The potential for chemical control of *Pterotylenchus cecidogenus* on *Desmodium ovalifolium* was studied. Pre-germination treatment of *D. ovalifolium* seed with 500 ppm carbofuran for 1-60 min or 500 ppm benomyl for 60 min reduced subsequent infection by *P. cecidogenus* for at least 3 and 2 wk, respectively. Thiabendazole and thiophanate were nematicidal when applied to infected seedlings 1 wk after inoculation. Thiabendazole increased growth of uninoculated plants.

**Keywords:** nematicides, control, seed treatment, systemic effects, fungicides.

*Desmodium ovalifolium* Wall. is a perennial shrub which has great potential as a pasture legume in association with various grasses, especially *Brachiaria* spp. (Grof, 1982). In 1983, *Pterotylenchus cecidogenus* Siddiqi & Lenné, the stem gall nematode, was found parasitizing and destroying stands of *D. ovalifolium* throughout the eastern plains of Colombia (Lenné, 1983). *P. cecidogenus* has previously been recorded in Porto Velho, Brazil (CIAT, 1986). *Desmodium barbatum* (L.) Benth. is one of its native hosts and is widespread in tropical Latin America so the potential threat by *P. cecidogenus* to the use of *D. ovalifolium* as a pasture legume is very high.

This paper studies the potential of some commercially available pesticides for the chemical control of *P. cecidogenus*. In a series of experiments the effect of time of application, duration of treatment and concentration of pesticides on numbers of nematodes infecting plants was studied.

**MATERIALS AND METHODS**

All seed used was *D. ovalifolium* CIAT accession No. 350 which had been scarified with concentrated sulphuric acid for 8 min, a standard method for small-seeded (600-800 seeds/g) tropical legumes. The nematode inoculum used was extracted, by Baermann funnel, from galls of *D. ovalifolium* CIAT 350 collected at the Instituto Colombiano Agropecuario - Centro Internacional de Agricultura Tropical (ICA-CIAT) Research Station, Carimagua in the Meta department. Soil from the CIAT Research Station at Santander de Quilichao

1) Present address: Plant Pathology Branch, Western Australian Department of Agriculture, Baron-Hay Court, South Perth, Western Australia 6151.
in the Cauca department was steam sterilized for experiments with chemical treatment of seeds.

Seed treatments. About 50 seeds were soaked in 0, 100, or 500 ppm carbofuran (Furadan*) for 1, 5 or 60 min. To test whether control by benomyl (Benlate*) was as effective as that by carbofuran, benomyl was tested at 100 and 500 ppm for 1, 5 and 60 min using carbofuran at 500 ppm for 60 min as the control. After treatment, seeds were washed well in tap water and germinated on filter paper in Petri dishes for 1 wk. Ten replicate seedlings were then sown, one per 15-cm-diameter plastic pot in soil from Quilichao. After 1 wk (i.e. 2 wk after chemical treatment) all plants were inoculated with a mixture of 70 females and juveniles of *P. cecidogenus* in 0.5 ml of water and again on two further occasions at 2-3 day intervals. Each plant was covered with a glass beaker to minimise evaporation. Four weeks after the final inoculation, plants were harvested and nematodes extracted from galls using the Baermann-funnel technique (Southey, 1986).

In an additional experiment, seeds were treated as above with 500 ppm carbofuran for 60 min. Plants were inoculated as above but 1, 2, 4 or 8 weeks after sowing. All plants were harvested after sowing when nematodes were extracted and counted.

Plant treatments. In each experiment, treatments were replicated ten times in a completely randomised design. Seed was germinated on damp filter paper in Petri dishes for 1 wk and then sown one per 15 cm-diameter plastic pot containing unsterilized soil. Two weeks later, test plants were inoculated with 70 females and juveniles of *P. cecidogenus* in 0.5 ml of water and again on two further occasions at 2-3 day intervals. All plants were covered with glass beakers to minimise evaporation. One week after the final inoculation, plants were sprayed to run-off with the chemicals under test.

In the first experiment, benomyl at 0.26 g a.i./L was sprayed onto inoculated and nematode-free plants. Untreated inoculated and nematode-free plants were also maintained as controls. In a second experiment, inoculated and nematode-free plants were treated with 1.2 g a.i./L thiabendazole (Mertect*) or 0.45 g a.i./L thiophanate (Topsin*). Water controls were included. Forty days after chemical treatment, plants in both experiments were harvested. Nematodes were extracted from inoculated plants using the Baermann-funnel technique (Southey, 1986) and the numbers of *P. cecidogenus* counted. Numbers of leaves, primary stem length, root length (Tennant, 1975) and shoot and root dry weights of all plants were recorded.

RESULTS

Seed treatments. When plants were inoculated one week after sowing, carbofuran at 500 ppm significantly decreased the number of nematodes/plant for

* Registered trade names.