NEMATODE ASSOCIATES OF A *FUSARIUM* BIOCONTROL ENDOPHYTE OF COLORADO CHEATGRASS. **Carta[1], Lynn K., A.M. Skantar[1], Z.A. Handoo[1], G. Bauchan[2], and M.A. Baynes[3].** [1]United States Department of Agriculture, ARS-BARC-W, Nematology Laboratory, Beltsville, Maryland 20705, [2]United States Department of Agriculture, ARS-BARC-E, Electron and Confocal Microscopy Unit, Beltsville, Maryland 20705, [3]Department of Forest Ecology and Biogeosciences, University of Idaho, Moscow, ID 83844.

Nematodes were isolated from surface-sterilized stems of cheatgrass, *Bromus tectorum* (Poaceae) in Colorado, grown on *Fusarium* (Hypocreaceae) fungus culture, and identified as *Paraphelenchus acontioides* and *Panagrolaimus artyukhovskii*. These nematodes were found during a survey of endophytic fungi as possible biocontrol agents in eight mid-western and western U. S. states and in British Columbia, Canada. Morphometrics and micrographic morphology of these species were generated to supplement the original descriptions. Tabular morphometrics of females of 23 *Paraphelenchus* species were updated from those in the most recent 1984 publication. Variations in the oviduct within *Paraphelenchus* were detailed from specimens on slides and from the literature. Molecular sequences were generated for 18S and 28S ribosomal DNA for *P. acontioides*. For genus *Paraphelenchus* this represents the first identified species so characterized. These sequences were incorporated into phylogenetic trees with related species. *Aphelenchus avenae* isolates formed a well-supported monophyletic sister group to *Paraphelenchus*. *P. artyukhovskii* was morphometrically similar to the species that lack posterior corpus swelling such as *P. detritophagus*, *P. superbus*, *P. subelongatus*, and *P. rigidus*. Diagnostically important SEM head images that could distinguish species in this group were created that showed discrete, unseparated lips similar to *P. detritophagus*. The stoma of *P. artyukhovskii* was longer than that of *P. detritophagus* however, and possessed the two characteristic teeth for this species.

THE EFFECTOR PROTEIN ENCODING GENE *GR33E05* FROM *GLOBODERA ROSTOCHIENSIS* HAS A ROLE IN PLANT PARASITISM. **Chen, Shiyan[1], S. Lu[2], H. Yu[1], and X. Wang[1,3*].** [1]Department of Plant Pathology and Plant-Microbe Biology, Cornell University, Ithaca, NY 14853, [2]USDA-ARS, Northern Crop Science Laboratory, Fargo, ND 58102, and [3]USDA-ARS, Robert W. Holley Center for Agriculture and Health, Ithaca, NY 14853.

Secreted effector proteins encoded by parasitism genes expressed within the esophageal gland cells of plant-parasitic nematodes are essential for successful parasitism of host plants. The *Gr33E05* parasitism gene is expressed exclusively within the single dorsal gland cell of the potato cyst nematode *Globodera rostochiensis* and encodes two predicated effector isoforms, Gr33E05A and Gr33E05B. Gr33E05A differs from Gr33E05B by an internal insertion of 22-amino acid residues as a result of alternative splicing (AS) of the *Gr33E05* pre-mRNA. Transgenic potato lines overexpressing either form of *Gr33E05* showed an increased susceptibility to *G. rostochiensis* infection, whereas silencing the *Gr33E05* transcripts through host-derived RNA interference resulted in less susceptibility to *G. rostochensis* in transgenic potato lines. These results clearly demonstrate that *Gr33E05* is required for nematode parasitism. Yeast two-hybrid screens identified several potato proteins that potentially interact with both isoforms of Gr33E05. Interestingly, a potato protein that interacted with Gr33E05A, but not Gr33E05B in yeast was also identified, suggesting that AS may play a role in diversifying *Gr33E05* function. The identified protein-protein interactions are being characterized to further elucidate the role of *Gr33E05* in promoting plant parasitism by *G. rostochiensis*.

SNEA253 OF *STREPTOMYCES VENEZUELA* CONTROL ROOT-KNOT NEMATODES ON CUCUMBER IN GREENHOUSE TESTS. **Chen, Lijie[1], C.H. Wan[1], X.F. Zhu[1], Y.Y. Wang[1], J.S. Chen[2], Y.X. Duan[1].** [1]Nematology Institute of Northern China, Shenyang Agricultural University, Shenyang, Liaoning,China,110866; [2]Daqing Branch, Heilongjiang Academy of Agricultural Sciences, Daqing, Heilongjiang, China 163316.

Snea253 is a secondary metabolite in the fermentation product of *Streptomyces venezuela*, which was isolated from the soil by Shenyang Agricultural University, and constitutes the Snea253 extract found to kill phytoparasitic nematodes such as soybean cyst nematode and root knot nematode in vitro in our previous research. Concentrations of Snea253 nematicidal extract at 10.2μl · ml^{-1} killed 50% of target *Meloidogyne incognita* J2 in vitro, and killed 90% J2 at 50μl · ml^{-1}, providing a dose-response virulence regression equation of Y = 3.40152X +1.75706, LD50 = 10.15534μl · ml^{-1}. To evaluate Snea253 effects on root-knot nematodes in soil, we designed a series of dilutions (diluted 50×, 100×, 200× and in vitro LD50 concentration 10.2μl · ml^{-1}) of the Snea253 extract. Water and 1.8% avermectin commercial pesticide were included as negative and positive controls treatments, respectively. Five replicates of each treatment, including controls, were added to the soil in pots of cucumbers grown in the greenhouse and plants were inoculated with *M. incognita*. Then the number of root galls, egg masses of *M. incognita* and disease index (DI=Σ[(Si*Ni)/(N*imax)]*100) were investigated in this paper. The results showed that the 50× dilution of Snea253 had a similar level of root-knot nematode control as avermectins in pot experiments, where compared to water controls the inhibition rate of root gall numbers and egg masses was 90.87% and 91.58% respectively, and avermectins was 92.52% and 91.32%, with no significant difference between them. The other dilutions of Snea253 reduced root-knot nematode infection more than