POCHONIA CHLAMYDOSPORIA AND PLANT AQUEOUS EXTRACTS, A COMBINED APPROACH FOR MANAGEMENT OF *MELOIDOGYNE INCOGNITA* IN BEANS. **Martínez[1], K.V., R.M. Belmont[1] and R.H. Manzanilla López[2].** [1]Centro de Desarrollo de Productos Bióticos Instituto Politécnico Nacional. Apartado postal 24. Yautepec Morelos México 62731; [2]Department of AgroEcology, Rothamsted Research. Harpenden Herts, AL5 2JK, UK.

Pochonia chlamydosporia is a facultative parasite of *Meloidogyne* spp. eggs, and is increasingly being used in combination with other crop management strategies, such as the nematicidal properties of extracts from several plant families. In the present work, the combination of both management strategies was tested in beans against *M. incognita*. Bean plants grown under greenhouse conditions in a soil infested with *M. incognita* were added with powder from three milled plants (6 g/ 600 g of soil) belonging to three plant species with nematicidal properties (*Chenopodium album*, *Raphanus raphanistrum*, *Thymus vulgaris*) alone or in combination with *P. chlamydosporia*. One treatment also included the fungus and the three plant species together. All treatments were compared with the nematicide carbofuran. There was a significant reduction in root galling with carbofuran, the combination of the fungus with the three plant species applied together, and the combination of the fungus with *Thymus vulgaris*. There was no difference in green bean production between treatments. It was concluded that it is possible to combine both management strategies against *M. incognita* but further studies are required.

BIOCIDAL EFFICACY OF ENTOMOPATHOGENIC NEMATODES AGAINST CATTLE TICKS. **Maru[1], A.K., S. Kachhawaha[2], A.U. Siddiqui[3] and S.K. Sharma[3].** [1]Department of Entomology, B.A.C., Bihar Agricultural University, Sabour, Bhagalpur-813210, India; [2]Krishi Vigyan Kendra, CAZRI, Pali-Marwar -306401, India; [3]Department of Nematology, R.C.A., MPUAT, Udaipur-313001, India.

Entomopathogenic nematodes have been successfully used as biological control agents of insects of economically important crops. In the present study, the biocidal efficacy of two different strains of entomopathogenic nematodes, *Steinernema carpocapsae* STSLU and *S. carpocapsae* STUDR against two different cattle ticks, *Rhipicephalus microplus* and *Hyalomma savignyi* was evaluated on the basis of percentage mortality under laboratory conditions. The adult female cattle ticks were inoculated with infective juveniles (IJs) of both the strains of *S. carpocapsae* at different inoculum levels. All the treatments were replicated four times at 20° C in a B.O.D. incubator. The percentage mortality of the cattle ticks was determined every 24 hours up to 120 hours from the time of inoculation. Rhipicephalus *microplus* was more susceptible to both strains than *H. savignyi*.*Steinernema carpocapsae* STSLU was more efficient than *S. carpocapsae* STUDR and cause 100 and 97.5 % mortality of *R. microplus* and *H. savignyi*, respectively at a concentration of 250 IJs/Petri dish after 120 hours. Both the tested strains showed promise for the control of *R. microplus* and *H. savignyi,* and will be evaluated further in field conditions.

THE LEVAMISOLE-SENSITIVE NICOTINIC ACETYLCHOLINE RECEPTOR OF *GLOBODERA PALLIDA*. **Marvin[1], J., A. Crisford[2], L. Jones[1], C. Lilley[1], V. O'Connor[2], L. Holden-Dye[2] and P. Urwin[1].** [1]Centre for Plant Sciences, University of Leeds, Leeds, LS2 9JT, UK; [2]Centre for Biological Sciences, University of Southampton, Southampton, SO17 1BJ, UK.

The potato cyst nematode *Globodera pallida* costs the UK potato industry over £50 million per annum and novel effective control of the pathogen is essential. The ability to locate and migrate to host-roots in the soil is a common requirement among many plant-parasitic nematodes and may be a key target for control. A target for control may be the mechanism of muscle contraction by the neurotransmitter acetylcholine. The paralytic drug levamisole is known to act via acetycholine receptors. *Globodera pallida* is more resistant to levamisole than *Caenorhabditis elegans*. In *C. elegans* the levamisole-sensitive acetylcholine receptors of body wall muscle are largely comprised of five subunits; UNC-38, UNC-63, UNC-29, LEV-1 and LEV-8. Orthologues of *unc-38; unc-63* and *unc-29* have been identified and cloned from *G. pallida*. Orthologues for *lev-1* and *lev-8* have not been identified in *G. pallida*. The predicted amino acid sequence of *Gp-unc-38* lacks important determinants for binding of acetylcholine and other agonists like levamisole. *Caenorhabditis elegans* mutants that are functionally null for *unc-38* display an uncoordinated phenotype and increased resistance to levamisole. Transgenic expression of *Gp-unc-38* in this mutant background rescues normal movement suggesting a functional reconstitution of the levamisole sensitive receptor, but does not restore full sensitivity to levamisole. This raises important questions about the arrangement and pharmacology of this receptor in *G. pallida* that are currently being investigated. Other members of the order Tylenchida share the same complement of receptor subunits and features of UNC-38, which may provide a unique target for control of plant-parasitic nematodes.

TYLENCHULUS SEMIPENETRANS BIOTYPE IN SOUTH AFRICA: PONCIRUS BIOTYPE. **Mashela[1], P.W., Z.P. Dube[1] and K.M. Pofu[2].** [1]School of Agricultural and Environmental Sciences, University of Limpopo, Private Bag X1106, Sovenga 0727, South Africa; [2]Agricultural Research Council- Vegetable and Ornamental Plant Institute, Private Bag X293, Pretoria 0001, South Africa.

The reproductive potential (Pf/Pi) previously used to established the citrus nematode (*Tylenchulus semipenetrans*) biotype among differential hosts did not allow for inter- and intra-continental comparability. Therefore, the reproductive potential was used to re-assessed the citrus nematode biotype from *T. semipenetrans* isolates collected from 18 different citrus-producing district municipalities in South Africa on rough lemon (*Citrus jambhiri*), trifoliate orange (*Poncirus trifoliate*) and