

# Effect of Climatic Factors on the Development of *Aspergillus niger* Rot of Papaya

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**Abstract:** It was reported that development of *Aspergillus niger* rot of papaya fruit was very less at low temperature and low R.H. while it was maximum at 25<sup>o</sup> C and at 100% R.H.

**Keywords:** *Aspergillus niger* rot, Disease development, Temperature, Humidity, Papaya

## 1. Introduction

Environmental factors like temperature and Relative Humidity (R.H.) affects the development of post-harvested fungal diseases of fruits (Chrys, 2006; Cherian and Mani, 2007, Gadgile and Chavan, 2010, Gadgile and Pawar, 2020). However, there is no reference about the effect climatic factors on post-harvest fungal disease development of papaya fruit. Therefore the objective of the present study was to study the effect of ecological factors on *Aspergillus niger* rot of Papaya fruit.

## 2. Material and Methods

Healthy papaya fruits were collected from Palam fruit market (M.S.), India and were surface sterilized then which were pricked and washed with sterile distilled water after that which were dipped in spore suspension of *Aspergillus niger* for 5 min. Then the fruits were placed in sterilized polythene bags and incubated to different level of temperature and RH percentage adjusted level were maintained (Buxton and Mellanby, 1934). Development of diseases was recorded on 7<sup>th</sup> day of incubation on the basis of percent fruit area infected. Effect of temperature and R.H. on spore germination of *Aspergillus niger* was studied by placing spores on glass-slide placed to different levels of temperature and R.H.

## 3. Results and Discussion

It is clear from table 1 and 2 that *Aspergillus niger* rot development was maximum at 25<sup>o</sup>C and 100% R.H. while there was no severity at 10<sup>o</sup>C and at low humidity. Severity was increased from 30 to 100% R.H. Spore germination was absent at 10<sup>o</sup>C.

Several researchers reported similar findings about the effects of environmental factors on disease development of post-harvest fungal diseases in different fruits (Bagwan and Meshram; 2003, Patel and Rathod; 2005, Chrys; 2006 and Gadgile and Chavan; 2010, Gadgile; 2020 and Gadgile and Pawar; 2020).

**Table 1:** Effect of temperature on disease severity and spore germination of *Aspergillus niger* rot of papaya

Temp. (°C)	Disease severity %	Spore germination % after 24 hours
10	0.0	0.0
25	59.4	79.9
30	56.5	73.4
40	51.3	39.3

**Table 2:** Effect of humidity on disease severity and spore germination of *Aspergillus niger* rot of papaya

R.H. (%)	Disease severity %	Spore germination % after 24 hours
30	26.2	20.2
50	39.5	30.6
80	49.5	77.2
100	61.3	79.3

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