

## IN VITRO CONTROL OF *UROMYCES STRIATUS* SCHROET., THE CAUSE OF LEAF RUST OF LUCERNE

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### Abstract

Spore germination of *Uromyces striatus*, the cause of leaf rust on lucerne was significantly reduced on tap water agar (TWA) pieces containing different doses (1, 2, 3, 4, 5, 10, 15, 20, 25, 50 mg l<sup>-1</sup>) of active ingredients of four systemic fungicides viz., Plantvax, Sapro, Sicarol and Tilt. Sapro and Sicarol showed better results as compared to Plantvax and Tilt in inhibiting the urediniospore germination.

### Introduction

Lucerne or alfalfa (*Medicago sativa* L.), an important fodder crop, is cultivated in different parts of the world. The plant is infected by a number of disease causing organisms viz., *Rhizoctonia violacea*, *Pseudopeziza medicaginis*, *Peronospora trifoliorum* and *Uromyces striatus* which cause considerable damage to the crop (Khoso, 1977) Experiments were carried out to study the *In vitro* control of *Uromyces striatus*, the cause of leaf rust of lucerne.

### Material and Methods

Four fungicides viz., oxycarboxin (Plantvax 75% WP, Uniroyal Ltd.), propiconazole (Tilt 25% EC., Novartis, Pakistan Ltd.), pyracarbolid (Sicarol 50% WP, Hoechst, Pharmaceuticals Pakistan Ltd.) and triforine (Sapro 20% EC, Celamerck Gmb H. & Co. Jaffar Brothers Ltd.) were used. Tap water agar 1% was mixed with different concentrations viz., 1,2,3,4,5,10,15,20,25 and 50 mg a.i l<sup>-1</sup>. Rectangular pieces (30 x 20 mm) of thinly poured agar of each concentration and water agar control were cut and placed on glass slides. Five replicated slides of each treatment were inoculated with urediniospore suspension (5 x 10<sup>4</sup> spores ml<sup>-1</sup>) of *Uromyces striatus*. Immediately after inoculation the slides were placed in glass Petri dishes and incubated at 20°C under dark. After 24 hours 10 microscopic fields were observed at random on each slide and percentage germination recorded.

### Results and Discussion

Systemic fungicides viz., Sapro at low doses of 5 mg l<sup>-1</sup> and Sicarol @ 20 mg l<sup>-1</sup> showed better results in inhibiting urediniospore germination as compared to Plantvax and Tilt which were effective at higher dosage of 50 mg l<sup>-1</sup> (Fig. 1). This might be due to the fact that some fungicides are very active *in vivo* but their high doses are required to suppress urediniospore germination *in vitro* (Sajani, 1984; Shattock & Rahbar-Bhatti 1983). Other workers have also achieved better results *in vitro* (Pei & Sun, 1981; Sajani, 1984) and *in vivo* (Okigbo & Jaffar, 1972). Tilt fungicide was also tested by Ahmed *et al.*, (1995) who found it most effective in inhibiting mycelial growth and sporulation of

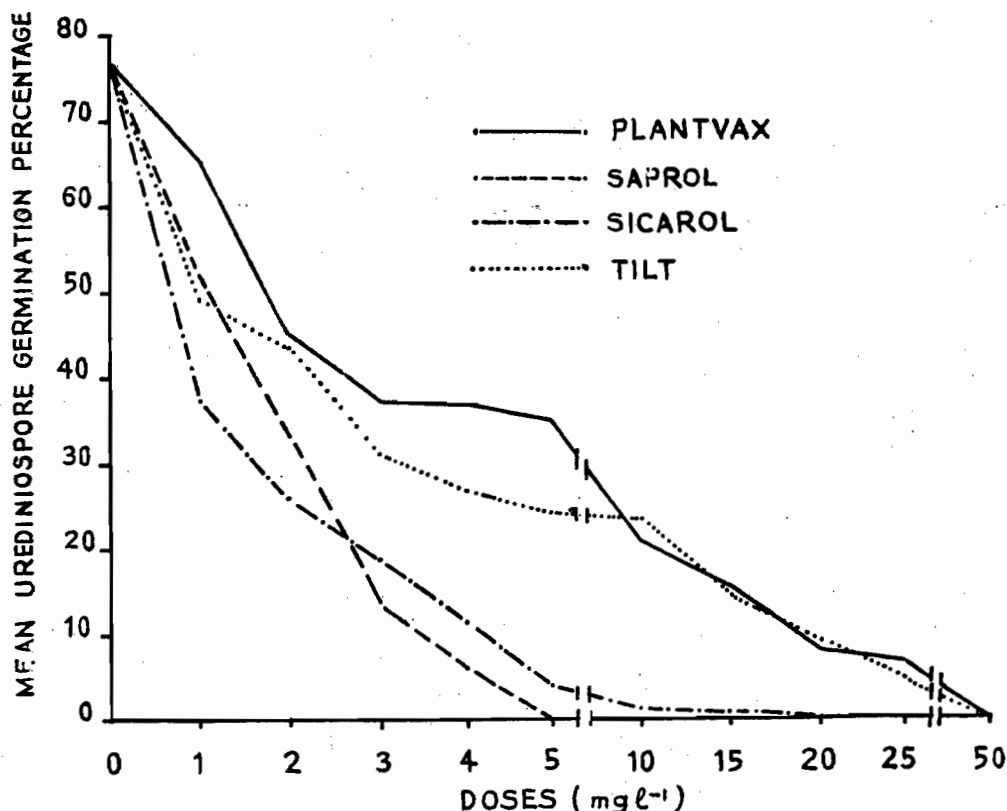


Fig. 1. Urediniospore germination percentage as affected by various fungicides.

*Drechslera halodes* Drechs., in sugarcane. However, Ilyas *et al.*, (1996) found intermediate effect against *Fusarium oxysporum* f.sp. *lini* *in vitro* and Fusarial wilt of linseed in soil drenching. Goel *et al.*, (1975) have reported pyracarbolid (Sicarol) most effective against *Puccinia striiformis* but the same chemical proved less effective when used *in vitro* against *Puccinia substriata* var *indica* (Sajnani, 1984). Pyracarbolid (Sicarol) has also offered better control of coffee leaf rust (Figueiredo *et al.*, 1982; Maithia, 1981; Muthapa, 1978).

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