

First report of *Sclerotinia* stem rot of Indian Sweet Basil (*Ocimum basilicum*)

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A destructive white rot disease has been reported on Indian sweet basil (*Ocimum basilicum*) from Pakyong, Sikkim, India. Based on the morphological and cultural characters the causal fungus has been identified as *Sclerotinia sclerotiorum* (Lib.) de Bary and seems to be a new disease on this host.

Key words: Indian sweet basil, *Sclerotinia sclerotiorum*, new disease host, Sikkim.

INTRODUCTION

Indian sweet basil (*Ocimum basilicum* L. Fam. Labiatae), commonly known as Tulsi, is an important small annual medicinal shrub. It is indigenous to Persia, South Asia, North Africa, far and Middle East. It is planted near Hindu houses and temples with a great religious belief in India. It is commonly cultivated for commercial purposes in central south Europe; sub tropical America and plains of India.

It is important part of the Chinese, Tibetan, Unani, Persian and Japanese medicine. Essential oil made from the herb, which has clove like odor is useful in migraine, headache, digestive problems, chest infection etc. Besides, the herb has a variety of uses in ayurvedic medicines and preparation of culinary. In October 2006, the author came across with a destructive white rot disease on the Indian sweet basil in Pakyong (1350 M msl), Sikkim, India.

MATERIALS AND METHODS

The infected leaf and stem parts were collected and the diseased stem tissue was surface sterilized for 1 min in 1% NaOCl and placed on potato dextrose agar (PDA) and incubated at $25 \pm 1^\circ\text{C}$ for 5 days.

Immature sclerotium produced on stem surface was also grown on PDA after surface sterilization. In both the cases, the fungus grew very fast and produced profuse white mycelia on the Petri dishes. The Petri dishes were kept inverted in diffused light at $18-22^\circ\text{C}$ for another 30-45 days for germination and production of apothecia.

Pathogenicity was tested by pot inoculation of the Sweet Basil. The pathogen was grown on sand maize meal medium for 7 days at 24°C and each pot having six months old plants were inoculated with 20 g sand maize meal inoculum mixture. Three pots each containing two plants were kept as uninoculated control. The test (inoculated and non inoculated) plants were covered with transparent polyethylene bags and kept in the polyhouse for 15 days for development of the disease.

RESULTS AND DISCUSSION

Symptoms

The disease appeared as irregular drying of branches starting from bases, gradually progressing upward and appeared as die back symptom (Fig. 1). After 4-5 days, the branches appeared as

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Fig. 1. Rotten stem with characteristic white shredding and wilted branches of sweet basil.

characteristic white shredding and bleaching. Some of the branches suddenly dry with hanging leaves and stems. On the stems, fluffy fungal growth could also be seen with scattered dark sclerotia. Heavily infected leaves became curled with black sclerotia inside. Eventually, the plants became defoliated.

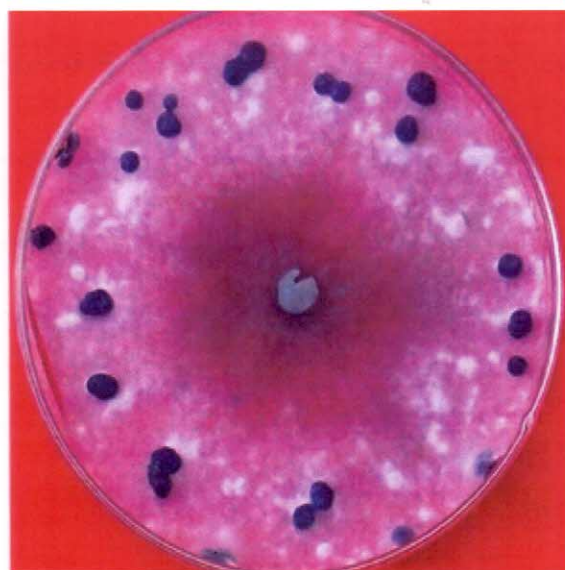


Fig. 2: Colony of *Sclerotinia sclerotiorum* on PDA with matured brown sclerotia at the border of Petri dish.

Characterization and identification of the pathogen

The fungus produced sclerotia on PDA around the boarder of Petri dishes (Fig. 2) within 8-10 days, which turned black after 15-25 days. Sclerotia produced on PDA measured 4.2-6.6 mm \times 3.3-4.4 mm (Average size 5.4 \times 3.89 mm). Maximum and minimum sizes of sclerotia measured were 7.5 \times 5.0 mm and 4.0 \times 3.2 mm respectively. When the same Petri dishes were left inverted in diffused light at 18-22°C for another 30-45 days, each of the sclerotia were found germinated with the production of

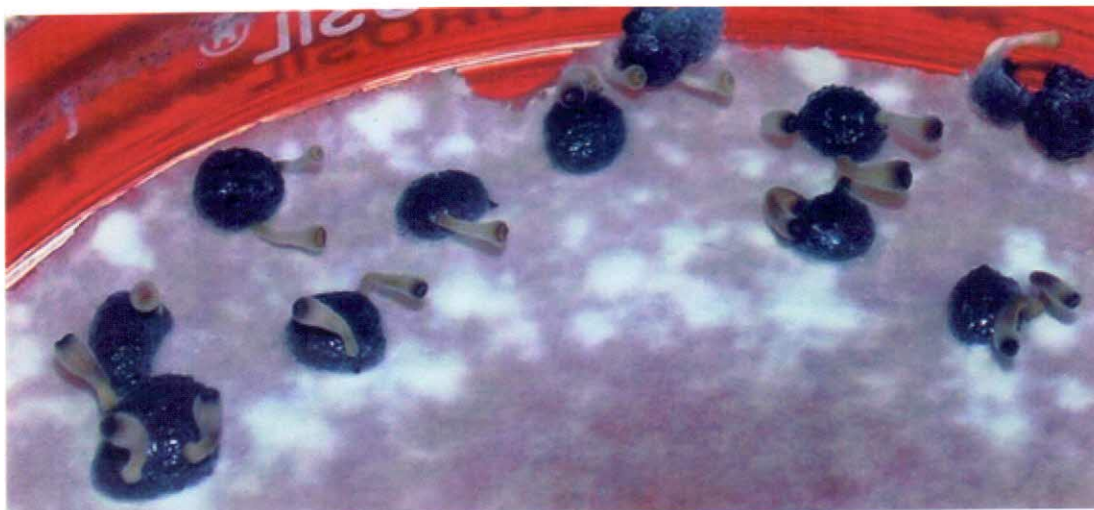


Fig. 3 : Sclerotia germinated with the production of apothecia on PDA.

apothecia (Fig. 3). The size of the apothecia varied from 8.11 ± 1.54 mm in length and cup size varied from 2.48 ± 1.4 mm in diameter. Based on the morphological and cultural characters the fungus was identified as *Sclerotinia sclerotiorum* (Lib.) de Bary (Purdy, 1979).

On pathogenicity test, all inoculated plants were infected with the disease and produced the similar rot symptoms with the production of sclerotia but there was no disease symptom in non-inoculated control plants and remained healthy. *Sclerotinia sclerotiorum* was reisolated from infected test plants.

Stem rot of Sweet Basil (*Ocimum basilicum*) has been reported from USA (Holcomb and Reed, 1994), Canada (Paulitz, 1997) and Coastal California (Koike, 2000). This is the first report of *Sclerotinia* stem rot of Sweet Basil in India (Mukherji and Juneja, 1974; Sarbhoy *et al.*, 1980, 1986; Bilgrami *et al.*, 1991).

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