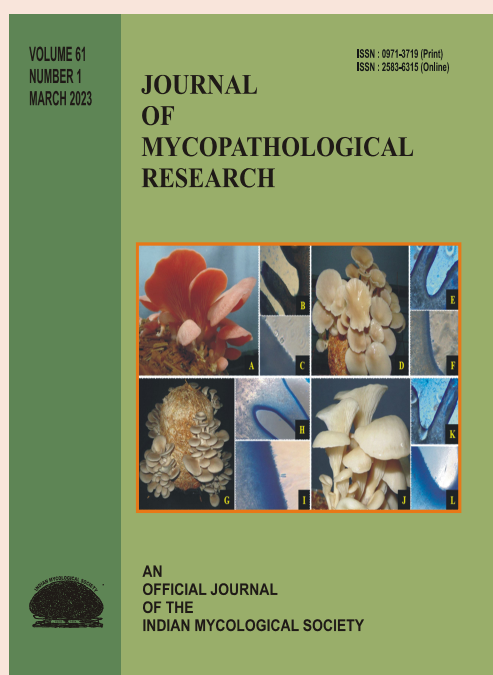


# Study of Host Range of pathogen causing Powdery Mildew of Cucurbits

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## Study of Host Range of pathogen causing Powdery Mildew of Cucurbits

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The present work was a study of host range of powdery mildew pathogen *Podosphaera fuliginea* and pathogenic to muskmelon (*Cucumis melo* L.), pumpkin (*Cucurbita pepo* L.), watermelon (*Citrullus lanatus*), sponge gourd (*Luffa aegyptiaca*) and ridge gourd (*Luffa acutangula*). Significantly the highest powdery mildew intensity was recorded in ridge gourd followed by pumpkin and sponge gourd. The lowest powdery mildew intensity was observed in watermelon.

**Key Words:** Cucurbits, *Podosphaera fuliginea*, Powdery Mildew

### INTRODUCTION

Cucurbits are cosmopolitan vegetables grown successfully in tropical and sub-tropical regions and have worldwide demand for vegetable as well as medicinal uses. These are extensively grown in India and cultivated almost universally throughout the year. Cucurbits are most important "protective foods" because of its special nutritive value. Powdery mildew caused by *Podosphaera fuliginea* fungus has worldwide occurrence which can infect most of the cucurbits (Garcia-Perez, 2009). In India, Powdery mildew is most problematic in dry semi-arid climate of north Gujarat; generally cucurbits are grown in large scale throughout the year. Therefore, due to intensified cropping of cucurbits, Powdery mildew causes havoc losses and is the most serious disease causing great damage to the crop yield.

Present study was under taken to evaluate host range of *Podosphaera fuliginea* against powdery mildew.

### MATERIALS AND METHODS

The study was conducted in 2018-19 to identify the host range of *Podosphaera fuliginea* against

powdery mildew. The cucurbits are affected by powdery mildew disease and two most commonly recorded fungi have been identified as causing this disease. Hence, host range of pathogen was studied using the inoculation technique. Ten seeds of each of the selected hosts were grown in pots filled with mixture of sterilized soil and well decomposed farm yard manure (4:1), testing was carried out under mist house conditions. Thirty day old healthy plants were inoculated with conidial suspension prepared by washing the foliage of powdery mildew affected bottle gourd plants with distilled sterile water. The conidial suspension ( $10^6$  spore/ml) was sprayed with the help of atomizer on both lower and upper surface of leaves of the plants. Plants were sprayed with water two to three hours before inoculation. The leaves of few plants were slightly injured by slight rubbing with moist cotton wet to make easy entry of pathogen. Periodical observations on incubation period and disease intensity were recorded.

Following hosts were evaluated against test pathogen

1. Cucumber
2. Ridge gourd
3. Sponge gourd
4. Pumpkin
5. Okra

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6. Bottle gourd
7. Watermelon

The observation of powdery mildew intensity were recorded periodically using following disease rating scale (0-4 grade) given by Gangopadhyay (1984). Each plant was evaluated for its disease reaction by scoring the disease severity on top, middle and lower leaves following a 0-4 scale, where 0=0 (healthy), 1= 1-25%, 2= 26-50%, 3=51-75%, and 4= 76-100%.

GRADE	POWDERY MILDEW
0	No powdery growth
1	Trace to 25% of leaf area having powdery growth
2	26-50% of leaf area having powdery growth
3	51-75% of leaf area having powdery growth
4	76-100% of leaf area having powdery growth

Based on the observation on scale, the per cent disease intensity was calculated using the following equation.

## RESULTS AND DISCUSSION

Many plant pathogens are highly host specific while others can infect various species belonging to different families. Such plants act as collateral hosts and play a vital role to carryover the pathogen from

one season to the next, and also provide a base on which inoculum multiplies and also some time reaches epidemic proportions early in the season for the main crop. With a view to know the host crops of *Podosphaera fuliginea* present investigation was carried out with six different crops. To determine their susceptibility against *P. fuliginea*, initially inoculation was done by inoculation technique as described in the pathogenicity test. The symptoms viz., a white powdery mass of fungal pathogen appears on the leaves in the initial stage: later on it appears on the whole plant when whitish powder, drying of leaves, withering of plant etc. was observed periodically till the drying of plant. The powdery growth on plants showed whitish appearance where infection has taken place. The results presented in Table 1 indicate that the incubation period for initiation of powdery mildew disease was comparatively less (09 days) in pumpkin, sponge gourd and ridge gourd and higher in watermelon and muskmelon (12 days).

The powdery mildew intensity ranged from 30.32 to 34.28% in different host. Significantly the highest powdery mildew intensity of 34.28 % was recorded in ridge gourd which was at par with pumpkin (34.00 %) and sponge gourd (33.94 %) The lowest powdery mildew intensity of 30.32 per cent was observed in watermelon (Fig.1).

**Table. 1:** Disease intensity of Powdery Mildew caused by *Podosphaera fuliginea* in different cucurbit hosts

Sr. No.	Common Name	Scientific Name	Total numbers of plants maintained	Incubation period (days)	Powdery mildew intensity (%)
1	Muskmelon	<i>Cucumis melo</i> L.	20	12	25.70 (30.77) <sup>*b</sup>
2	Pumpkin	<i>Cucurbita pepo</i> L.	20	09	30.80 (34.00) <sup>a</sup>
3	Watermelon	<i>Citrullus lanatus</i> (Thunb.) Mansf.	20	12	25.00 (30.32) <sup>b</sup>
4	Sponge gourd	<i>Luffa aegyptiaca</i>	20	09	30.70 (33.94) <sup>a</sup>
5	Ridge gourd	<i>Luffa acutangula</i>	20	09	31.25 (34.28) <sup>a</sup>
				S. Em. ±	00.30
				C.D. at 5 %	00.88
				C.V. %	02.05

\*Figures in parentheses re-transformed values.

Figures indicating common alphabets in superscript do not differ significantly at 5 per cent level of significance according to DNMR.



Fig. 1 : Host range of *Podosphaera fuliginea*

Present findings were in conformity with those reported by Gangwar and Mishra (2014) who reported that cucurbits were found infected with powdery mildew disease in different localities. Perithecia were found on *Lagenaria siceraria* and *Cucurbita moschata* in two localities. Other samples of cultivated cucurbits and a wild cucurbit, *Coccinia cordifolia* contained only conidial stage. The powdery mildew fungi infecting the cucurbits were identified as *Sphaerotheca fuliginea* and *Erysiphe cichoracearum* (Mir and Wani, 2011; Gogoi et al. 2013; Gupta and Sharma, 2012; Shahare, 2016). Thus, the results of the present investigation are also in agreement with the results of earlier research workers.

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