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Efficacy of Ridomil in Combating Fruit Rot of Jackfruit in Sindhudurg and Kolhapur Districts of Maharashtra.

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Abstract*: Fruit and inflorescence rot caused by Rhizopus artocarpi is very common disease and serious disease of jackfruit. There was variation in MIC of ridomil among the Rhizopus artocarpi on the agar plates and fruit of jackfruit. MIC on agar plate ranged from 550 to 2200µg/ml, while it was 300 to 1000µg/ml on fruit of jackfruit. Isolate Ra-5 was sensitive while Ra- 2was resistant isolate.*

Key words: *Rhizopus rot, Rhizopus artocarpi, Jackfruit fruit rot, MIC, Ridomil.*

Introduction

Jackfruit *(Artocarpus heterophyllus)* cultur e as an alternative crop due to its high demand on a regional, national and international level.

It produces heavier yield than any other tre e species, and bear the largest known edible fruit (up to 35 kg). The jackfruit tree has several us es.Jackfruit is adapted to humid tropical and near-tropical climates. India is the second biggest producer of the jackfruit in the world and is considered as the motherland of jackfruit. Jackfruit plays a significant role in Indian agriculture and culture. It is popularly known as poor man's fruit in the eastern and southern parts of India. The tender fruits of the tree are used as vegetables and the ripe ones as table fruits.

Jackfruit is also considered as rich source of carbohydrate and Iron (Angeles,1983; Arkroyd *et al*., 1966; Bhatia *et al*., 1995).Some of the major pests and diseases include shoot borers, bark borers, mealy bug and scale insects, blossom and fruit rots, and bacterial dieback. There are more than 20 diseases reported on jackfruit tree. Among them leaf spot is caused by *Colletorichum lagenarium* (paris.) Ell. and Holst. Another leaf spot is caused by *Septoria artocarpi* Cke. The pink disease is caused by *Corticiumsalmonicolor* Berk and Br. Stem rot is caused by *Phytophthora palmivora* Butler and brown rot is caused by *Fomes noxious*. Fruit and inflorescence rot caused by *Rhizopus artocarpi* is very common disease and serious disease of jackfruit.**(**Chuadhari,1949). The infection of *Rhizopus artocarpi* forms layer of black spore mass then white fungal mycelium covers the surface of fruit of jackfruit. The pathogen engulfs the inflorescence, young fruits and results into black, shrunken, mummified fruits. Sometime it causes the total fruit loss of jackfruit

2. Material and Methods

2.1 Collection of symptomatic fruit material

Eight isolates of infected fruits of jackfruit were collected from Kolhapur and Sindhudurge district of Maharashtra. The infected fruit materials were brought to the laboratory and were cut into small pieces (0.5-1.0cm length) along the symptomatic region of fruit and subsequently surface sterilized by sequential dipping in 70% ethanol for 30 s and in 0.1% HgCl2 for 1 min., rinsed in sterilized distilled water (Mali et al, 2015). The sterilized portion was cultured cultured on Czapek Dox agar (CDA) amended with 25 mg/L of streptomycin sulphate (Patil et al. 2012; Mali et al. 2016). Plates were incubated at 25± 2°C for 6 days.

The plates were observed for fungal outgrowth through the symptomatic parts of plants. After 5-6 days of culture, fungal mass was observed. On the basis of visual morphological characters and microscopic characters the fungal isolate was identified as *Rhizopus artocarpi*. The sensitivity of *Rhizopus artocarpi* was carried out by using Food Poisoning Technique (Dekker and Gielink, 1979) by deploying various concentrations of fungicide, ridomil. The treatment was carried out by preparing ridomil dilutions from 1000 µg/ml stock solution by dissolving it in sterilized distilled water and then mixed in autoclaved Czapek Dox Agar (CDA). The mixture was prepared in proportion of 1:1 and final volume was made up to 30 ml. The media containing ridomil solution of various concentrations was poured into Petri plates until

solidification of media. Pure actively growing fungal mycelium was transferred on the solidified culture media plates by cutting 8 mm diameter discs. These plates were then incubated at 28-30°C in dark and then continuous growth was measured after various time intervals. A plate without ridomil was served as control.

In vivo sensitivity studies were performed on fruits of jackfruit. For this purpose fresh and healthy jackfruit fruits were used. Surface of fruit were disinfected with 70% alcohol for 3-5 min. then washed with sterile distilled water and wrapped with sterile moist blotting paper. On fruit of jackfruit 8mm wide and 10mm deep well was prepared with the help of sterile cork borer and treated with different concentration of ridomil solution. The fruits after 24hr were inoculated with mycelial suspension. Inoculated jackfruit fruit were wrapped with sterile moist blotting paper towel and percentage infection was recorded after various incubation periods. For control fruits were treated with sterile distilled water.

3. Result and Discussion

There was variation in MIC of ridomil among the 8 isolates on both agar plates and jackfruit fruit. MIC on the agar plate ranged from 550 to 2200µg/ml, while it was 300 to 1000µg/ml on fruit of jackfruit (Table 1).

Table 1: MIC of ridomil against *Rhizopus artocarpi* causing fruit rot of jackfruit.

Sr. No	Isolate	Locality	MIC µg/ml	
			In vitro	***In vivo***
1	Ra – 1	Vangurla (Sindhudurgi)	1300	500
2	Ra – 2	Kankavali (Sindhudurgi)	2200	1000
3	Ra – 3	Kudal (Sindhudurgi)	1000	500
4	Ra – 4	Kankavali (Sindhudurgi)	1900	900
5	Ra – 5	Gadhingals (Kolhapur)	550	200
6	Ra – 6	Radhanagari (Kolhapur)	1800	700
7	Ra – 7	Chandgad (Kolhapur)	750	300
8	Ra – 8	Ajara (Kolhapur)	2000	850

4. Conclusion

From present study, it can be concluded that, mixture of different fungicides proved to be an useful approach for the management of fruit rot of jackfruit caused by *Rhizopus artocarpi*.

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