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*Research Article*

# Effect of Relative Humidity on Mycelial Growth of *Cercospora canescens*

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**ABSTRACT**

*The relative humidity studies revealed that maximum mycelial of fungus was observed at 90 per cent relative humidity (89.00 mm), which was followed by 100 per cent (86.30 mm). The least mycelia growth was observed at 50 per cent (45.30 mm). A significant decrease in mycelium growth was observed at 80, 70 and 60 per cent (80.40 mm, 70.20 mm and 57.00 mm) humidity level, respectively. Each fungus has its relative humidity range for the growth.*

***Keywords:*** *Humidity, Mycelium, Mungbean, Growth.*

## INTRODUCTION

Mungbean [*Vigna radiata* (L.) Wilczek], is an important pulse crop of India. Which is an ancient and well known leguminous crop of Asia. It is quite versatile crop grown for seeds, green manure and forage and it is also considered as "Golden Bean" because of its nutritional values. Mungbean is grown mainly as a *kharif* season crop. However, its cultivation in rabi season is restricted to the eastern and southern parts of the country. Mungbean is well entourage to a large number of cropping system and a popular cereal-based diets due to easily digestible, plentiful in protein (25-28%), oil (1.0-1.5%), vulcanized fiber (3.5- 4.5%), ash (4.5 – 5.5%) and carbohydrates (62 – 65%), on dry weight basis (Singh et al., 2010). The major mungbean growing states are Orissa, Maharashtra, Andhra Pradesh, Rajasthan, Karnataka and Gujarat. It ranks third among all pulses grown in India after chickpea and pigeonpea (Rajendra Prasad, 2006). Cercospora leaf spot (CLS) caused by *Cercospora canescens* is one of the major biotic constraints in mungbean production. The disease causes severe losses in mungbean crop (Poehlman, 1978). Relative humidity plays an important role in infection and disease development.

The present work was undertaken with the aim to know the effect of relative humidity on growth and development of *C. canescens*. The results obtained are presented in this paper.

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## MATERIALS AND METHODS

To study the effect of relative humidity on mycelial growth of *Cercospora canescens*, six different levels of relative humidity i.e. 50, 60, 70, 80, 90 and 100 per cent was maintained in desiccators by using the concentrate sulphuric acid and sterilized distilled water in different proportions. The different relative humidity levels were maintained by the method suggested by Buxton and Mellanby (1934) table 1.

**Table 1: Composition of the acid solution for maintain relative humidity is as follows**

| S. No. | Relative humidity (%) | Stock solution (ml)* | Distilled water (ml) |
|---|---|---|---|
| 1. | 50 | 514.0 | 420.0 |
| 2. | 60 | 374.0 | 396.0 |
| 3. | 70 | 348.0 | 510.3 |
| 4. | 80 | 294.0 | 640.0 |
| 5. | 90 | 161.0 | 712.0 |
| 6. | 100 | 0.00 | Only distilled water |

* 50% v/v solution of concentrate sulphuric acid

Petri plates having Malt Extract Agar medium inoculated with 5 mm disc of fifteen days old fungal culture kept in desiccators having solution of relative humidity different levels and then incubated at 25±1 °C. Observations on mycelial growth was recorded after fifteen days of incubation.

## RESULTS

In this investigation evaluated the effect of relative humidity, the fungus was exposed directly to different levels of relative humidity. It was observed (Table 1.2) that all the six humidity levels (50 to 100 per cent) induced the growth of *Cercospora canesence*. Significantly highest mycelial growth (89.00 mm) was recorded at 90 per cent relative humidity followed by growth at 100 per cent (86.30 mm) relative humidity level. A significant decrease in mycelium growth was observed at 80, 70 and 60 per cent (80.40 mm, 70.20 mm and 57.00 mm) humidity level, respectively. Lowest mycelium growth was observed (45.30 mm) at 50 per cent relative humidity level. It can be concluded that high humidity favoured the growth of *Cercospora canesence*.

**Table: 1.2 Effect of relative humidity on mycelial growth of *Cercospora canescens***

| S.No. | Relative humidity (%) | Mycelial growth* (mm) |
|---|---|---|
| 1 | 50 | 45.30 (42.30) |
| 2 | 60 | 57.00 (49.02) |
| 3 | 70 | 70.20 (56.91) |
| 4 | 80 | 80.40 (63.72) |
| 5 | 90 | 89.00 (70.63) |
| 6 | 100 | 86.30 (68.28) |
| | **$SEm_{+}$** | 1.19 |
| | **CD (p=0.05)** | 3.67 |

## DISCUSSION

Relative humidity at 90 per cent (86.00 mm) supported the highest mycelia growth of fungus followed by 100 per cent relative humidity (85.30 mm) was recorded to be the next best and while lowest mycelial growth was recorded at 50 per cent relative humidity (45.30 %).The relative humidity indicating that too much saturation also does not support the fungal growth as well as that of dry or lesser humidity levels. The similar finding were also reported by Kumar et al. (2011) on mungbean, Rao and Mallaiah (1985) recorded that most favourable conditions for germination of *C. canescens* in mungbean were relative humidity at 90 per cent.

## CONCLUSION

The effect of different levels of relative humidity was revealed that all the six relative humidity levels (50 to 100 per cent) induced the growth of *Cercospora canescens*. Significantly highest mycelial growth (86.00 mm) was recorded at 90 per cent relative humidity. A significant decrease in mycelium growth was observed at 80, 70 and 60 per cent (80.40 mm, 70.20 mm and 57.00 mm) humidity level, respectively. Lowest mycelium growth was observed at 50 per cent (45.30 mm) relative humidity level. It can be concluded that high humidity favoured the growth of *Cercospora cansence*.

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