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Short Communication

EFFECT OF FUNGICIDE HEXATHIR ON DISEASE DEVELOPMENT OF TUBER ROT

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ABSTRACT
Potato (*Solanum tuberosum*) is very nutritive food crop, cultivated all over the world. It is used in our regular articles of food; contain protein, carbohydrate, vitamin, and trace elements. This economically important crop gets affected by various pests and diseases, among these, fungal pathogen plays important role in disease development of tuber rot. *Sclerotium rolfsii* is casual fungal pathogen causing tuber rot in potato. For control of tuber rot chemical fungicide Hexathir was found effective against fungal growth of *Sclerotium rolfsii*.

Keywords: *Fungicides, Tuber rot of Potato, Hexathir*

INTRODUCTION
The pathogen *Sclerotium rolfsii* Sacc., is a soil borne pathogen that commonly occurs in the tropics, sub-tropics and other warm temperate regions of the world, causing root rot, stem rot, wilt and foot rot on more than 500 plant species, including almost all the agricultural and horticultural crops (Domsch *et al.,* 1980; Farr *et al.,* 1989). This was first time reported by Rolfs (1892) as a cause of tomato blight in Florida. Later, Saccardo (1911) named the fungus as *S. rolfsii*.
Sclerotia of the fungus are initially white in colour, later it becomes light brown to dark brown at maturity and they are sub sphere, the surface finely wrinkled, sometimes flattened (Subramanian, 1964 and Mehan, 1995). *Sclerotium rolfsii* forms brown sclerosis, which is very well organized, compact structures, built of three layers, the rind, composed of empty melanised cells; the cortex cells, filled with vesicles and the medulla (Chet, 1975).
Dutta and Das (2002) studied the efficacy of Thiram and Mancozeb at 0.1 per cent concentration against tomato isolate of *S. rolfsii in vitro* and reported that Thiram inhibited 70.3 per cent mycelial growth and 96.5 per cent sclerotial production of *S. rolfsii*. The full chemical name for thiram is tetramethylthiuram disulfide. Hexathir is one of its trade names.
In chickpea it was shown that Thiram 37.5% was found to be highly effective at all the concentrations with 100 per cent inhibition in mycelial growth of *S. rolfsii* (Shirsole *et al.,* 2019).
Potato (*Solanum tuberosum* L.) is an economically important crop worldwide. It is classified as the fourth most important food crop after wheat, rice and maize (Wang *et al*. 2008; Schieber and Aranda Saldaña 2009; Visser *et al*., 2009). India is one of the major potato growing country have rank fourth in production (Nayar and Varma,1992). Its quality of protein is comparable to milk and eggs, and is superior to those present in cereals, pulses and vegetables. In highly populated areas it is the major food supplements.
Potato is important part of cotton industry for sizing the clothes, paper industries, production of alcohol and adhesive etc., (Chaddha, 1996). In views of above properties it has been a permanent solution of 21st centuries major problems like Hunger, Malnutrition's and unemployment (Khurana 2006).
Various pests and diseases including fungi affect potato cultivation. The tuber rot is caused by Fungi *Sclerotium rolfsii,* which causes faulty handling during transportation and poor storage conditions (Body, 1972; Smith *et al.,* 1987; Khurana and Chandra, 1980; Soman, 2004).
The attempt has been taken to carry out the control of tuber rot by application of chemical fungicide Hexathir.

MATERIALS AND METHODS

The efficacy of fungicides Hexathir was tested using potato slice method (Wakle and Kareppa, 2000). Potato slices of 75mm diameter thickness were prepared. The slices were dipped in 100 to 800 micromilligram per milli liters concentration of fungicide Hexathir. The slices were dipped in different concentrations of Hexathir for five minute.

A 5mm mycelia disc of Sclerotium rolfsi was incubated aseptically on each slice. The linear growth of *Sclerotium rolfsii* were measured at 24hrs interval. The plate without inoculated tissue acts as control. The result was presented as percent control efficacy (PCE).

The plates containing potato slice were incubated at room temperature in laboratory. During incubation period, the linear growth of *Sclerotium rolfsii* was measured in mm at 24 hours interval for 8 days. The results were recorded and expressed in table 1.

Table 1: Efficacy of fungicide hexathir on *Sclerotium rolfsii* causing tuber rot

Concentration (U g/ml)	Percent control efficacy (PCE)							
	Incubation period (days)							
	1	2	3	4	5	6	7	8
100	83.00	72.95	64.36	52.63	43.78	33.86	24.32	13.83
200	84.63	74.86	67.47	56.58	47.63	38.49	27.19	18.93
300	85.73	76.58	71.39	60.53	53.23	44.62	33.47	23.25
400	86.45	80.39	75.86	65.73	57.96	49.57	33.45	29.00
500	87.64	83.66	78.00	68.41	60.32	53.46	43.74	34.33
600	88.95	84.69	80.73	70.36	65.74	56.36	46.96	37.82
700	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
800	100.00	100.0	100.00	100.00	100.00	100.00	100.00	100.00
S.E.=+-	2.63	2.39	2.07	1.90	1.67	1.43	1.20	2.26
C.D.= 0.01	14.60	11.79	10.21	9.37	8.24	7.05	5.92	11.15
C.D.=0.05	8.71	7.91	6.85	6.29	5.53	4.73	3.97	7.48

RESULTS AND DISCUSSION

Mahato *et al.*, (2014) did an *in-vitro* experiment to determine the effect of different fungicides, plant oils and plant extracts on radial colony growth of *Sclerotium rolfsii* Sacc. following poison food technique in PDA medium. Combination of systemic and contact fungicides (Carboxin 37.5% + Thiram 37.5% WP as Vitavax Power @ 0.2%), was evaluated against *S. rolfsii* in laboratory. Viavax Power (95%) was the best

fungicide to restrict the fungal growth effectively. The efficacy of fungicides Hexathir was tested against *Sclerotium rolfsii* causing tuber rot of potato (Datar and Mayee, 1985; Kareppa and Gangawane 1999). In our case Hexathir at 700 microgram per milliliter concentration shows highest growth of inhibition. At this concentration 100% growth control of *Sclerotium rolfsii* was observed. Therefore Hexathir fungicide was found effective, it controls the growth of *Sclerotium rolfsii* causing tuber rot of Potato.

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