500 to 5000 nematodes per 100 cm^3 soil. Corn yield increased in all three systems from 1989 to 2013, but system 2 consistently produced less yield than systems 1 and 3. In 1997, Maturity Indices distinguished system 1 from system 3. Maturity Indices were lower in all corn based systems as compared to pasture for 1995-1997. Preliminary faunal analyses of the current data set suggest that nematode community structure has not become more different in the systems over time.

POPULATION DYNAMIC OF RING NEMATODE IN PEACH ORCHARD MANAGED WITH CASTOR BEAN CAKE AND MILLET CROP. **Bernardo[1], J.T., A.C. Krolow[2] and C.B. Gomes[2].** [1]PPGFS/Universidade Federal de Pelotas, Campus Universitário s/n C. P. 354, Pelotas/RS, Brazil; [2]Embrapa Clima Temperado, Cx Postal 403, Pelotas/RS, Brazil.

The Peach Tree Short Life syndrome associated with the ring nematode, *Criconemoides xenoplax* has been a problem in peach orchards in southern Brazil since the 1980s. Therefore, the influence of incorporating of castor bean cakes and soil cropping with black oat (*Avena strigosa*) and millet (*Pennisetum americanum*) was investigated in a peach orchard 'Rubimel' naturally infested by *C. xenoplax*. During the spring/summer and autumn/winter seasons, 20 kg of castor bean cakes were incorporated into the soil at level of 10kg castor bean cake/m^2 in plots with five peach trees. Just after the residue application, black oat or millet were seeded in the plots. Peach trees maintained without weeds were used as control. The experiment was carried out during 2012 and 2013 using a randomized design with six replications. Four months after the application of the treatments, soil samples were collected before and 30 days after plant incorporations for evaluation of *C. xenoplax* populations using regression analysis. Additionally, the chemical characteristics of peach fruits were also evaluated. Independent of the treatment, the *C. xenoplax* populations behaved similarly. In the spring-summer seasons the populations decreased in the soil and increased during the autumn-winter season. However, the nematode populations were lower in the pots where the plants received the residue associated with cover crops. Evaluating the fruit quality, there were no difference in the pH, total titratable acidity and ascorbic acid between the different treatments, but in the plots with castor bean cake and cover crops a significant reduction of total soluble solids was verified and it can possibly be explained by increased nitrogen from the castor bean cakes.

PAECILOMYCES LILACINUS (=*PURPUREOCILLIUM LILACINUM*) AS A NEMATODE BIOCONTROL AGENT. **S.D. Berry.** BASF Agricultural Specialities (Pty) Ltd., 91 Clifton Canyon Drive, Gillits, 3610, South Africa.

Nematodes are a constant threat to crop production worldwide. Various management strategies have been developed over the years, with most of the emphasis being on chemical nematicides and varietal resistance. However, with the demise of many of the traditional chemical solutions, the identification and management of these pests is becoming increasingly more important. In the last few years much interest and investment has gone into researching biological control of nematodes. A number of different biological control organisms have been researched and a few developed into commercial products (e.g. *Paecilomyces lilacinus, Bacillus firmus, Pochonia chlamydosporia, Pasteuria penetrans*). The aim of this talk will be to discuss the history, modes-of-action, nematode targets, crops, commercial products and efficacy of *Paecilomyces lilacinus* (also known as *Purpureocillium lilacinum*) as a nematode biocontrol agent.

RECENT METHODOLOGICAL AND THEORETICAL ADVANCES FOR SPECIES DELIMITATION IN CONTEMPORARY NEMATODE TAXONOMY. **Bert[1], W., D. Slos[1], T. Janssen[1], P. Fonderie[1], H. Steel[1] and W. Decraemer[1,2].** [1]Nematology Research Unit, Department of Biology, Ghent University, K.L. Ledeganckstraat 35, 9000 Ghent, Belgium; [2]Royal Belgian Institute of Natural Sciences, Department of Invertebrates, Vautierstraat 29, B-1000 Brussels, Belgium.

Only a small fraction of the estimated existing nematode species has been described. To grasp the overwhelming nematode diversity, some nematologists still have confidence in methods that date back to the 17th century, while others want to abandon species as fundamental entities of diversity. We will discuss the necessity and shortcomings of traditional and new approaches. It is obvious that nematode taxonomy is confronted with the challenge to fully incorporate new theory, methods and data from disciplines that study the origin, boundaries and evolution of species. These recent methodological advances hold promise for species delimitation methods that reflect ''true'' speciation events. However, these advanced methods have their limitations in daily taxonomic practise, and therefore it is evident that forwarding one best possible taxonomical method is currently impossible. We advocate the simultaneous use and efficient integration of slow integrative taxonomy and fast molecular operational taxonomical units. Examples of our own approaches, targeting a comprehensive and reliable description of nematode biodiversity, will be illustrated using case studies on free-living, plant-parasitic, and facultatively animal parasitic nematodes. These efforts are based on a combined acquisition of informative sequences, ecological and morphological data; and integrated in phylogenetic frameworks and supported by an appropriate databank. Finally, the link of our taxonomical work with other ongoing research projects will be highlighted.

IS INTROGRESSION BREEDING ANSWER TO NEMATODE RESISTANT SUGARCANE IN AUSTRALIA? **Bhuiyan[1], S.A., B.J. Croft[1], E. Wong[1], P. Jackson[2] and G.R. Stirling[3].** [1]Sugar Research Australia, Woodford, Australia; [2]CSIRO Townsville, Australia; [3]Biological Crop Protection, Brisbane, Australia.

Root knot (*Meloidogyne* javanica) and root lesion (*Pratylenchus zeae*) nematodes are causing in excess of A$82 million losses to the Australian sugar industry annually. No commercial sugarcane varieties are resistant to these nematodes. A