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RESEARCH ARTICLE

ISOLATION AND IDENTIFICATION OF FIELD BULB FUNGAL PATHOGEN FROM (*ALLIUM CEPA* L.) IN MAHARASHTRA

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ABSTRACT

Onion is one of important commercial vegetable crops grown in worldwide. India is second most onion producer. In India Maharashtra is leading state. Present study was investigated of the isolation of fungal diseases in the field of onion. Onions are infected from many fungal diseases, such as, *Basal rot*, *southern blight*, *purple blotch*, *White tip*, *Botrytis Squamosa*, *downy mildew*, *Neck rot*, *leaf blotch* and *black stack ofrotet*. *Basal rot* and *Southern blight* is the major fungal Bulb diseases. A complete causes the number of onion fields every year by fungi. Diseases were collected from the different varieties likewise, Nashik red, Punafursungi, Panchganga, Bhima kiranand N-53 and different locality of Maharashtra likewise, Aurangabad, Beed, Jalna, Ahemdnagar, Nashik, Osmanabad and Pune districts. Fungi were isolates from the infected onions Bulbs of different pathogen as like, *Fusarium oxysporum*, *Botrytis allii*, and *Sclerotium rolfsii* etc. isolated fungi in Maharashtra for this study.

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INTRODUCTION

Onion (*Allium cepa* L.) is the important commercial vegetable crops grown in worldwide. India is the second largest producer country of onion after the china, and leader in production. In India occupies an area of 1.05 million hectare with the production of 16.81million tones (D A & C H D. 2013). The major onion growing states in India is the Maharashtra, Bihar Orissa, Andhra Pradesh, Karnataka, Rajasthan Tamil Nadu, Haryana, and Madhya Pradesh. Maharashtra is the pioneer state in onion production contributing 25% of country's onion (Gadge et al., 2012). In Maharashtra the major onion producing districts are Pune, Ahmadnagar, Satara, Solapur Dhulia, and Nashik. Nashik district contributes 35 to 40 % of the onion production. Onions are cultivated in three different seasons' *Kharif* and *Rabi*. In Maharashtra, the production of onion likewise season, late *Kharif* (35-40%), and *rabbi* (40-45%) *Kharif*, (20%), respectively. (Data source: NHRDF, Nashik, 2006). Chemical composition of onion is anti-inflammatory, anticancer anticancerolesterol, and antioxidant properties such as quercetin (Slimestad et al., 2007). The fungicidal and insecticidal properties of onion are also well identified. (Mishra, 2014.).

The onion also losses due to the causes of same Virus, bacterial, Mycoplasma Nematode and fungi is the major Field bulb diseases of onions. These concept understanding, chosen the most important think is isolation of Bulb fungal diseases of different variety and different localities of the infected onions bulb for fungal pathogen Isolation.

MATERIALS AND METHODS

Collection of samples

Infected sample was collected from the fields, in the polythine bags, that bags was sterilized or aseptic in condition and brought in to the laboratory of Dr Babasaheb Ambedkar Marathwada University, Department of Botany, Plant pathology Fungal Biotechnology laboratory for further experiments.

Isolation and Identification causal pathogen

The infected onion leaves collected from the fields directly in polythine bags of different areas of Maharashtra. Likewise Aurangabad, Beed, Jalna, Latur, Nashik, Osmanabad, and Pune districts. These collected samples were cleaned and washed by sterilized water then surface sterilized with 1% HGCL₂ solution, the rinsed several times in sterilized water and dried, the surface sterilized sample were inoculated on to

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Name of the diseases	Causal Organisms	Varieties				
		Nashik Red	Bhima kiran	N-53	Punafursungi	Panchganga
Basal rot	<i>Fusarium oxysporum f. sp. cepea</i>	++	++	+	++	++
Neck rot	<i>Botrytis allii</i>	+	+	-	+	+
Southern blight	<i>Sclerotium rolfsii</i>	+	+	+	-	+

Table 2. Isolation of fungal pathogen from different districts of onions field bulbs

Name of the diseases	Causal Organisms	Locality						
		Aurangabad	Beed	Jalna	Osmanabad	Nashik	A.nagar	Pune
Basal rot	<i>Fusarium oxysporum</i>	++	+	+	++	++	+	-
Neck rot	<i>Botrytis allii</i>	+	+	-	-	+	-	-
Southern blight	<i>Sclerotium rolfsii</i>	+	+	+	+	++	+	++

(++) = moderate, (+) = Less, (-) = absent



Basal rot



Pure culture plate



Fusarium oxysporum



Southern blight



Pure culture plates



Sclerotium rolfsii

Potato Dextrose Agar (PDA) medium and incubated at 24^oc. After 4-5 days incubation period, the developed fungal colonies were purified by hyphal tip and single spore isolation technique. Identification and the fungal isolation were carried out by using the morphological characteristic of mycelia and spore as described by (Kritzman G.1983).

RESULTS AND DISCUSSION

Present research study was Isolation of fugal pathogen from the different Variety of Field onion bulbs. Likewise, Nashik red, Bhima kiran, N-53, punafursungi and Panchganga verities of onions were used to infected plant material was collected

and isolates of fungi from the infected onion field bulbs of onions. Results are clear in the Table 1 and 2. From the different varieties of onions sample was isolates fungal species like, *Fusarium oxysporum*, *Botrytis allii* and *Sclerotium rolfsii*. Found on the all most varieties of infected fields bulbs of the onions. While *Botrytis allii* and *Sclerotium rolfsii* are found on the particular varieties, moderate amount of fungal pathogen are isolates from all varieties field bulbs of the onions. *Botrytis allii* are absent in N-53, and *Sclerotium rolfsii* also absent in the punafursungi varieties of infected field bulbs of onions. Less amount of fungi are isolates from the Nashik red, Bhimakiran, N-53, punafursungi and Panchganga varieties of infected fields' bulbs of onions.

It is clear that isolation of fungi from district wise, the infected field bulbs of onions. Maximum amount of fungi are isolated from the Osmanabad, Aurangabad and Nashik districts, while less amount of fungi isolates from Jalna and Ahmadnagar. *Sclerotium rolfsii* are moderate amount fungal pathogen are isolates from the Nashik and Pune districts. But *Fusarium oxysporum* are completely absents in the pune districts. Whereas *Botrytis allii* are found less amount in Aurangabad, Beed and Nashik, But completely absent in Jalna, Osmanabad. Ahmadnagar and pune districts. *Sclerotium rolfsii* less amount of fungal pathogen are isolate form Nashik, Beed, Jalna, Osmanabad and Ahmadnagar districts. Similarly same researcher are reported by the fungi are isolates from infected field bulbs onions. Root diseases caused by *Fusarium oxysporum* reported by (Rabies- Motlagh et al., 2010) Bulb-rot caused by *Fusarium oxysporum*, (Vigitha et al., 2014, Schwartz & Mohan, (1995) Neck rot caused by *Botrytis allii* (Schwartz, 2011), and collar rot caused by *Sclerotium rolfsii* reported by Santha Lakshmi (et al., 2012). Root rot by *Sclerotium rolfsii* reported by Sultana et al., (2012) Pawar and Chavan., (2015) and Stem rot. This is the isolate of fungi from the infected part of plant materials.

Conclusion

The survey indicates that Field bulbs of onions are collected from the different variety and different localities that infected plants from the isolates the pathogen were confirmed to be causal organisms of the diseases. Important role was the diseases development done by the field bulbs fungi from onions of that particular pathogen.

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