

Management of Post-Harvest Fungal Diseases in Onion (Allium cepa) - A Review

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ABSTRACT

Onion (Allium cepa) is one of major vegetable crop in India. Highly known for its pungency. It has good capability of storage it can be store up to 8-10 months. It is damaged by many pathogenic fungal infections during storage due to absence of proper storage facilities. During the time of post harvest storage approx 35-40% onion is damaged or lost due to post harvest diseases. There are different fungal pathogen spp like Aspergillus spp., Alternaria spp., Fusarium spp., Pseudomonas spp., Penicillium spp., Erwinia spp., Rhizopus spp., collectotrichum spp. and Botrytis spp. etc attacks on onion at the time of post harvest losses. Aspergillus spp. (A.niger) is very destructive fungal pathogen in pre&post harvest losses. To safeguard the use of conventional fungicides to suppress the post harvest losses is not sufficient due to residue impacts. To decrease the onion losses during storage it is necessary to develop strategies by the possible use of plant extracts Or differ bio fungicides. An opportunity to counter or manage post harvest diseases can be bio-nano fungicides.

Keywords-

Onion, Diseases, Postharvest, losses, Fungal pathogen, management

I. INTRODUCTION-

It is a important Vegetable crop which is grown worldwide and one of the most potential foreign exchange earners for India. India stands 2nd after china in production. There are three types of onion- red onion, yellow onion, white onion. It is cooked as vegetable&raw as salad During kharif, latekharif, rabi seasons Singh et al., (1994). In which kharif produce holds 15-20% availability October to December late kharif produce holds 20-25% availability January to March rabi produce holds 60-65% availability April to June in total production. Rabi season onion has more storability and made constantly availability for domestic or international markets. The leading onion producing states are Maharashtra, Karnataka, Gujrat, Bihar and

Madhyapradesh wherein, 32.6% is singly contributed by Maharastra, NHRDF (2012). It contains minerals, vitamins, polyphenols and phytonutrients in a good amount. It prevent some kind of cancer and lowers blood pressure. India have the 300 lakh million tones of cold storage capacity of vegetables out of which most of the storage is grapped by onion and potato. Because of decay, Sprouting and desiccation in onion the annually post harvest losses is approx 1000 crores ASSOCHAM (2012). For preventing losses due to rotting and sprouting at the time of off season storage. A good and efficient storage facility plays a vital role for both consumers and producers V.Anbukkarasi et al., (2013).

Losses Occured During Post Harvesting In Onion

The methods which is used by farmers during storage now a days is costly, require more time and labour more labour. In post harvest management of onion storage facility plays a vital role. At the time of post harvest management about 35-40% onion is lost due to various post harvest operations like handling and storage, Anbukkarasi et al., (2013). Different diseases damaged the onion which caused about 35-40% loss for which number of microorganism is responsible, Currah and Proctor (1990); Gupta and Verma (2002). In onion the identification of pathogen which causes different diseases for effective management is necessary. IN onion the Aspergillusniger pathogens are dominant for disease occurrence Marziyeh et al., (2010). The quality and quantity is reduced by mycotoxin which is produced by Aspergillusniger, Paster et al., (1995); Belmont and Carjaval, (1998); Sahin and Korukluoglu, (2000); Candlish et al., (2001); Galvano et al., (2001); Juglal et al., (2002); soloman and Badeaa, (2002); Rasooli and Abyaneh (2004); sibi et al., (2012). Mostly suitable condition for growth and development of fungus is warm and moist condition temperature 25-34 degree C, Tysoni et al., (2004). Losses during

post harvesting of onion can be reduced by low temperature storage and fumigation up 10-20%. To control the black mould and other fungal diseases chemical treatment is more suitable, Grinstein et al., (1992).

Different Ways For Prevention Of Fungal Diseases Newly Developed Prevention Methods Copper, Silver, Sulphur And Zinc oxide Nanoparticle

Combination of antifungal agents (Fluconazole) with silver nanoparticles can improve antifungal effectiveness of disinfectants, Gazbhiye et al.,(2009). In the formation of silver nanoparticles the function of microorganism occurs sustainable and ecofriendly. Aspergillusniger, Staphylococcus aureus etc are tested with silver nanoparticles(AgNPs) for antimicrobial activities, San et al., (2013). In the white rot of onion apply the liquid solution of 7 PPM silver nanoparticle, Jin-heejung., (2010). Sahar et al., (2014) reported antifungal resistance against two plant pathogenic fungi alternariaalternata, botrytis cinerea by the help of copper, silver and copper silver nanoparticles. Copper nanoparticle plays an important role in pathogen suppression, Prachi et al., (2014). Navale et al., (2015) Reported antimicrobial resistance in two plant pathogenic fungi Aspergillusflavas, Aspergillus fumigants by the application of zinc oxide nanoparticles (ZnO NPs). Srinivasan et al., (2015) reported that pure zinc oxide nanoparticles is effectively used against plant pathogenic fungi Aspergillusniger. On Aspergillusflavus alluminium coated zinc nanoparticles are effectively used. The results of a study shows which is based on inhibition of Aspergillusniger by elemental and Nano sulphur particles in which it shows that elemental form is less effective than nano sulphur, Choudhary et al., (2010).

SYNTHETIC CHEMICALS OR FUNGICIDES

Different fungicides are used now a days during pre and post harvest management of onion which is more than 50 in number like carbendazim, mancozeb, maleic hydrazide, bavistin, bronopol etc. To control the physiological and rotting loss in onion and to improve the shelf life and quality use carbendazim and maleic hydrazide before 30 days of harvest at the rate of 1000&2000 PPM, Anubukkrasi.

,(2010). In 2009 the maleic hydrazide is banned due to its adverse effects. Ali and Shoabrawy et al., reported Benzoyl and carbendazim inhibits the plant pathogenic fungi of neck rot when it is applied at the rate of 0.5%. In order to reduce impact and pathogen resistance due to highly use of

chemicals there is a need of proper substitute for chemical fungicides for disease management, Alabi et al., (2005).

BIO CHEMICALS OR PLANTS EXTRACTS

It can be eco-friendly substitute for present or long term control measures for post harvest management. Because of excessive use of chemical or synthetic fungicides pathogen resistance and toxicity the bio fungicides and plant extracts can be major eco-friendly substitute, Elad.,(2000).

II. CONCLUSION

Onion is one of the most important vegetable crop which is grown worldwide. A major and large amount can be lost due to post harvest disease. Hence, it is important to use different strategies and control measures to control post harvest diseases in onion. A number of strategies and methods are developed and used to control post harvest diseases of onion like use of synthetic chemical, Plant extracts and Biochemicals. It is necessary to develop new and efficient methods and strategies to decrease or minimize the post harvest losses in onion.

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