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Survey of Fungal Disease of Some Crops of Nanded District in Maharastra, India.

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Abstracts - Nanded is one of the most divergent districts of Maharastra in which many types of crops grown by farmers. Most of the land in Nanded is under crop cultivated area. In this area farmer grown the Cotton, banana, sugarcane, turmeric, soybean, tur, channa, jowar, wheat, papaya, vegetables, pulses etc. Many time this crop is badly affected by the many pathogens and causes of many diseases. Fungi is the most important category of plant pathogen and its causes destructive disease of many crops. The aim of research is survey of fungal disease of common crops in Nanded region. There is total 46 different type of fungal disease observed in our research and total 30 crops are covered in this survey. There are 17 fungal pathogens belong to the ascomycetes, then 13 fungi belong to the class deuteromycetes, 9 fungal pathogens belong to the class basidiomycetes and 7 fungi belong to the class oomycetes. In our research survey the fungi belong to the class ascomycetes and class deuteromycetes causes more diseases as compare to the fungi of class oomycetes and basidiomycetes.

Index terms – **plant pathogen, fungal disease, Nanded districts.**

Introduction

The humans primary need is the food and it fulfill from the agriculture sector. India is the large food producer country. India is an important cash crop, which is grown for both the domestic and export market **(Bijeeta *et al).*** All states of India produce the different type crop. Maharastra state also produce many crops. Nanded is one of the districts of Maharastra which is grown of different type of crops such as Cotton, Soybean, Tur, black-green gram, turmeric, sugarcane, banana, wheat, jowar, tomato, brinjal, chilli, papaya etc. Crops are affected by the many pathogens like as virus, bacteria, mycoplasma, fungi, and nematodes. its causes different type of disease to the crops. Aim of the research is study of fungal disease of crops because fungi are one of the most destructive disease causal organisms. Most of the crop disease caused by fungi. Fungal infection affected on yellowing, rusting, and wilting of leaves, rotting of root, stem, and fruits, decaying of fruits and ultimately affected on shelf life, nutritional profile and economy of fruits **(Sandhya Shitole2019).** They may affect different parts of the plants, such as foliage, stem, root, flowers and seed that induce various types of symptoms. However, vascular system infecting pathogens causing wilt and affect the entire plant **(N. M. Gohel 2023).** In Nanded region cotton, soybean, turmeric, Banana, Tur, channa, jawor and wheat are badly affected by the fungal infection and causes a heavy loss in productivity.

Material and methods

Study Area

Maharastra is the one of the biodiversity rich state of India. Nanded is the district of Maharastra which grow the different crops. According to Indian Government geographical websites the Nanded is located between the 18.15 to 19.55 N altitude and 77.7 to 78.15 E longitude with altitude of 354 M. above the sea level. Nanded is cover the total area of 10528 sq. km. The total geographical area of Nanded is 1052800 hectors, out of which total cultivable area is 677500 hectares. The area under irrigation is 90226. This area farmers grow the kharif and rabi seasonal crops in different Taluka including the Mudkhed, Ardhapur, umri, Dharmabad, Naigaon, Degloor etc. Godavary river is the one of the most helpful river of farmers for irrigation of many people of Nanded region.

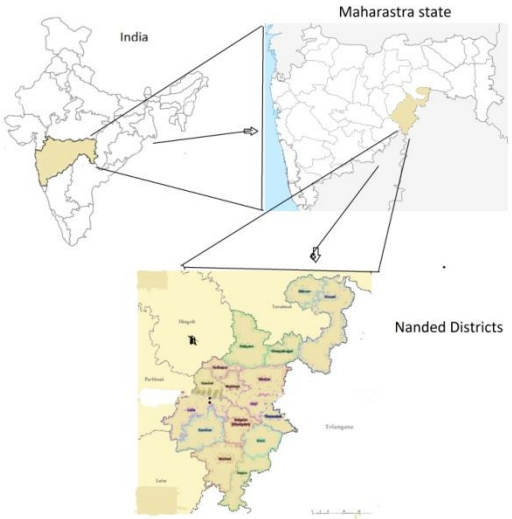

Fig- showing the location of Nanded districts in map

Plant material and Data collection

All the plant material are collected from the different part of Nanded districts. Many fields visited in different season for collection of different crop diseased plant materials. The diseased plant material collected in sterile polythene bag and brought to the laboratory. Collected plant material are carefully examine and external symptoms of disease plants are recorded. Potato dextrose agar (PDA) plate method used for the isolation of pathogen from the disease plant materials. PDA plates are inoculating the fungal pathogen in aseptic condition. Inoculated plates were kept for incubation at room temperature for 7 days. During the incubation period the fungal growth was observed regularly and observation were noted. After 7 days of incubation the photographs of plates were taken. After the 7 days isolated fungal pathogen colonies were used for preparation of slides. Fungal pathogen slides were prepared using cotton blue stain and lactophenol is used as mounting medium. Slides were examined under microscope and micro-photography was also done. Fungal pathogen was identified based on morphological characters of spores by using standard literature and reputed online journals. (Nagamani *et al.*, 2006).

Table: List of fungal plant disease, causal organism and affected plant part.

Sr. No.	*Plants Name (Host)*	Plants Local Name	Disease Name	*Pathogen*	Systematic Class	Affected Plants Part
1	*Pennisetum typhoides*	Bajra	Green Ear of bajra	*Sclerospora graminicola*	Oomycetes	Leaves and ear
			Ergot of Bajra	*Cleviceps microcephala*	Ascomycetes	Inflorescence, ear
2	*Raphanus sativus*	Mustard	Damping off	*Pythium debaryanum*	Oomycetes	Seedling
			White rust	*Albugo candida/ Cystopus candida*	Oomycetes	Leaves, stem, inflorescence
3	*Sorghum vulgare Pers.*	Jowar	Rust of Jowar	*Puccinia purpurea Cke.*	Basidiomycetes	Leaves
			Grain smut	*Sphaeclotheca sorghi Link.*	Basidiomycetes	Inflorescence, ear
			Loose smut	*Sphaeclotheca cruenta*	Basidiomycetes	Inflorescence, ear
4	*Triticum vulgare/ aestivum*	Wheat	Stem rust	*Puccinia graminis tritici*	Basidiomycetes	Leaves, stem
			Loose smut	*Ustilago tritici*	Basidiomycetes	Inflorescence, ear.
5	*Saccharum afficinarum L.*	Sugarcane	Red rot	*Collectotrichum falcatum Went.*	Deuteromycetes	Leaves and stem
			Whip smut	*Ustilago scitaminea*	Basidiomycetes	Inflorescences axis
6	*Solanum tuberasum L*	Potato	Late blight	*Phytophthora infestans (Mont) de Bary*	Oomycetes	Leaves, stem, tuber.
7	*Musa paradisiacal L.*	Banana	Sigtokka disease	*Mycosphaerella fijiensis (Morelet)*	Ascomycetes	Leaves
8	*Lycopersicom esculentum Mill.*	Tomato	Leaf blight	*Alternaria solani*	Deuteromycetes	Leaves, stem, calyx
			Wilt of Tomato	*Fusarium oxysporum Schlecht. f. sp. lycopersici (Sacc)*	Deuteromycetes	Root and stem
9	*Curcuma longa Roxb*	Turmeric	Leaf spot	*Collectotrichum capsici*	Deuteromycetes	Leaf
10	*Arachis hypogaea L.*	Groundnut	Tikka Disease	*Cercospora personata/ C. arachidicola*	Deuteromycetes	Leaf, Stem
11	*Cajanus cajas L.*	Tur/ pigeon pea	Wilt of tur	*Fujarium oxysporum udum*	Deuteromycetes	Root and Stem
12	*Gossypium spp.*	Cotton	Wilt of cotton	*Fusarium oxysporum f.sp. vasinfectum*	Deuteromycetes	Root and Stem
			Leaf spot	*Alternaria macrospora*	Deuteromycetes	Leaves

13	*Glycine max*	Soybean	Leaf spot	*Cercospora sojina*	Ascomycetes	Leaves, stem
			Anthracnose	*Colletotrichom trancatum*	Ascomycetes	Stem, Leaves, pod
			Rust of soybean	*Phakopsora pachyrhizi*	Basidiomycetes	Leaves
14	*Solanum melongena*	Brinjal	Leaf spot	*Cercospora melongenae*	Ascomycetes	Leaves calyx stem
			Fruit rot	*Phytophthora nicotianae*	Oomycetes	Fruits
15	*Capsicum annum L*	Chilli	Powdery mildew	*Leveillula taurica*	Ascomycetes	Leaves
			Leaf spot	*Cercospora capsica*	Ascomycetes	Leaves, stem
16	*Cicer arietinum L.*	Chickpea/Channa	Ascochyta blight	*Ascochyta rabiei.*	Ascomycetes	leaves
			Wilt of channa	*Fusarium oxysporum f.sp. cicero*	Ascomycetes	Root, stem
17	*Vigna radiata L*	Green Gram	Powdery mildew	*Erysiphe polygoni*	Ascomycetes	Leaves
18	*Vigna mungo L*	Black Gram	Powdery mildew	*Erysiphe polygoni*	Ascomycetes	Leaves
19	*Helianthus annuus*	Sunflower	Powdery mildew	*Erysiphe cichoracearum*	Ascomycetes	Leaves
			Alternaria Leaf spot	*Alternariaster helianthi, /Alternaria zinnia*	Deuteromycetes	Leaves
20	*Carthamus tinctorius L*	Safflower	Blight of safflower	*Alternaria carthami*	Deuteromycetes	Leaves
21	*Sesamum indicum L.*	Sesame	Dry root rot	*Rhizoctonia bataticola*	Deuteromycetes	Root
22	*Zea mays*	Maize	Head smut	*Sphacelotheca reiliana*	Basidiomycetes	Ear
23			Leaf spot	*Helminthosporium turcicum (Syn : H. maydis)*	Ascomycetes	Leaves
24	*Allium sativum*	Garlic	Leaf blight	*Stemphylium vesicarium*	Ascomycetes	Leaves
25	*Allium cepa*	Onion	Leaf spot	*Alternaria porri*	Deuteromycetes	Leaves
26	*Brassica oleracea*	Cabbage	Leaf spot	*Alternaria brassica*	Deuteromycetes	Leaves
27	*Zingiber officinale Roscoe*	Ginger	Soft rot	*Pythium phanidermatum*	Oomycetes	Roots
28	*Ricins communis*	Castor/Arendi	Rust	*Melampsora ricini*	Basidiomycetes	Leaves

			Powdery mildew	*Leveillula taurica*	Ascomycetes	Leaves
29	*Carica papaya*	Papaya	Phytophthora blight	*Phytophthora palmivora*	Oomycetes	Fruits
3o	*Abelmoschus esculentus*	Bhendi / Okra	Powdery mildew	*Erysiphe cichoracearum*	Ascomycetes	Leaves
31	*Pisum sativum*	Pea	Powdery mildew	*Erysiphe polygoni*	Ascomycetes	Leaves, stem, pod

Result and discussion

All the data are collected in the form of above table. The present research study in Nanded region is based on the survey of common cultivated crops and their common fungal disease. In that research total 46 disease survey are done. This research cover total 30 different crops which grown in kharif and rabi season. Most of the disease symptoms are appear on the leaf and stem, some disease symptom shows on the flower and inflorescence, roots fruits etc. In Nanded region leaf spot, rust, smut and powdery mildew of leaf is the common disease of crops. In rainy season the fusarium wilt disease show in cotton, Tur, Tomato etc. Alternaria, Puccini, Colletotrichum, fusarium, cercospora, clerospora is the common pathogen which causes disease on different crops.

All the included disease is caused by fungal pathogen. All the fungal pathogen belongs to the four class such as ascomycetes, basidiomycetes, oomycetes and deuteromycetes. There are 17 fungal pathogens belong to the ascomycetes, then 13 fungi belong to the class deuteromycetes, 9 fungal pathogen belong to the class basidiomycetes and 7 fungi belong to the class oomycetes. In our research survey the fungi belong to the class ascomycetes and class deuteromycetes causes more diseases as compare to the fungi of class oomycetes and basidiomycetes. All the collected data and information are examining the standard literature and online journal.

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