BIOINFOLET 6 (1) : 77-78, 2009

VARIATION IN SPORANGIAL DIMENSIONS OF *PHYTOPHTHORA PALMIVORA* VAR. *PIPERINA* CAUSING QUICK WILT OF BLACK PEPPER

K. B. Patil and S. S. Kamble

Mycology and Plant Pathology Research Laboratory, Department of Botany,
Shivaji University, Kolhapur. 416004.

ABSTRACT

Variation in dimensions (length and breadth) of *Phytophthora palmivora* var. *piperina* mycelium and sporangia among five isolates was observed. The sporangia belonging to isolate PP-3 were large (131.74 x 98.70 μm) in comparison to an isolate PP-1 (65.25 x 44.62 μm.)

Key words : *Piper nigrum*, *Phytophthora palmivora*, sporangium

Black pepper (*Piper nigrum* L.) is one of the most important spice crop, traditionally grown in South-Western coastal region of India. It suffers from several fungal diseases such as Quick wilt, slow wilt, leaf spots, and stump rot. Quick wilt (Foot rot) is the most destructive disease caused by *Phytophthora palmivora* var. *piperina* (Muller 1936). In India, it was first reported in Kerala by Samraj and Jose (1966).

In order to study biometric characters of this fungus, samples of wilted Black pepper plants were collected in sterile polythene bags from various places of Maharashtra and Goa. Five

Table 1 : Variation in Length and Breadth of the Mycelium and Sporangium of *P. palmivora* var. *piperina* from different localities.

Locality	Mycelium		Sporangium	
	Length (μm)	Breadth (μm)	Length (μm)	Breadth (μm)
Amboli PP-1 (Sindhudurga)	53	6.4	65.25	44.62
Bhatye PP-2 (Ratnagiri)	69	8.5	96.59	61.32
Sangameshwar PP-3 (Ratnagiri)	65	6.8	131.34	98.70
Radhanagari PP-4 (Kolhapur)	56	5.0	77.87	49.00
Panjim PP-5 (Goa)	55	12.9	104.02	63.07
Mean	59.6	7.9	95.01	63.34
S. D.	6.26	2.7	22.72	19.03
C. V.	10.5	34.5	23.92	30.04

isolates of *Phytophthora palmivora* var. *piperina* were isolated and grown on Lima bean agar medium (Lima bean 100g, Thiamine 1g, Agar 17g and Distilled water 1 lit). Discs of 6 mm pathogen were inoculated on the Petri plates and radial growth of various isolates were recorded at different intervals.

For the measurement of hyphal thickness and length and breadth of sporangium, temporary slides were prepared using cotton blue and observed under calibrated compound microscope. The averages of twenty observations were considered. The data were statistically analyzed following Mungikar (2003).

It was observed (Table 1) that isolate PP-2 grew luxuriantly with mycelial length of 69μm followed by PP-3(65μm). Isolate PP-5 showed very slow radial growth (55 μm). Mycelia of all isolates showed difference in their thickness. Maximum thickness was observed in PP-5 (12.91 μm) and minimum in PP-4 (5 μm).

Maximum length of sporangium was observed in isolate PP-3 (131.34 μm). while minimum in isolate PP-1 (65.25μm). Maximum breadth of sporangium was observed in PP-3 (98.70 μm), while minimum in PP-1 (44.62 μm). Anandraj et al (1988) reported that the sporangia of *Phytophthora palmivora* var. *piperina* were 24.6 x 16.34 μm. while Sharma *et al* (2004) reported it between 39.6 – 60.6 x 19.3 – 24.1 μm.

Statistical analysis of the data revealed that there was little variation in length of the mycelium (C.V= 10.5), rather than breadth (C.V= 34.5). Similarly length of sporangium showed less variation (C.V= 23.92) as compared to sporangial breadth (C.V= 30.04). Thus variability in breadth was more prominent than that of length.

References :

Anandraj, M, Jose and Balkrishnan, R. (1988). *Indian Phytopathology*. **41**:473.

Manohara, D, Mulya, K, Purwantara, A. and Wahyuno, D. (2004). *Mycologia* **93**, 132.

Muller, H. R. A. (1936). Med. Inst. Piziekt. Batavia. No.88.

Mungikar, A. M. (2003) *"Biostatical analysis"*, Saraswati Printing Press, Aurangabad. (M.S.)

Samraj, J. and Jose, P.C. (1966). *Sci. and Cult.* **32**: 90.

Sarma, Y. R. Ramchandran, N. Anandraj, M. and Santhakumari, P. (2004). *"Advances in Diseases of Plantation crops and spices"*. International Book Distributing Co. Lucknow, 21