



**EFFECT OF PLANT PRODUCTS ON THE MANAGEMENT OF
SAROCLADIUM ORYZAE (SAWADA) W. GAMS and D.
HAWKSW and *FUSARIUM OYSPORUM* F. *LYCOPERSICI*
(SACC;) SNYDER and HANSEN**

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ABSTRACT

Water extracts of 7 and 18, out of 23 plant species screened *in vitro* inhibited conidial germination of *Sarocladium oryzae* (rice sheath rot pathogen) and *Fusarium oxy. f. lycopersici* (tomato wilt pathogen) respectively. Water extracts of *Caesalpinia pulcherrima* and *Ipomaea crassicaulis* at 10 and 5 per cent sprayed (i) before inoculation (ii) before and also after inoculation (iii) After disease development reduced the sheath rot disease incidence in pot culture experiments; the latter was more effective than the former. Ten per cent conc. was more effective than 5 per cent and the extracts sprayed both before and also after inoculation showed the lowest disease incidence.

Inhibitory effect of plant extracts on the fungal spore germination was reported by several workers (Kumar et. al., 1979; Jagannathan and Narasimhan, 1988). Thangamani and Narayanasamy (1988) reported that neem oil and neem seed 2 per cent spray reduced the incidence of sheath rot in rice. The effect of different extracts on the spore germination of *S. oryzae* and *F. oxysporum f. lycopersici* and sheath rot incidence of rice was studied.

MATERIALS AND METHODS

Water extracts of 23 plant species viz. *Achyranthes aspera*, *Adatoda vasica*, *Arachis hypogea*, *Asteracantha longifolia*, *Bougainvillea spectabilis*, *Caesalpinia pulcherrima*, *Canna indica*, *Coccinia indica*, *Datura fastuosa*, *Eichhornia crassipes*,

Euphorbia hirta, *Glyricidia maculata*, *Ipomaea crassicaulis*, *Leucas aspera*, *Morinda tinctoria*, *Momordica charantia*, *Moringa pterygosperma*, *Phyllanthus nirur*; *Rhizosphora mucronata*, *Salvinia mollusta*, *Solanumnigrum* *Trichodesma indicum*, *Vinca rosea* were prepared at 20 per cent conc. according to the method of Kumar and Sachar (1979). The extracts and spore suspension 0.1 ml each were taken in a cavity slide placed in the humid chamber and incubated at room temperature ($28 \pm 1^{\circ}\text{C}$). The conidial germination was recorded at 24 hr of incubation and per cent per cent calculated.

In another experiment 10 and 5 per cent of extracts of *Caesalpinia pulcher-*

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rima and *Ipomaea crassicaulis* were sprayed on IR 20 and ADT 37 rice varieties in pot culture experiments with 12 plants for each treatment as detailed below.

1. Spray pre-inoculation
2. Spray pre-inoculation and post-inoculation spray after 1 hr.
3. Spraying the extract after disease development.
4. Control (pathogen only).

RESULTS AND DISCUSSION

Among the 23 plants tested Seven were found to inhibit the conidial

germination of *S. oryzae* while another 12 stimulated the conidial germination and the remaining on par with the control. Less than 10 per cent conidial germination was observed with *Ipomaea crassicaulis* and 10-25 per cent with *Caesalpinia pulcherrima* after 24 hours. The minimum inhibition of conidial germination was recorded in *Moringa pterygosperma* with 63 per cent followed by *Glyricidia maculata* and *Datura fastuosa*. In the case of *F. oxy. f. lycopersici* 18 plant extracts were found to inhibit the conidial germination while the remaining five were stimulatory. *Euphorbia hirta* and *Rhizosphora*

TABLE 1 : Effects of two plant extracts on the sheath rot incidence (%)

Treatment			IR 20	ADT 37
<i>Caesalpinia pulcherrima</i>				
T 1	10%	S.I.	44.4	55.2
T 2	10%	S.I.S.	36.6	48.3
T 3	10%	I.S.	55.4	63.6
T 4	5%	S.I.	58.2	70.3
T 5	5%	S.I.S.	47.6	63.2
T 6	5%	I.S.	65.2	75.4
<i>Ipomaea crassicaulis</i>				
T 7	10%	S.I.	32.3	41.3
T 8	10%	S.I.S.	26.2	35.2
T 9	10%	I.S.	41.2	50.0
T 10	5%	S.I.	45.2	51.2
T 11	5%	S.I.S.	38.3	44.3
T 12	5%	I.S.	61.2	60.2
T 13	Control	(Pathogen only)	68.6	78.2

S.I. - Spray - Inoculation S.I.S. - Spray - Inoculation - Spray I.S. - Inoculation - Spray

mucronata showed maximum inhibition of conidial germination 1 per cent at 24 hours of incubation. The minimum inhibitory effect was observed with *Bougainvillea spectabilis* recording 88 per cent conidial germination.

The inhibitory action on the conidial germination might be due to the presence of inhibitory principles in the extract. The presence of antifungal compounds in the plant extracts were reported by various workers (Miyakado et al., 1983; Reuveni et al., 1984). The stimulatory effect is presumably due to the presence of some nutrients and stimulatory substances.

Extracts of *C. pulcherrima* and *I. crassicaulis* reduced the disease incidence (Table 1). The spray of plant extract before and after the inoculation of the pathogen was more effective, than spray pre inoculation. The minimum disease incidence was observed with *I. crassicaulis* 10 per cent, applied pre inoculation and post, inoculation recording 26.2 and 35.2 per cent in IR 50 as against 68.6 per cent in control.

The reduction in disease incidence might be due to the inhibition of conidial germination and destruction of germ tube which prevented the invasion of pathogen and inhibition of sporulation.

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EVALUATION OF MUSSOORIE ROCK PHOSPHATE AND PYRITE AS SOURCES OF PHOSPHORUS AND IRON FOR SUGARCANE

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ABSTRACT

Application of P in the form of Mussooriephos recorded higher Brix, Sucrose, Purity, Cane yield and Commercial cane sugar per cent (CCS %) than P in the form of DAP for sugarcane. NPK + Pyrite 100 kg (P as Mussooriephos) recorded significantly higher CCS %, brix, sucrose and purity. The highest cane yield (103.5 t/ha) was obtained with NPK (Mussooriephos) + Pyrite at 300 kg/ha. Foliar application of FeSO₄ was better than soil application of FeSO₄ for all the above quality parameters. Pyrite upto 300 kg/ha with FYM at 10 t/ha and P as Mussooriephos recorded higher available micronutrients especially iron.

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