host cells for feeding. The molecular mechanisms and signalling pathways involved in ROS-mediated restriction of cell death will be discussed.

STUDY OF BRAZILIAN SPECIES OF *MELOIDOGYNE*: ENZYMATIC AND MOLECULAR CHARACTERIZATIONS. **Mattos[1], V.S., J.M.S. Monteiro[1], J.E. Cares[1], V.R. Correa[1, 2], M.R.A. Almeida[2], J.P. Borges[3], R.M.D.G. Carneiro[2].** [1]Dep. Fitopatologia, Universidade de Brasília, 70910-900 Brasília, Distrito Federal, Brazil; [2]Embrapa Recursos Genéticos e Biotecnologia, 70849-979 Brasília, Distrito Federal, Brazil; [3]Embrapa Hortaliças, 70359-970 Brasília, Distrito Federal, Brazil.

Root-knot nematodes (*Meloidogyne* spp.) are amongst the world's major crop pathogens, due to their wide distribution, extensive host ranges, and ability to cause considerable economic losses. Efficient control of these pathogens depends upon correct species identification. Recently, five Brazilian species of *Meloidogyne* were described (*Meloidogyne petuniae*, *Meloidogyne pisi*, *Meloidogyne phaseolus*, *Meloidogyne brasiliensis* and *Meloidogyne polycephannulata*) without detailed molecular characterization. Therefore, the aim of this study was to characterise the type isolates using enzymatic profiles and SCAR markers. Esterase profiling and SCAR analyses were done according to described protocols. *Meloidogyne petuniae* Est Pe2 (Rm: 0.95, 1.08) and *M. pisi* Est Pi5 (Rm: 0.91,0.95,1.12,1.25,1.33) showed new species-specific esterase phenotypes. *Meloidogyne phaseolus*, *M. brasiliensis* and *M. polycephannulata* had the same species-specific esterase phenotypes as *Meloidogyne morocciensis (*Est A3, Rm: 1.1,1.2,1.3), *Meloidogyne ethiopica* (Est E3, Rm: 0.9,1.05,1.20) and *Meloidogyne incognita* (Est I2, Rm:1.0, 1.1), respectively. PCR with species-specific SCAR primers confirmed the results of esterase phenotypes: *M. phaseolus* and *M. morocciensis*, both showed a single specific fragment of 420 base pairs (bp), as well as in *M. brasiliensis* and *M. ethiopica* (350 bp) and *M. polycephannulata* and *M. incognita* (399 bp). Preliminary, morphological studies revealed similarities in characters of females, males and second stage juveniles among these species. Additional studies, including morphology, sequencing of 18S rRNA, internal transcribed spacer rRNA (ITS), D2-D3 fragment of 28S rRNA and phylogenic analyses have been carried out in order to clarify the taxonomic status of these Brazilian root-knot nematode species.

EFFECTIVENESS OF ECOSYSTEM CONDITION AND FUNCTION INDICES USED IN SOIL NEMATOLOGY. **Matveeva, E., A. Sushchuk and D. Kalinkina.** Institute of Biology, Karelian Research Centre, Russian Academy of Sciences, 11 Pushkinskaya St., 185910 Petrozavodsk, Russia.

Monitoring of soil nematodes in the Republic of Karelia has provided extensive data on the taxonomic diversity, abundance and community structure of nematodes in coenoses differing in geographical location, type of vegetation and scope of disturbance. The large data pool allowed us to check the effectiveness of the ecological indices derived from nematode fauna analysis (structure *SI*, enrichment *EI*, and channel *CI* indices) for assessing soil ecosystem conditions. It is shown that the indices reflect both changes in the soil or plant cover of natural coenoses, and the consequences of environmental disturbance caused by human activities. E.g., differences depending on the geographical location were found in *CI* and *SI* indices. In meadows *CI* significantly decreased from southwards (from 56 to 23). Northern coenoses exposed to extreme climatic conditions or anthropogenic transformation had a high *SI* index owing to a large proportion of omnivores in the nematode community structure. In natural coenoses *EI* and *CI* indices were associated with the type of vegetation. A combination of the indices enables clear differentiation between nematode communities of meadow and forest habitats. The nematode communities of meadows had higher *EI* and lower *CI* values. Low *SI* and high *EI* values were detected in disturbed habitats (urban areas, industrial zones). Agrocoenoses yielded similar values, indicating habitat instability and simplification of the soil food web. Thus, ecological indices are effective tools for assessment of the state and functioning of soil ecosystems.

PRIMING OF POTATO PLANTS BY TEMPERATURE FOR ENHANCEMENT OF RESISTANCE TO COLD STRESS AND NEMATODE INVASION IN THE NORTH. **Matveeva[1], E., V. Lavrova[1], E. Sherudilo[1], M. Seppänen[2] and P. Palonen[2].** [1]Institute of Biology, Karelian Research Centre of Russian Academy of Sciences, Pushkinskaya St. 11, 185910 Petrozavodsk, Karelia, Russia; [2]University of Helsinki, P.O. Box 27, FIN-00014, Helsinki, Finland.

Priming of plants to abiotic and biotic stresses is an important component in plant survival and normal functioning in the North, where low temperatures with sharp fluctuations during day-cycle are experienced and consequences of environment disturbances, including pest invasion, are strongly expressed. Research on priming of plants by low temperature was carried out on a parasite system ''potato - potato cyst nematode *Globodera rostochiensis* (Wollenweber)Behrens, Ro1''. Plants of potato genotypes derived from wild species *Solanum commersonii,* possessing different freezing tolerances and cultivated potato *Solanum tuberosum* (resistant and susceptible to nematode cultivars) were subjected to a temperature drop from 23 to 5°C for 2 h at the end of the night. Afterwards half of plants were infested by potato cyst nematode, (10-20 cysts per plant). It was established that nematode infestation promoted plant growth and development and led to a slight decrease in content of photosynthetic pigments and Fv/Fm ratio in potato genotypes in comparison with non-infested plants. Plant growth and development of susceptible cultivars were inhibited and photosynthetic pigment content was slightly increased. Morphological and physiological traits of resistant cultivars were not affected under *G. rostochiensis* infestation. Temperature