Monta.	---	---	---	---	---	---	+	---	+
28	<i>A. oryzae</i> (Ahburg in Korschelt) Cohn.	+	---	---	+	---	---	+	+	---
29	<i>A. parasiticus</i> Speare.	---	---	---	---	---	+	---	---	---
30	<i>A. phaceocephalus</i> Durieu and Montagne.	---	---	---	+	+	---	---	---	---
31	<i>A. phoenicis</i> Thom.	---	---	---	---	---	---	---	---	+
32	<i>A. pulverulentus</i> (McAlpine)	---	---	---	---	+	---	---	---	---
33	<i>A. quercinus</i> (Bain) Thom and Church.	---	+	---	+	---	---	---	---	---
34	<i>A. repens</i> (Corda) Sacc.	---	---	---	+	---	---	+	---	---
35	<i>A. sclerotiorum</i> Huber.	---	---	---	+	---	---	---	---	---
36	<i>A. versicolor</i> (Vuill) Tiraboschi.	---	+	---	---	---	---	+	+	---
37	<i>A. violaceo-fuscus</i> Gasperini.	---	---	---	---	---	+	---	---	---
38	<i>Botrytis cinerea</i> .	---	---	---	---	---	---	---	+	---
39	<i>Corynespora casiicola</i> (Berk & Curt.) Wei.	---	---	---	---	---	+	---	---	---
40	<i>Choanephora cucurbitarum</i> (Berk. & Rav.) Thaxt.	---	---	---	---	---	+	---	+	---
41	<i>Cladosporium</i> spp.	---	---	+	---	---	---	---	+	---
42	<i>Cladosporium -herbarum</i> (Pers.) Link.	---	---	---	+	+	---	---	---	---
43	<i>Colletotrichum capsici</i> (Syd.) Butler & Bisby.	---	---	---	+	+	+	---	---	---
44	<i>Cladosporium fulvum</i> Cooke.	---	---	---	---	---	---	+	---	---

45	<i>Cladosporium variabile</i> (Cooke) de Varies.	---	---	---	---	---	+	---	---	---
46	<i>Curvularia lunata</i> Wakker Boedijn.	+	---	+	---	---	---	---	---	+
47	<i>Curvularia trifoli</i> (Kauff.) Boedijn.	---	---	---	+	---	---	---	---	---
48	<i>Dendrophiopsis spp.</i>	---	---	---	---	---	---	---	---	+
49	<i>Drechslera australiensis</i> (Bugn.) Subram & Jain.	---	---	---	+	+	---	---	+	---
50	<i>Fusarium spp.</i>	---	---	---	---	---	---	---	---	+
51	<i>Fusarium avenaceum</i> (Fries) Sacc.	---	---	+	---	---	+	---	---	---
52	<i>F. chlamydosporum</i> Wr. & Rg.	---	---	---	---	+	---	---	---	---
53	<i>F. decemcellulare</i> Brick.	---	---	+	---	+	---	---	---	---
54	<i>Fusarium equiseti</i> (Corda) Sacc.	---	---	---	---	---	+	---	---	---
55	<i>F. incarnatum</i> (Roberge) Sacc.	---	---	+	---	---	---	---	---	---
56	<i>Fusarium lateritium</i> Nees ex Fries	---	+	---	---	+	---	---	---	---
57	<i>F. moniliforme</i> Sheldon.	---	+	---	---	---	---	---	---	---
58	<i>F. merismoides</i> Corda.	---	---	---	---	---	+	---	---	---
59	<i>F. nivale</i> (Fries) Cesati.	---	---	+	---	---	+	+	---	---
60	<i>F. oxysporum</i> Schl. ex Fries.	---	---	---	---	---	+	---	+	---
61	<i>Fusarium oxysporum</i> Schl. ex Fries f. pisi (V.Hall) Snyder & Hansen.	+	---	---	---	---	---	---	---	---
62	<i>F. roseum</i> Link.	---	---	---	---	---	+	---	---	---
63	<i>F. semitectum</i> Berk. & Rav.	+	---	---	---	---	---	---	---	---
64	<i>F. scirpi</i> Lamb. et Fautr.	---	---	---	---	---	---	---	+	---
65	<i>F. udum</i> Butler.	---	---	+	---	---	---	---	---	---
66	<i>M. spp.</i>	---	---	---	---	---	+	---	---	---

67	<i>M. hiemalis</i> Wehma.	---	---	---	---	---	---	---	---	+
68	<i>M. janssenii</i> Lendner.	---	---	---	---	---	+	+	---	---
69	<i>M. mucedo</i> (Linne) Brefeld.	---	---	---	---	---	---	---	+	---
70	<i>M. racemosus</i> Fresenius.	---	---	---	---	---	---	---	+	---
71	<i>M. rouxianus</i> (Calmette) Wehma.	---	---	---	---	---	---	---	---	+
72	<i>M. javanicus</i> Wehmer.	---	---	+	---	---	---	---	---	+
73	<i>Penicillium corylophilum</i> Dierckx.	---	---	---	---	---	---	---	+	---
74	<i>P. javanicum</i> van Beyma.	---	---	---	---	+	+	---	---	---
75	<i>P. minio-luteum</i> Dierckre.	---	---	---	---	---	+	---	---	---
76	<i>P. variabile</i> Sopp.	---	---	---	---	---	---	---	---	+
77	<i>Pyricularia ebbelsii</i> MB Ellis.	---	---	---	+	---	---	---	---	---
78	<i>Rhizopus artocarp</i> Raciborski.	---	---	---	+	---	+	---	---	---
79	<i>R. arrhizus</i> Fischer	---	---	---	---	---	+	---	---	---
80	<i>R. combodia</i>	---	---	---	+	---	---	---	+	---
81	<i>R. nigricans</i> Ehrenb.	---	---	---	---	---	+	+	---	---
82	<i>R. nodosus</i> Nomyslowski	---	---	---	---	---	---	+	---	---
83	<i>R. oryzae</i> Went et Gerlings	---	---	---	+	---	+	+	---	---
84	<i>R. stolonifer</i> (Ehrenb. ex Fr.) Lind.	---	---	---	---	---	---	+	---	---
85	<i>Septinema bombayense</i> Subram.	---	---	---	---	---	---	---	---	+
86	<i>Scolecobasidiella avellanea</i> (Sappa and Mosca)	---	---	---	---	---	+	---	---	---
87	<i>Staphylotrichum cocosporum</i>	---	---	---	---	---	---	---	+	---
88	<i>Trichothecium roseum</i> Link.	---	---	---	+	---	---	---	---	---

**Table No.22 – Comparative Study of Mycoflora Associated With Horticultural And Vegetable Fruits.**

Sr. No	Name of Fungus	Apple	Sour Lime	Mandarin Orange	Sweet Orange	Banana	Pea pod	Clusterbea	French bean	Lablab	Chilli	Tomato	Brinjal	Okra	Coconut
1	<i>Actinomucor spp.</i>	-	-	-	+	-	-	-	-	-	-	+	-	-	-
2	<i>Alternaria alternata</i> (Fr.) Keissler.	-	-	-	-	-	+	-	-	-	-	+	+	-	+
3	<i>Alternaria amaranthi</i> (Peck) van Hook.	-	-	-	-	-	+	-	-	+	+	-	-	-	-
4	<i>Alternaria brassicicola</i> (Schw.) Wiltshire.	+	-	-	-	-	-	-	-	+	-	-	-	-	-
5	<i>Alternaria burnsii</i> Uppal, Potel & Kamat.	-	-	-	-	-	-	-	-	+	+	-	-	-	-
6	<i>A. citri</i> Eltus and Pierce and Pierce.	-	-	-	-	-	-	-	-	+	-	-	+	-	-
7	<i>A. carthami</i> Chowdhury.	-	-	-	-	-	+	-	-	+	-	-	-	-	-
8	<i>Alternaria chlamydospora</i> Mouch	-	-	-	-	-	-	+	-	-	-	-	-	-	-
9	<i>A. humicola</i> Oudemans.	-	-	-	-	-	-	-	-	+	-	-	-	-	-
10	<i>Alternaria palandui</i> Ayyangar.	-	-	-	-	+	-	+	-	+	-	-	-	-	-
11	<i>Alternaria pluriseptata</i> (Karst. et Har.) Jorstad.	-	-	-	+	-	-	-	-	-	-	-	-	-	-
12	<i>A. phragmospora</i> Emden.	-	-	-	-	-	+	-	-	-	-	+	-	-	-
13	<i>A. ricini</i> (Yoshii) Hansford.	-	-	-	-	-	+	-	-	-	-	-	-	-	-
14	<i>A. solani</i> (Ell. & Mart.)	-	-	-	-	-	-	-	-	-	-	+	-	-	-
15	<i>A. tenuis</i> Auct.	-	-	-	-	-	-	-	-	-	+	-	-	-	-
17	<i>Aspergillus alutaceus</i> . Berk. & Church.	-	-	+	+	-	-	-	-	-	-	-	-	-	-
18	<i>A. alliaceus</i> Thom & Church.	-	+	-	-	-	-	-	-	-	-	-	-	-	-

19	<i>A. amstelodami</i> (Mang) Thom & Church.	-	+	+	+	+	-	-	-	+	-	+	-	-	-
20	<i>A. awamori</i> Nakazawa.		+	+	+	-	-	+	-	+	-	-	+	+	-
21	<i>A. candidus</i> Link ex Fries.	-	-	-	-	-	-	-	-	-	-	-	+	-	-
22	<i>Aspergillus</i> <i>carbonarius</i> (Bain.) Thom.	-	-	-	-	-	-	-	-	-	+	-	-	-	-
23	<i>A. chevalieri</i> (Mang.) Thom & Church.	-	+	-	-	-	-	+	-	+	+	+	+	-	-
24	<i>A. flavus</i> Link.	-	-	-	+	+	-	-	-	+	-	+	-	-	-
25	<i>A. fonsecæus</i> Thom & Raper.	+	+	+	-	+	+	+	+	+	-	-	+	-	+
26	<i>A. fumigatus</i> Fres.	-	+	-	-	-	-	-	-	-	-	-	-	-	-
27	<i>A. insecticola</i> Subram.	-	-	-	-	-	-	-	-	+	-	-	-	-	-
28	<i>A. japonicus</i> Saito.	+	+	-	+	-	-	+	-	-	-	-	-	-	-
29	<i>A. nanus</i> Mont.	-	+	+	-	-	-	-	-	-	-	-	+	-	+
30	<i>A. nidulans</i> (Eidam) Wint.	-	-	-	+	-	-	-	-	+	-	+	-	-	-
31	<i>A. niger</i> van Teigh.	+	+	+	+	+	-	-	-	+	-	-	-	-	+
32	<i>A. lutescens</i> Bain ex Thom & Church.	-	+	-	+	-	-	-	-	+	-	-	-	-	-
33	<i>A. oryzae</i> (Ahlburg.) Cohn.	-	+	-	+	-	+	-	-	+	-	-	+	+	-
34	<i>A. parasiticus</i> Speare.	-	+	-	-	-	-	-	-	-	-	+	-	-	-
35	<i>A. phaceocephalus</i> Durieu and Montagne.	+	-	-	+	-	-	-	-	+	+	-	-	-	-
36	<i>A. phoenicis</i> (Corda) Thom.	-	-	-	+	-	-	-	-	-	-	-	-	-	+
38	<i>A. pulverulentus</i> (McAlpine)	-	-	-	-	-	-	-	-	-	+	-	-	-	-
39	<i>A. quercinus</i> (Bainier) Thom and Church.	-	-		+	-	-	+	-	+	-	-	-	-	-
40	<i>A. repens</i> (Corda) de Bary.	-	-	-	-	+	-	-	-	+	-	-	+	-	-
41	<i>A. sclerotiorum</i> Huber.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	<i>A. sydowi</i> (bain, and Sart. ) Thom. And Church.	-	-	-	+	-	-	-	-	-	-	-	-	-	-
43	<i>A. ustus</i> (Bainer) Thom & Church.	-	+	-	-	-	-	-	-	-	-	-	-	-	-

44	<i>A. versicolor</i> van Tiraboschi.	-	-	+	+	-	-	+	-	-	-	-	+	+	-
45	<i>A. violaceo-fuscus</i> Gasperini.	-	+	-	+	-	-	-	-	-	-	+	+	-	-
46	<i>Botrytis cinerea</i> Pers. ex Fries.	-	-	-	-	-	-	-	-	-	-	-	-	+	-
47	<i>Corynespora casiicola</i> (Berk& Curt.) Wei.	-	-	-	-	-	-	-	-	-	-	+	-	-	-
48	<i>Choanephora cucurbitara</i> (Berk. & Rav.) Thaxt.	-	-	-	-	-	-	-	-	-	-	+	-	+	-
49	<i>Cladosporium spp.</i>	-	+	-	-	+	-	-	-	-	-	-	-	+	-
50	<i>C. elatum</i> (Harz) Nannfeldt.	-	-	-	+	-	-	-	-	-	-	-	-	-	-
51	<i>C. fulvum</i> Cooke.	-	-	-	-	-	-	-	-	-	-	-	+	-	-
52	<i>C. gallicola</i> B. Sutton.	-	-	-	+	-	-	-	-	-	-	-	-	-	-
53	<i>Cladosporium herbarum</i> (Pers.) Link. ex Fr.	-	+	-	-	+	-	-	+	+	+	-	-	-	-
54	<i>C. nigrellum</i> Ellis & Evert.	-	-	-	+	-	-	-	-	-	-	-	-	-	-
55	<i>Cladosporium uredinicola</i> Speg.	-	-	-	+	-	-	-	-	-	-	-	-	-	-
56	<i>Cladosporium variabile</i> (Cooke) de Varies.	-	-	-	-	-	-	-	-	-	-	+	-	-	-
58	<i>Colletotrichum capsici</i> (Syd.) Butler & Bisby.	-	-	-	-	-	-	-	-	+	+	+	-	-	-
59	<i>Curvularia lunata</i> Wakker) Boedijn.	-	-	-	-	-	+	-	+	-	-	-	-	-	+
60	<i>Curvularia trifoli</i> (Kauff.) Boedijn.	-	-	-	-	-	-	-	-	+	-	-	-	-	-
62	<i>Dendrophiopsis spp.</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	+
63	<i>Drechslera australiensis</i> (Bugn.) Subram & Jain.	+	-	-	-	-	-	-	-	-	+	+	-	+	-
64	<i>Fusarium spp.</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	+
65	<i>Fusarium avenaccum</i> (Fries) Sacc.	-	-	-	+	-	-	-	+	-	-	+	-	-	-
67	<i>F. chlamydosporum</i> Wr. & Rg.	-	-	-	-	-	-	-	-	-	+	-	-	-	-

68	<i>F. decemcellulare</i> Brick.	-	-	-	-	-	-	-	+	-	+	-	-	-	-
69	<i>Fusarium -dimerum</i> Penzig.	-	-	-	-	+	-	-	-	-	-	-	-	-	-
70	<i>Fusarium equiseti</i> (Corda) Sacc.	-	-	-	-	-	-	-	-	-	-	+	-	-	-
71	<i>F. incarnatum</i> (Roberge) Sacc.	-	-	-	-	-	-	-	+	-	-	-	-	-	-
72	<i>Fusarium lateritium</i> Nees ex Fries.	-	-	-	-	-	-	+	-	-	+	-	-	-	-
73	<i>F. merismoides</i> Corda.	-	-	-	-	-	-	-	-	-	-	+	-	-	-
74	<i>F. monoliforme</i> Sheldon.	-	-	-	-	+	-	+	-	-	-	-	-	-	-
75	<i>F. nivale</i> (Fries) Cesati.	-	-	-	-	-	-	-	+	-	-	+	+	-	-
76	<i>F. oxysporum</i> Schl. Ex Fries f. lycopersici (Sacc.) Snyder & Hansen.	-	-	-	-	-	-	-	-	-	-	+	-	-	-
78	<i>F. oxysporum</i> Schl. ex Fries f. niveum (E. F. Sm.) Snyder & Hansen.	-	+	-	-	-	-	-	-	-	-	-	-	-	+
79	<i>Fusarium</i> <i>oxysporum</i> Schl. ex Fries f. pisi (V.Hall) Snyder & Hansen.	-	-	-	-	-	+	-	-	-	-	-	-	-	-
80	<i>F. rosae</i> Link.	-	-	-	+	-	-	-	-	-	-	-	-	-	-
81	<i>F. roseum</i> Link.	-	-	-	-	+	-	-	-	-	-	+	-	-	-
82	<i>F. semitectum</i> Berk. & Rav.	-	-	-	-	-	+	-	-	-	-	-	-	-	-
83	<i>F. scirpi</i> Lamb. et Fautr.	-	-	-	-	-	-	-	-	-	-	-	-	+	-
84	<i>F. udum</i> Butler.	-	-	-	-	-	-	-	+	-	-	-	-	-	-
85	<i>Mastigosporium</i> <i>album</i> Riess.	-	-	-	-	+	-	-	-	-	-	-	-	-	-
86	<i>Mucor</i> spp.	-	-	-	-	-	-	-	-	-	-	+	-	-	-
87	<i>Mucor albo-alter</i>	-	-	-	+	-	-	-	-	-	-	-	-	-	-
88	<i>Mucor hiemalis</i> Wehmer.	-	-	-	-	-	-	-	-	-	-	-	-	-	+
89	<i>M. janssenii</i> Lender.	-	-	-	-	-	-	-	-	-	-	+	+	-	-
90	<i>M. javanicus</i> Wehmer.	-	-	-	+	-	-	-	-	-	-	-	-	-	+
91	<i>M. luteus</i> Gleditsch.	-	+	-	+	-	-	-	-	-	-	-	-	-	-
92	<i>Mucor mucedo</i>	-	-	-	-	-	-	-	-	-	-	-	-	+	-



	(Linne) Brefeld.																	-
93	<i>Mucor racemosus</i> Fresenius.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-		-
94	<i>M. rouxianus</i> (Calmette) Wehma.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		+
95	<i>Penicillium</i> <i>atramentosum</i> Thom.	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-		-
96	<i>P. brefeldianum</i> Dodge.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
97	<i>Penicillium</i> <i>corylophilum</i> Dier.	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-		-
98	<i>P. chrysogenum</i> Thom.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
99	<i>P. crustosum</i> Thom.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-		-
100	<i>P. expansum</i> Link ex Fries.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
101	<i>P. janthinellum</i> Biourge.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
102	<i>P. javanicum</i> van Beyma.	-	-	-	+	-	-	-	-	-	+	+	-	-	-	-		-
103	<i>P. lilacinum</i> Thom.	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-		-
104	<i>P. minio-luteum</i> Dierckx.	-	+	-	+	-	-	-	-	-	-	+	-	-	-	-		-
105	<i>P. oxalicum</i> Currie and Thom.	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-		-
106	<i>P. rubrum</i> Stoll.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-		-
107	<i>P. simplicissimum</i> (Oud.) Thom.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-		-
108	<i>Penicillium</i> <i>variabile</i> Sopp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		+
109	<i>Pyricularia ebbelsii</i> MB Ellis.	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-		-
110	<i>Rhizopus arrhizas</i> Fischer.	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-		-
111	<i>R. artocarpi</i> Raciorski.	-	-	-	+	-	-	-	-	-	+	-	+	-	-	-		-
112	<i>R. combodia</i> Vuillemin.	+	-	-	+	-	-	-	-	-	+	-	-	-	-	+		-
113	<i>R. nigricans</i> Ehrenb.	-	-	-	+	-	-	-	-	-	-	-	+	+	-	-		-
114	<i>R. nodosus</i> Nomyslowski.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-		-
115	<i>Rhizopus oryzae</i> Went and Gerl.	-	-	+	-	-	-	-	-	-	+	-	+	+	-	-		-
116	<i>R. stolonifer</i> (Ehrenb. ex Fr.) Lind.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-		-

117	<i>Septonema bombayense</i> Subram.	-	+	-	-	-	-	-	-	-	-	-	-	-	+
118	<i>Scoleceobasidiella avellanea</i> (Sappa and Mosca)	-	-	-	-	-	-	-	-	-	-	+	-	-	-
119	<i>Stigmina caffra</i> (Wakefield).	-	-	-	+	-	-	-	-	-	-	-	-	-	-
120	<i>Staphylotrichum cocosporum</i>	-	-	-	-	-	-	-	-	-	-	-	-	+	-
121	<i>Torula herbarum</i> (Pers.) Link ex Fries.	-	-	-	+	-	-	-	-	-	-	-	-	-	-
122	<i>Trichothecium roseum</i> Link.	-	+	-	-	-	-	-	-	+	-	-	-	-	-

— Absent    + Present

## **EXPLANATION OF PLATE – VI**

**Fig. No. 16 - 18**

### **Pea**

**16) A) Normal fruit**

**17) Humid chamber Method.**

1) *Alternaria carthami* Chowdhuri

2) *Fusarium oxysporum* Schl. Ex Fries f. Pisi (V. Hall)  
Snyder and Hansen

**18) Agar plate Method**

3) *Aspergillus oryzae* ( Ahburg in Korschelt Cohn.)

# PLATE NO. VI

Fig. no. 16 to 18

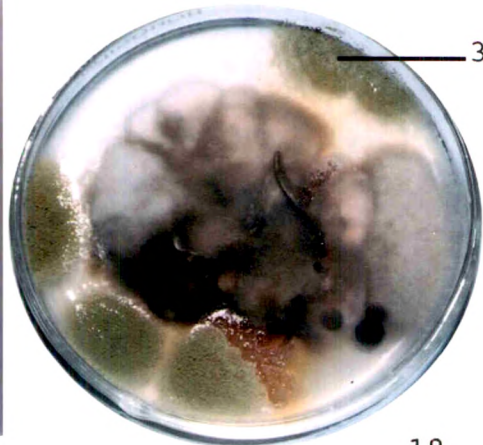
Pea



16



17



18

## **EXPLANATION OF PLATE – VII**

**Fig. No. 19 - 21**

### **Cluster bean**

**19) A) Normal fruit**

**B) Abnormal fruit**

**20) Humid chamber Method.**

1) *Aspergillus fonsecaeus* Thom & Raper

2) *Fusarium moniliforme* Sheldon

**21) Agar plate Method**

3) *Aspergillus chevalieri* (Mang.) Thom & Church

4) *Fusarium lateritium* Nees ex Fries

# PLATE NO. VII

Fig.no.19 to 21

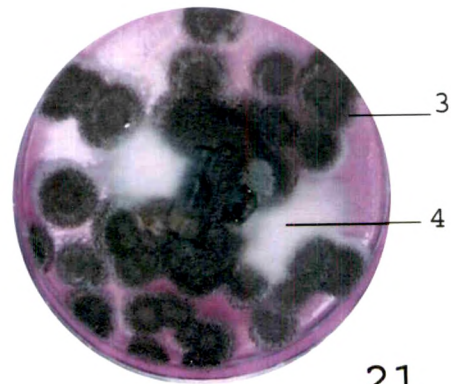
Cluster bean



19



20



21

## **EXPLANATION OF PLATE - VIII**

**Fig. No. 22 - 24**

### **Lablab**

**22) A) Normal fruit**

**B) Abnormal fruit**

**23) Humid chamber Method.**

1) *Fusarium nivale* ( Fries ) Cesati

2) *Alternaria amaranthi* (Peck)

**24) Agar plate Method**

3) *Alternaria burnsii* Uppal, Patel & Kamat.

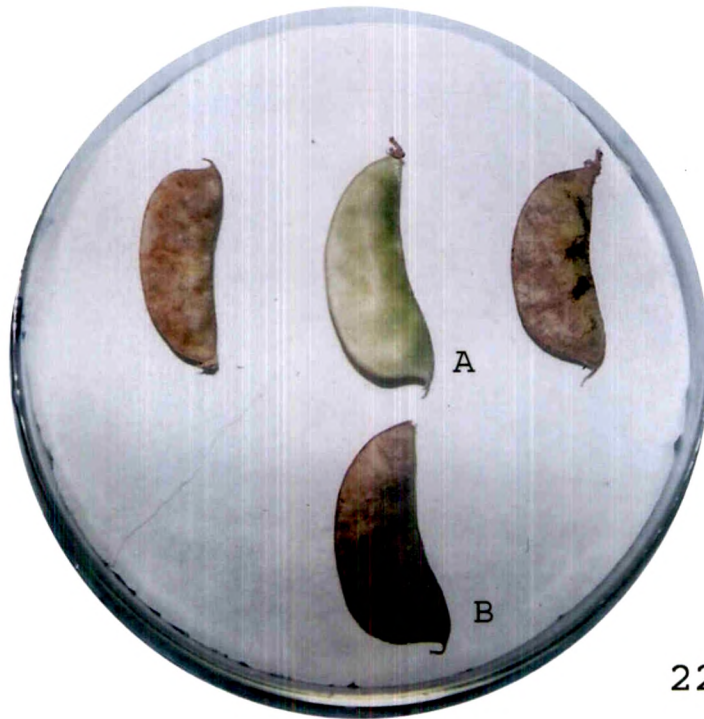
4) *Aspergillus niger* Van Teigh.



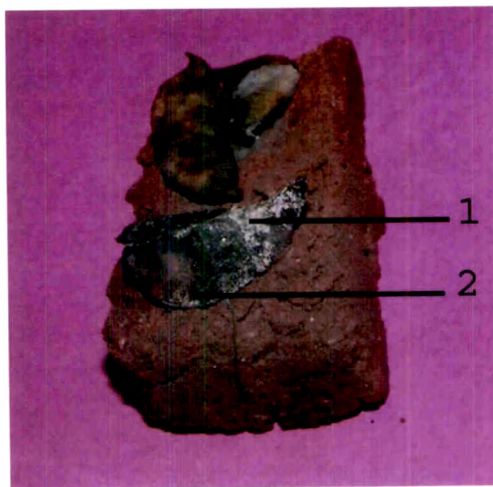
# PLATE NO. VIII

Fig. no. 22 to 24

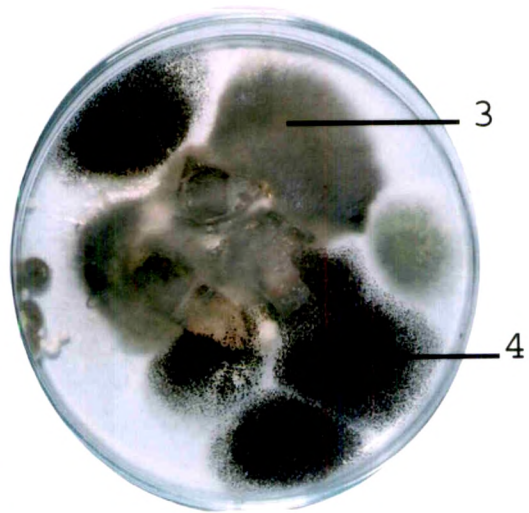
Lablab



22



23



24



## **EXPLANATION OF PLATE – IX**

**Fig. No. 24 - 25**

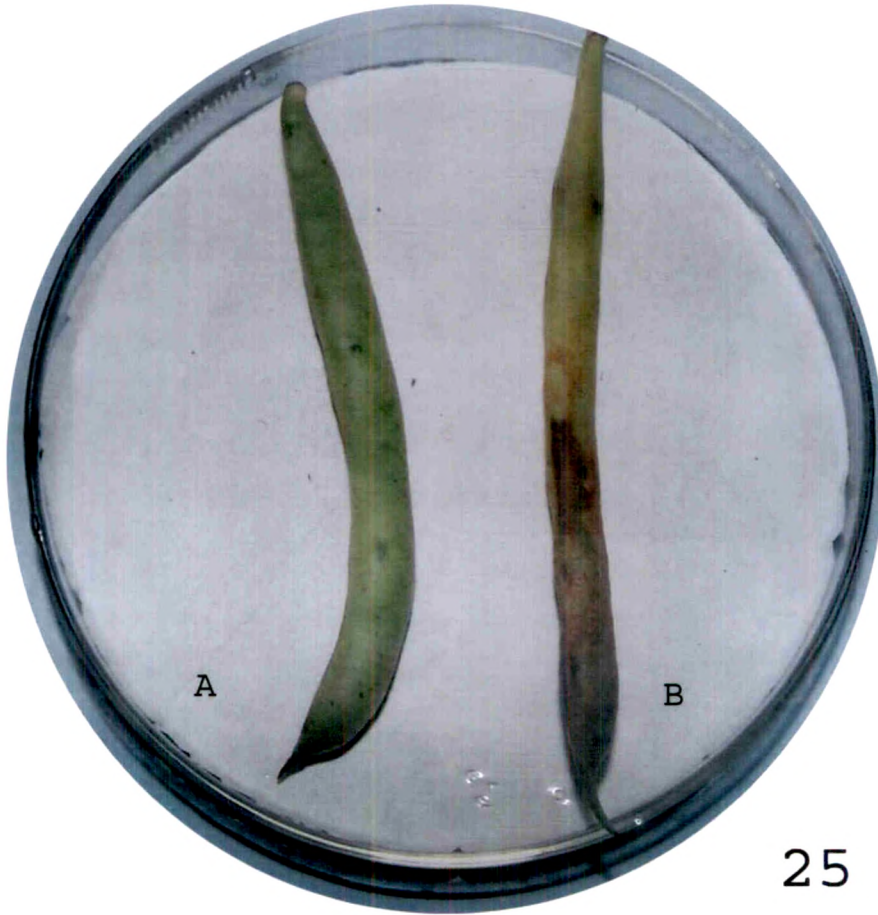
**French bean**

- 25) A) Normal fruit**
  - B) Abnormal fruit
- 26) Humid chamber Method.**
  - 1) *Fusarium incarnatum* (Roberge ) Sacc.
  - 2) *Curvularia lunata* ( Wakker ) Boedijn
- 27) Agar plate Method**
  - 3) *Cladosporium herbarum* ( Pers.) Link.

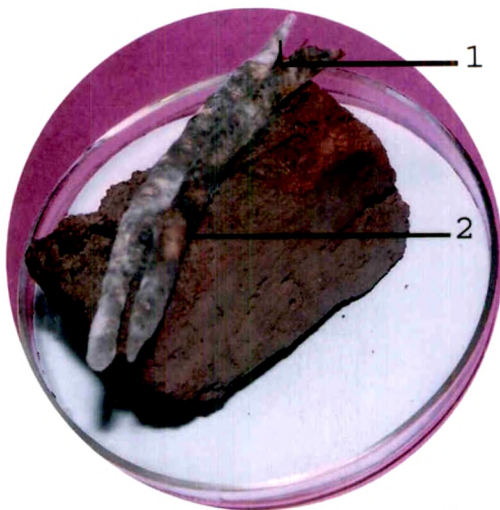
# PLATE NO. IX

Fig. no. 25 to 27

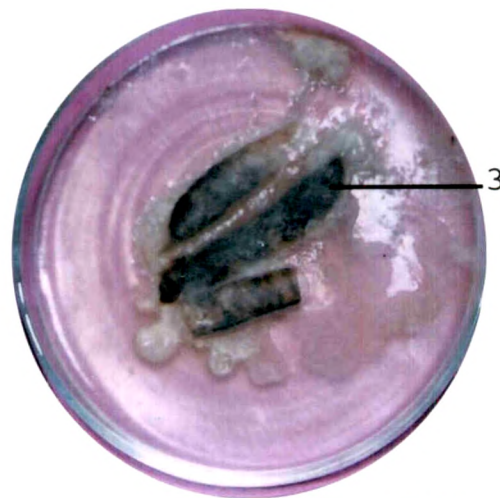
French bean



25



26



27

## **EXPLANATION OF PLATE - X**

### **Chilli**

**28) A) Normal fruit**

**B) Abnormal fruit**

**29) Humid chamber Method.**

1) *Fusarium lateritium* Nees ex Fries.

**30) Agar plate Method.**

1) *Alternaria burnsii* Uppal, Patel & Kamat

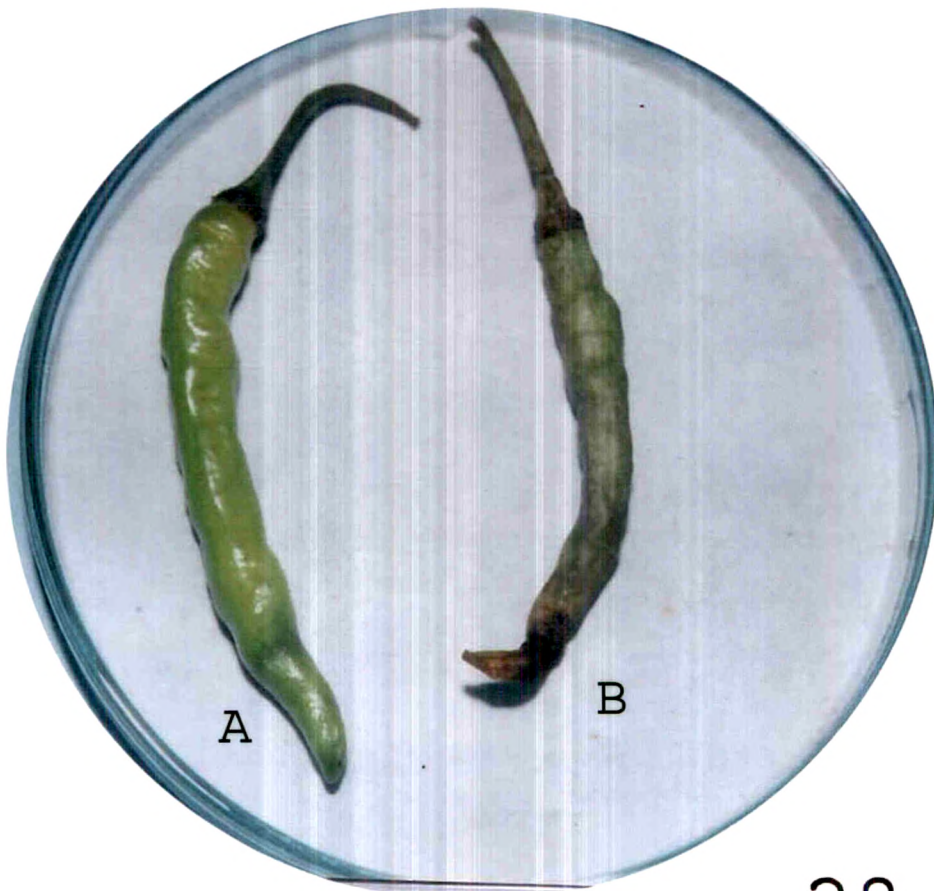
2) *Aspergillus chevalieri* (Mang.) Thom and Church.

3) *F. chlamydosorum* Wr. and Rg.

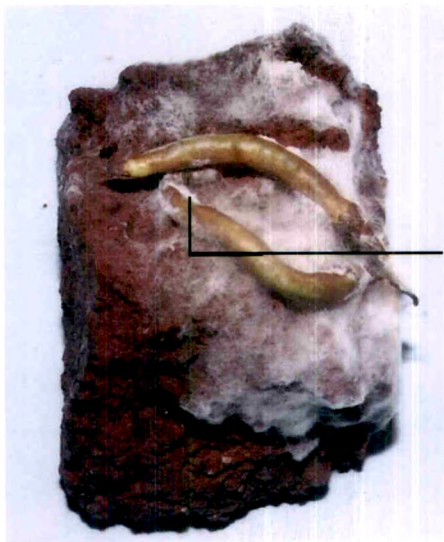
# PLATE NO. X

Fig.no.28 to 30

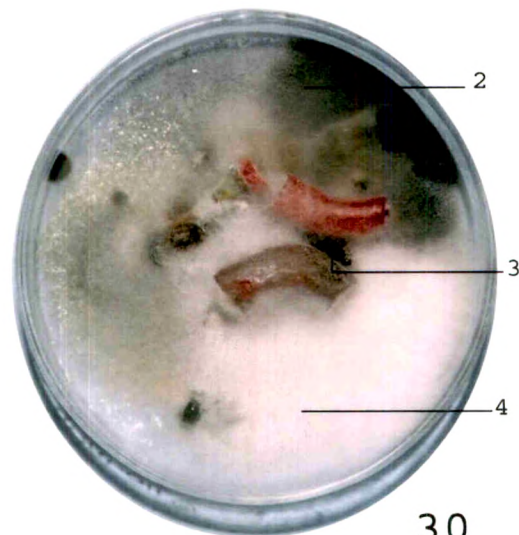
Chilli



28



29



30

## **EXPLANATION OF PLATE - XI**

**Fig. No. 31 - 33**

### **Tomato**

**31) A) Normal fruit**

**B) Abnormal fruit**

**32) Humid chamber Method.**

1) *Alternaria solani* (Ellis & Mart.) Sorauer.

**33) Agar plate Method**

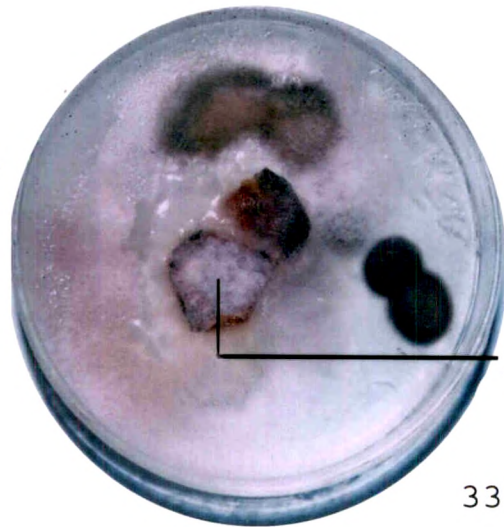
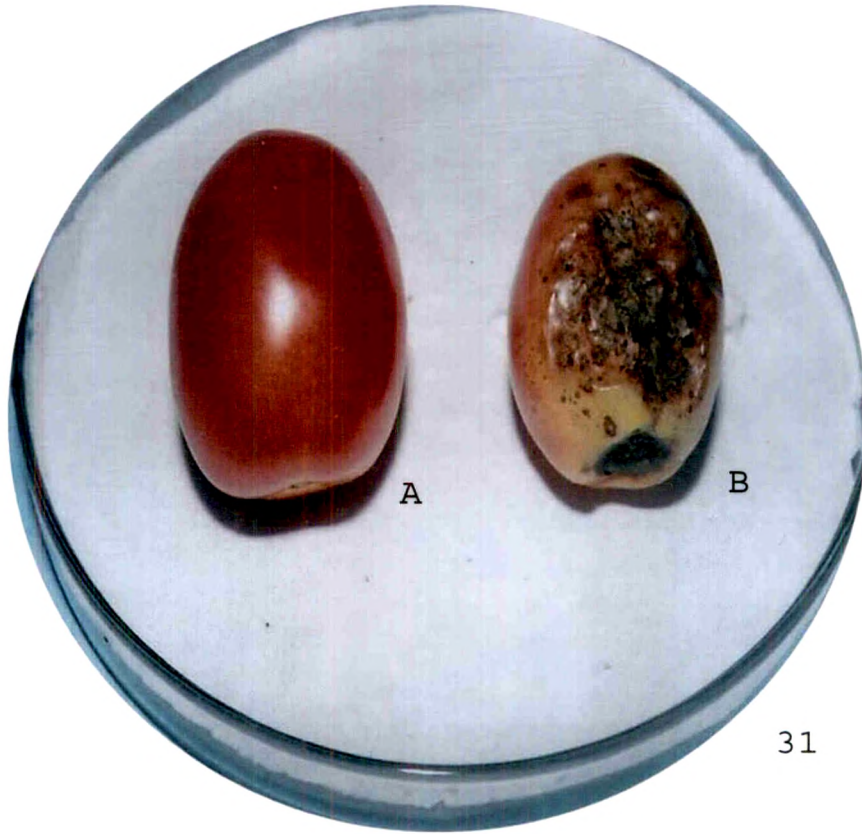
2) *Fusarium avenaceum* ( Fries ) Sacc.



# PLATE NO. XI

Fig. no.31 to 33

Tomato



32

33

## **EXPLANATION OF PLATE - XII**

**Fig. No. 34 - 36**

### **Brinjal**

**34) A) Normal fruit**

**B) Abnormal fruit**

**35) Humid chamber Method.**

1) *Mucor janssenii* Lender.

**36) Agar plate Method**

2) *Aspergillus fonsecaeus* Thom and Rapper

3) *A. nanus* Monta

4) *Alternaria citri* Ellis and Pierce

5) *Fusarium nivale* (Fries ) Cesati.

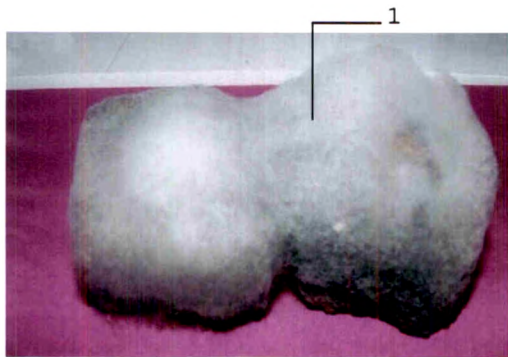
# PLATE NO. XII

Fig.no.34 to 36

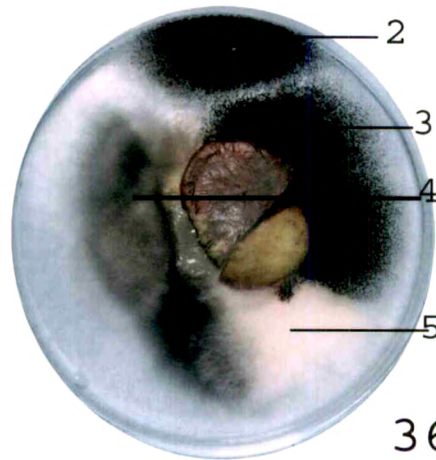
Brinjal



34



35



36



## **EXPLANATION OF PLATE – XIII**

**Fig. No. 37 - 39**

**37) A) Normal fruit**

**B) Abnormal fruit**

**38) Humid chamber Method.**

1) *Choanephora cucurbitarum* (Berk et Rav.) Thaxt.

**39) Agar plate Method**

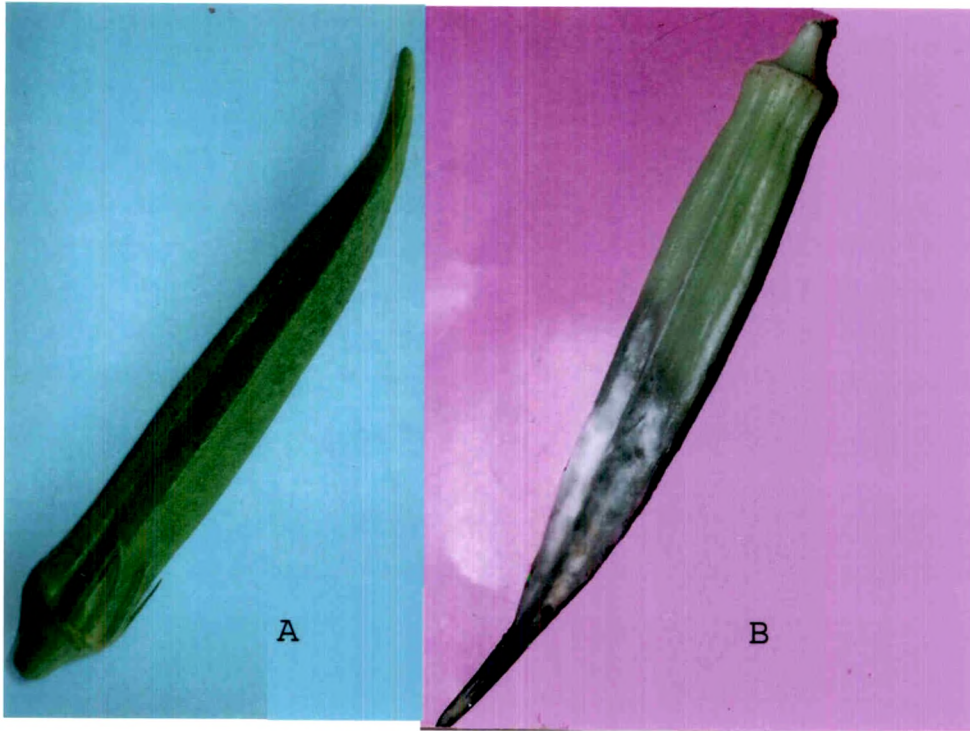
2) *Fusarium oxysporum* Schl. Ex Fries

3) *Aspergillus awamori* Nakazawa.

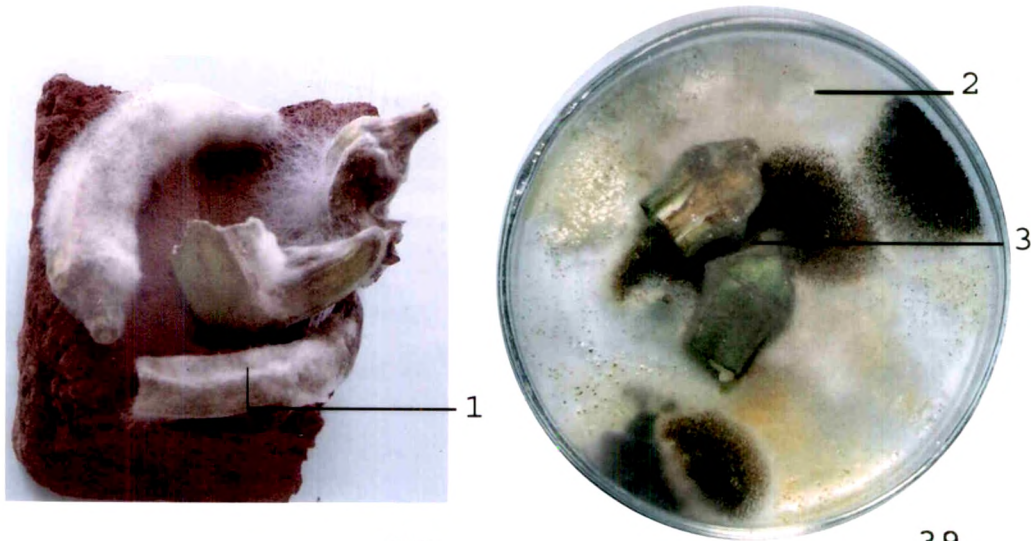
# PLATE NO. XIII

Fig.no.37 to 39

Ok ra



37



38

39

## **EXPLANATION OF PLATE – XIV**

**Fig. No. 40 - 42**

### **Coconut**

- 40) A) Normal fruit**
  - B) Abnormal fruit**
- 41) Humid chamber Method.**
  - 1) *Penicillium variabile* Sopp.
  - 2) *Aspergillus fonsecaeus* Thom. & Raper.
- 42) Agar plate Method**
  - 3) *Aspergillus fonsecaeus* Thom. & Raper.

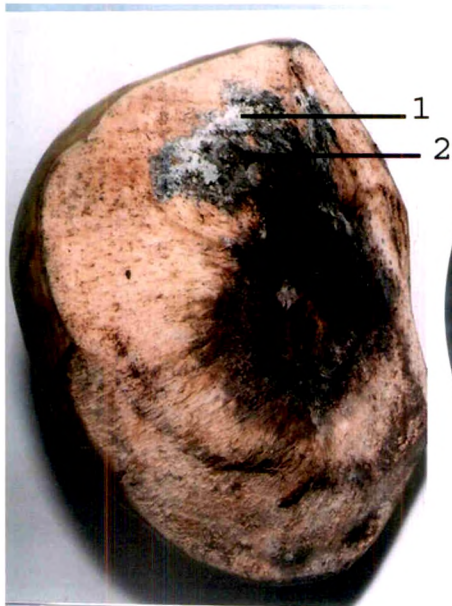
# PLATE NO. XIV

Fig.no.40 to 42

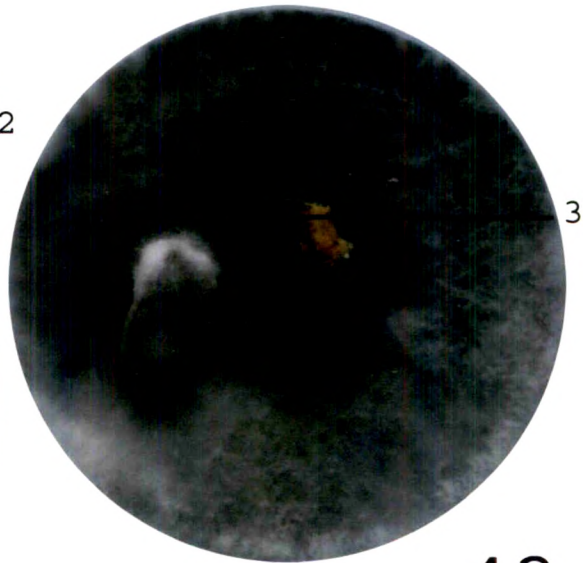
Coconut



40



41



42

## EXPLANATION OF PLATE – XV

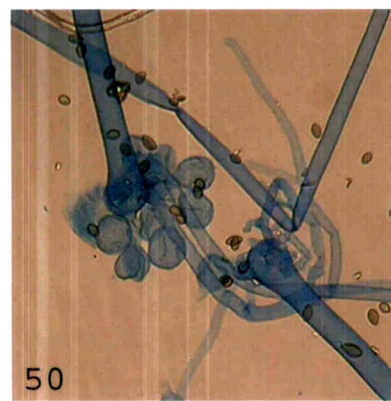
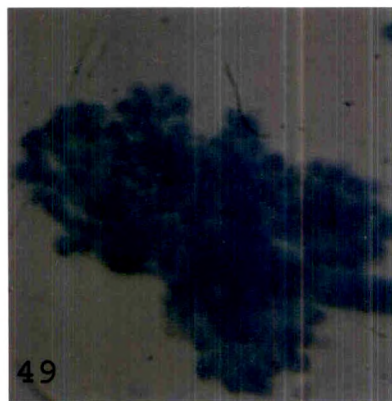
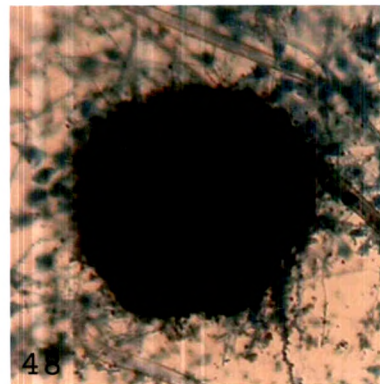
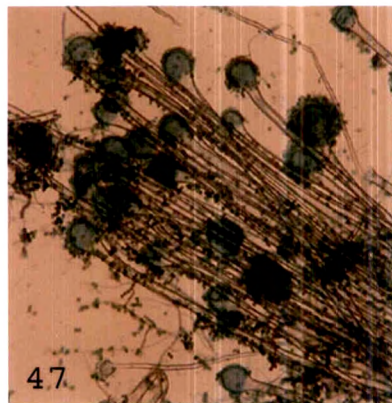
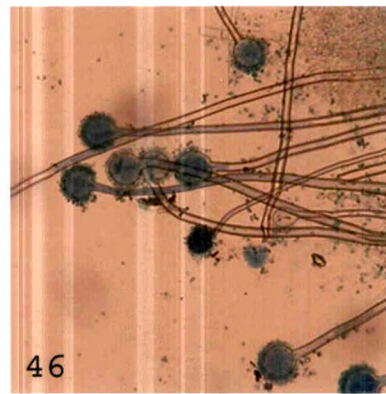
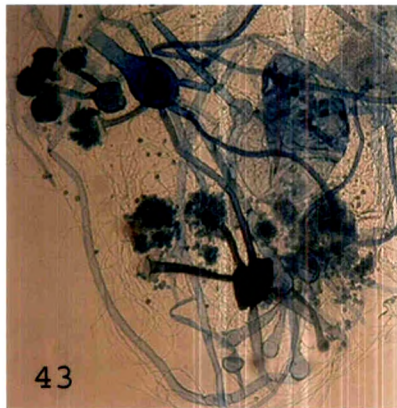
### Fig. No. 43 – 50

- 43) *Actinomucor* spp. X 150
- 44) *Alternaria amaranthi* (peck) van Hook. X 650
- 45) *A. carthami* Chowdhuri. X 650
- 46) *Aspergillus amstelodami* (Mang.) Thom & Church. X 150
- 47) *A. chevalieri* (Mang.) Thom & Church. X 150
- 48) *A. niger* van Teigh. X 650
- 49) *Botrytis cinerea* Pers. Ex Fries. X 650
- 50) *Choanephora cucurbitarum* (Berk. & Rav.) Thaxt. X 650



# PLATE NO. XV

Fig.no.43 to 50



116

## EXPLANATION OF PLATE – XVI

### Fig. No. 51 – 58

51) *Colletotrichum capsici* (Syd.) Butler & Bisby. X 650

52) *Corynespora asiicola* (Berk & Curt.) Wei. X

53) *Curvularia trifoli* (Kauff.) Boedijn. X 150

54) *Cladosporium herbarum* (Pers.) Link. ex Fr. X 650

55) *Drechslera australiensis* (Bugn.) Subram & Jain. X 650

56) *Fusarium incarnatum* (Roberge) Sacc. X 150

57) *Penicillium javanicum* van Beyma. X 150

58) *Trichothecium roseum* Link. X 650

# PLATE NO. XVI

Fig.no.51 to 58

