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AMINI, M., SHAHIDI BONJAR, G.H., SHOKOOHI, E. & MOHAMMADI, H. Evaluation of cannabis extract on root knot nematode (*Meloidogyne javanica*).

Nematicidal activity of Cannabis extract (*Cannabis sativus*) on the mortality of juveniles of root-knot nematode *Meloidogyne javanica* was studied *in vitro*. Cannabis leaves were collected and shade dried. The leaves pulverized and macerated in methanol for 3 days followed by filtration through two layers of cheese cloth. The extract was concentrated under reduced air using Rotatory evaporation at 50°C. The tar-like crude was collected and kept refrigerated before use. The experiment was conducted in well while had been filled with plant extract. Concentrations of Cannabis extract in wells were 0.5, 2 and 5 percent in methanol. CRD used for test in five replications. After 24 hrs exposure, mortality of *M. javanica* juveniles was assessed. The results evaluated using MSTATC software and Duncan's multiple range test. The results showed that 5% of cannabis extract caused much higher mortality than other concentrations ($P \leq 0.05$); 89% of mortality was observed. However, all concentrations had significant effect ($P \leq 0.05$) on mortality of juveniles in comparison with blank. This test demonstrates that Cannabis extract can be considered as a candidate for further work with the aim of use as biological agent for control of root knot nematodes. - **Department of Plant Protection, College of Agriculture, University of Shahid Bahonar, Kerman, Iran. E-mail: eshokoohi@mail.uk.ac.ir**

AMIRZADI, N.¹, SHOKOOHI, E.², ESKANDARI, A.³ & ABOLAFIA, J.⁴ Correlation of morphometric data among different populations of *Eucephalobus* Bastian, 1865 species from Iran.

The free-living nematodes and ecologically dominant genus *Eucephalobus* Bastian, 1865 with 12 nominal species are studied worldwide. *E. mucronatus* (Kozłowska & Roguska-Wasilewska, 1963) Andrassy, 1967 and *E. striatus* (Bastian, 1865) Thorne, 1937 were studied to find the correlation between morphometric data in different populations. Some characters such as body length, stoma, corpus, isthmus, bulbus, pharynx, spermatheca, tail, vulva position, gubernaculum and spicules were used in this study. In both species 53 females and 24 males from different populations were used to illustrate the correlations. SPSS software and Pearson's correlation coefficients were used to analyze data. Results showed that stoma ($r = 0.518$), corpus ($r = 0.625$), pharynx ($r = 0.774$), and spermatheca ($r = 0.526$) had significant correlation ($p \leq 0.01$) with body length. The vulva position had high correlation with body length ($p \leq 0.01$; $r = 0.975$) in females. In males corpus ($r = 0.762$), bulbus ($r = 0.703$) and pharynx ($r = 0.861$) had significant correlation with body length ($p \leq 0.01$). Spicules had significant correlation ($r = -0.744$) with gubernaculum while increasing in spicule length associate with decreasing of gubernaculum length simultaneously. In conclusion, morphometric data of this two species demonstrated that some important morphometric characters depended on body length while increasing in body length was caused by increasing in other character simultaneously. This information may be similar in other species of the genus *Eucephalobus*. - ¹Department of Plant Protection, College of Agriculture, Islamic Azad University of Damghan, Damghan, Iran; ²Department of Plant Protection, College of Agriculture, University of Shahid Bahonar, Kerman, Iran. E-mail: eshokoohi@mail.uk.ac.ir; ³Department of Plant Protection, College of Agriculture, University of Zanjan, Zanjan, Iran; ⁴Departamento de Biología Animal, Biología Vegetal y Ecología, Universidad de Jaén. Campus "Las Lagunillas" s/n. 23071-Jaén, Spain.

ANIKIEVA, L.V., TYUTYUNNIK, N.N., BESPATOVA, L.A., ANIKANOVA, V.S. & GOLITSYNA, N.B. Effects of *Toxascaris leonina* (Nematoda) infection on economic features of Arctic fox.

The effects of nematode *Toxascaris leonina* infection on the body weight and fur quality of the arctic fox have been experimentally studied. At infection doses of 10 and 100 eggs of *T. leonina* per host no significant effect of host infection dose on the body weight and pelt quality of arctic foxes was found. Arctic foxes infected with 1000 *T. leonina* eggs had minimal body weight gain and lower fur quality, resulted in a lower pelt price. The analysis of the effects of *T. leonina* infection on the course of pregnancy has shown that *Toxascaris* caused 5% of all abortions in arctic foxes and 9% ($P > 0.99$) of cases of cannibalism. The results obtained suggest that the host-parasite system *Alopex lagopus* - *T.*

leonina has a wide range of adaptation possibilities. Low intensity infection with *T. leonina* does not have a pronounced pathological effect on the body weight and fur quality. It is also not a major cause of abnormal pregnancy, but aggravates it. Higher infection dose, 1000 eggs/host affects the established relationship and shifts the balance in host-parasite relations to the detriment of the host. Decrease in the body weight negatively affects pelt size and quality. - **Institute of Biology of Karelian Research Centre, Russian Academy of Sciences, 11 Pushkinskaya St., Petrozavodsk, 185910, Russia. E-mail: anikieva@krc.karelia.ru**

ARBUZOVA, E.N.¹, MAGOMEDOV, U.SH.¹, ABASOV, M.M.¹, PONOMAREV, V.L.¹, KOZYREVA, N.I.², RYSS, A.YU.³ & KULINICH, O.A.¹ Surveys for the pine wood nematode *Bursaphelenchus xylophilus* in Russia.

The Pine Wood Nematode (PWN) *Bursaphelenchus xylophilus* (Steiner & Buhner) Nickle is one of the most important quarantine pests worldwide. This nematode is a major pathogen of conifers where it causes massive wilting and death of trees. It has been estimated that the introduction and establishment of *B. xylophilus* into Russia would have an economic impact amounting to 50-112 billion rubles a year. At present the PWN is officially considered not to be present in the Russian Federation; however, conditions are suitable for the nematode in many regions of Russia. Detection surveys for the PWN have been made in several regions, including the Moscow and Sakhalin regions plus Krasnoyarsk, Zabaykalsky, Primorsky, Khabarovsk, Altai regions and Altai Republic. Nematodes were extracted from wood samples using the funnel method (24-hour extraction period). The nematodes were identified using a molecular diagnostic method – FLASH-PCR with 1349 samples of pine (*Pinus sylvestris*, *P. sibirica*, *P. korajensis*, *P. pumila*), silver fir (*Abies alba*, *A. nephrolepis*), fir (*Picea korajensis*) and Kayander larch (*Larix cajanderi*) being analyzed for PWNs. Several nematode species of various taxonomic groups were extracted from 33.1% of the 1349 samples. Although *B. xylophilus* was not found in any of the samples a closely-related nematode, *B. mucronatus*, was found in 11.5% of all the samples. *Bursaphelenchus mucronatus* was found most often in wood samples from Zabaykalsy krai (50%). Surveys of forest plantations are expected to be conducted in future. – ¹All-Russian Plant Quarantine Center, Pogranchnaya 32, Moscow oblast, 140150 Russia. E-mail: okulinich@mail.ru; ²The Center of Parasitology, Institute of Ecology and Evolution RAS, Moscow, Russia; ³Zoological Institute of RAS, St. Petersburg, Russia.

BAGHERI, M., SERAJI, A., JAMALI, S. & ESKANDARI, A. Effects of soil amendment on damage and population level of tea root lesion nematode (*Pratylenchus loosi*) in Iran.

Tea root lesion nematode *Pratylenchus loosi* is considered as the most important factor of tea causing damage in Iran and the world. Currently of total 34000 ha of tea gardens are in the northern part of Iran; more than one third of them are infected with the nematode. Goals of research were to study the effect of rotten manure, mineral fertilizer like dolomite and lethal nematicide like Nemakor on population of root tea lesion nematode; compare them with each other and compared with lethal nematicide like Fenamynus (Nemakor, 6 percent Granule). Research was conducted in Country Tea Research Center in the form of the factorial experiment (Nemakor at two levels of 0 and 7 g per each seedling, rotten manure at two levels of zero and three weight percent of soil each pot and dolomite mineral fertilizer at two levels of zero and 0.125 weight percent of soil each pot) on the base of randomized complete blocks statistical design with three replications and nine pots in each replications. Results showed that each treatment (manure, dolomite and Nemakor) had significant effect on reducing the nematode population and improved crop morphological traits to tea seedlings in comparison to control (infection without modifiers). In Simple (independent) treatments Nemakor was more effective in nematode population reducing; the efficiency of dolomite mineral fertilizer was evaluated more than rotten manure. In Double and Triple interaction of treatments, all three treatments applied together reduced the nematode populations and improved crop morphological characteristics at great extent. Percentage of independent treatment ability to reduce nematodes was calculated 60% for Nemakor, 25% – dolomite and 15% for rotten manure; in dual treatments – 75% for Nemakor + dolomite and 86% in triple interactions. - **University of Rasht, Guilan, Iran. E-mail: Bagheri_ep@yahoo.com**

BARSKAYA, J. Spread of Siberian relict – nematode *Philonema sibirica* – in water bodies of Karelia.

Formation of modern fauna of Karelian water bodies has begun after glacier reduction about 10-15 thousand years ago. Long formation of fauna was accompanied by various flows of spreading species. Modern fauna of water bodies of the Russian North was formed and colonized by species of Baltic, Caspian and Atlantic origin. The formation of modern European North hydrobiocenosis was also affected by Siberian fauna species. The discovery of Siberian parasites in water bodies of Karelia was first reported by Rummyantsev (Rummyantsev, 1965). He found the nematode *P. sibirica* in vendace in water bodies of Kuito lake-river system (Vyg river system, White Sea basin) in 1962. The author has pointed out differences in morphology and host range of *Philonema* and ecology of host. In 2010, parasitological studies on vendace from Segozero (Vyg river system) had revealed the presence of *Philonema*. Morphology of females and males was studied. Morphometrics of obtained nematode specimens differed from given in the Key book and

showed a great variability. However, numerous data on the fauna of Salmonidae parasites show that the presence of different hosts is not a reliable sign of identification of parasite species. It has been previously shown in our researches that parasite fauna of Salmonidae fish is characterized by high degree of a generality. There are very few species which are stated as specific which parasites with direct life cycle. Intermediate host isn't necessary to these species. At present, it's impossible to identify nematodes of *Philomema* genus without carrying out molecular researches. - **Institute of Biology of Karelian Research Centre RAS, Pushkinskaya St., 11, Petrozavodsk, 185910, Russia. E-mail: jbarskaya@gmail.com**

BERT, W.¹, YUSHIN, V.V.², COUVREUR, M.¹ & CLAEYS, M.¹ From the backbone of nematode phylogeny to species delineation: integrating morphology and sequences.

Nematodes are speciose and are present in huge numbers in virtually all marine, freshwater and terrestrial environments. A phylogenetic framework is needed to underpin meaningful comparisons across taxa and to generate hypotheses on the evolutionary origins of important properties and processes. However, despite a vast number of molecular data, several subdivisions of the phylum Nematoda are still unresolved. Especially in cases where molecular-based hypotheses do not correspond with morphological data, a multi-disciplinary approach is required for a more definitive framework. Hence, the use of morphology in a molecular millennium is still essential to obtain a powerful phylogenetic hypothesis. For instance, the vastly superior resolution of an electron microscope allows the study of many more characters that are able to provide an improved phylogenetic signal. On species level, nematodes are notorious of the presence of sibling species which are difficult to separate because of the small number of diagnostic characters at species level and because of the intraspecific variability of some of these characters. We forward an efficient acquisition of nematode biodiversity, based on the combination of molecular and morphological methods. With relatively simple tools, different datasets obtained from single individuals can be unequivocally linked and made accessible by database infrastructure. The theoretical foundation and practical applications of this approach will be further discussed. – ¹Nematology Unit, Department of Biology, Ghent University, K.L. Ledeganckstraat 35, 9000 Ghent, Belgium. E-mail: Wim.Bert@UGent.be; ²A.V. Zhirmunsky Institute of Marine Biology, Far East Branch of the Russian Academy of Sciences, Vladivostok 690041, Russia.

BOLTOVSKA, E.V., GALAGAN, T.A. & NIKOLAYTCHUK, L.P. Use of Avercom against root-knot nematodes *Meloidogyne incognita* on cucumbers in the conditions of the greenhouse.

Nematicidal activity of Avercom (avermectin complex of *Streptomyces avermitilis* UKM AC-2179) was investigated. *In vitro* Avercom has a high nematicidal activity against root-knot nematode *Meloidogyne incognita*. LD₅₀ of Avercom at 30 min, pH 7,0 and t⁰ +28°C is 2,0 mkg/ml. In conditions of production greenhouse the application of Avercom allows to decrease of nematode infection on 75-88%, to provide the best growth and development of plants, and to receive an increasing 15,4-29,0% of a cucumbers yield. – **Institute of plant protection NAAS of Ukraine, 33, Vasilkovskaya str., Kiev-022, 03022, Ukraine. E-mail: elenab_7@ukr.net**

FADEEVA, N.P., MORDUCHOVICH, V.V. & SCHUGOREVA, A.A. *Daptonema* species from far-eastern seas.

The taxon *Daptonema* is very species-rich, with more than 113 valid species from all over the world, occurring in all types of marine, brackish and freshwater habitats. Despite of *Daptonema* species being are of the most abundant nematode in the sand sediments over the world, this is the first report of this species in Far Eastern Seas. The estuary of the Amur River is the largest estuary of the eastern coast of Russia located between the Japan Sea and the Okhotsk Sea. A total of 233 species of nematodes was recorded, 15 species of *Daptonema* were reported from this estuary. Some species (*D. articulatum*, *D. ecphygmicum*, *D. longissimecaudatum*, *D. normadicum*, *D. procerum*, *D. tenuispiculum*) are widely distributed. In order to unravel the possible relationships between *Daptonema* species the distribution of species were analyzed in relation to environmental and geographical distribution. The spatial distributions of these nematodes were strongly correlated with salinity. *Daptonema* (sensu Lorenzen, 1977) represents heterogeneous group, particularly in the structure of their copulatory apparatus and is difficult in relation to taxonomy and systematics. The genus suffers from troubled taxonomy and many species cannot be identified with certainty. There are few morphological characteristics used as distinctive parameters: setae length, amphidial fovea size and position; copulatory apparatus size and structure; tail shape and length. Moreover this genus contains species complexes. Results will hopefully lead to taxonomic revisions of *Daptonema* Cobb, 1920 and give a better picture of evolution within the major group of nematodes. Research was supported by grant from Russian Government № 11.G34.31.0010. - **Far Eastern Federal University, Oktyabrskaya 27, 417, Vladivostok, 690600, Russia. E-mail: nfadeeva@mail.primorve.ru**

GALAGAN, T.A.¹, GRYGORYEV, V.M.² & NIKOLAYTCHUK, L.P.¹ Parasitic nematodes of Sugar beet agroecosystems in Ukraine.

In the rhizosphere of sugar beet in various regions of its cultivation in Ukraine the group of parasitic nematodes is presented by 7 species. The majority of them concern to 6 families of order Tylenchida: Anguinidae (*Ditylenchus dipsaci* (Kuhn, 1857) Filipjev, 1935), Tylenchorhynchidae (*Tylenchorhynchus dubius* (Butschli, 1873) Filipjev, 1936), Pratylenchidae (*Pratylenchus pratensis* (de Man, 1880) Filipjev, 1936), Hoplolaimidae (*Helicotylenchus dihystrera* (Cobb, 1893) Sher, 1961), Paratylenchidae (*Paratylenchus nanus* (Cobb, 1923) Brzeski, 1936) and Heteroderidae (*Heterodera schachtii* Schmidt, 1871). Only 1 species *Longidorus elongatus* (de Man, 1876) Thorne et Swanger, 1936 belongs to family Longidoridae of order Dorylaimida. It is necessary to notice also that the first 6 species of parasitic nematodes were met in fields with various saturation of crop rotations by a sugar beet (16.7%, 33%, 50% and in a monoculture) were dominant and frequent, but *L. elongatus* has been noted only in a crop rotation with 50% saturation or in a monoculture of sugar beet, and it was rare. – ¹Institute of plant protection of NAAS of Ukraine, 33, Vasilkovskaya str., Kiev-022, 03022, Ukraine. E-mail: galaganta@mail.ru; ²Podilsky state agrarian-engineering university, 13, Shevchenko str., Kamianets-Podilskyi, Khmelnytskyi oblast, 32300, Ukraine. E-mail: grigoriev_va@mail.ru

GALAGAN, T.A., SIGAREVA, D.D., NIKISHITCHEVA, E.S. & NIKOLAYTCHUK, L.P. System of protective actions against golden potato nematode in Ukraine.

Under growing of a potato for own consumption on the fields with very low level of golden potato nematode invasion (1-500 larvae + eggs per 100 cm³ of soil) it is possible not to be applied protective actions, however it is necessary to check the level of soil contamination the next years. On sites with low level of invasion (501-1000 larvae + eggs per 100 cm³ of soil) it is enough to grow resistant to nematode zoned potato variety annually and check the next years the level of soil contamination. At the average level of golden potato nematode invasion (1001-5000 larvae + eggs per 100 cm³ of soil) we can recommend a crop rotation with alternation of non-host plants of *G. rostochiensis* and resistant varieties (within 3 years), then it is possible growing susceptible variety with periodic control the level of soil contamination. In the loci with high density of nematode populations (> 5000 larvae + eggs per 100 cm³ of soil) it is necessary the use crop rotation with non-host plants and resistant potato varieties (not more often, than 1 time in 3-5th years). – Institute of plant protection NAAS of Ukraine, 33, Vasilkovskaya str., Kiev-022, 03022, Ukraine. E-mail: galaganta@mail.ru

GALAGAN, T.A.¹, & SULCHAK, N.Y.² Distribution of *Globodera rostochiensis* (Woll.) Dehrens in the Western areas of Ukraine.

For the first time *G. rostochiensis* has been found on the territory of Ukraine in 1963 in Storozhinets district of Chernovtsy oblast. In 1967 these loci have been liquidated, and till now the oblast is a free from the nematode. In 1968-1969 golden potato nematode have revealed on private fields of three western oblasts: Volyn, Lvov and Rovno. A little bit later, in 1973 it has been found in Khmelnytsky, in 1977 – in the Ternopol oblast. In 2001 loci of *G. rostochiensis* have been found out in the Ivano-Frankovsk oblast. So, for today the golden potato nematode is extended in 644 settlements of 73 districts of 7 oblasts of the western region of Ukraine to the areas of 2147,4 hectares. The first place on infection scales, is occupied with the Volynsk oblast (1064,7 hectares), the second place - the Rovno oblast (occupies 656,6 hectares). The Lvov oblast, where the infection area has made 243 hectares, occupies 3th place in region. In the Ternopol oblast the area of the *G. rostochiensis* makes for today 123,7 hectares, in the Khmelnytsky - 29,8, Zakarpatye - 15,7, and in the Ivano-Frankovsk oblast - 3,9 hectares of agricultural grounds. - ¹Institute of plant protection of NAAS of Ukraine, 33, Vasilkovskaya str., Kiev-022, 03022, Ukraine. E-mail: galaganta@mail.ru; ²State Plant Quarantine Inspection in the Lvov Region, 18, Vitovsky str., Lvov, 79011, Ukraine. E-mail: sulchak@mail.ru

GRUJIĆ, N. & RADIVOJEVIĆ, M. Manually operated device for washing nematode cysts from potatoes.

Potato cyst nematodes (PCN) are important quarantined pests of potato in Europe. Their control within EU is elaborated in the Directive 2007/33 of the European Council. One point of concern is what to do with crops grown in fields infested with PCN. The Directive permits harvest and marketing of certain crops, including ware potatoes, provided that plants are cleaned of soil containing PCN cysts. Washing potatoes is optional and facilities for that on industrial scale are available. However, often only small patches within fields are actually infested. Provided their location is known, separate harvesting and washing just tubers from the patches would considerably reduce costs for washing. A simple manually operated device for washing primarily small quantities of potato tubers is designed and prototype was tested with potatoes harvested from a heavily PCN infested field containing c.a. one cyst per gram of soil. The device takes c.a. 10 min to wash up to 30 kg of potatoes until they are visually free of adhering soil. Aliquotes

of 15 and 30 kg of potatoes in 10 replicates were washed immediately after harvest. The tubers were subsequently examined in the lab for the presence of residual cysts. Around 98 % of the cysts were removed in both treatments, comparing unwashed control. Since the tubers are aimed for ware marketing, risk of spreading PCN into arable fields after the described washing treatment can be considered ignorable. This work is part of the project 46008, financed by Ministry of education and science of Serbia. – **Institute for Phytomedicine, Faculty of Agriculture of the University of Beograd, Nemanjina 6, 11080 Beograd-Zemun, Serbia. E-mail: milan@agrif.bg.ac.rs**

GRUZDEVA, L.I., MATVEEVA, E.M. & SUSHCHUK, A.A. Diversity of nematode fauna in natural biocenoses of Karelia.

Nematode fauna of biocenoses with different types of vegetation (pinery, spruce forest, meadow) was studied. Soil samples were collected across the territory of Republic of Karelia (61° to 66° N). Pine forests dominated in Karelia and presented by 62 nematode genera, 78 species (from investigated 23 sites). Taxonomic diversity of the nematode fauna (H') varied from 2.5 to 4.4. High values of H' index were registered for the northern Karelia (66° N), protected biotopes and island habitats. Bacterial feeders were the dominant trophic group. Maturity index of nematode communities ($\sum MI$) was within 2.3–2.8. Spruce forests occupied much less territory than pine forests. There were 71 nematode genera, 83 species (from 15 sites). H' index ranged from 3.1 to 4.4. Similar to pinery H' index was highest in protected biotopes and island habitats. Maturity index was higher than in pine forests. The number of phytotrophs increased from North to South. Meadows, mainly secondary, accounted for only 0.2% of the territory. In investigated 50 biotopes 90 nematode genera, 114 species were found. H' index was higher than in forest biocenoses (3.1–5.0). Representatives of all six eco-trophic groups were observed. Proportion of phytotrophs in the fauna significantly increased in compared with forest biocenoses (3–8 times). Some features of the nematode community structure of island habitats were detected. At present, the soil nematode fauna of Karelia represented by 314 nematode species belong to 130 genera. Research was supported by the Ministry of Education and Sciences (grant № 02.740.11.0700). – **Institute of Biology of Karelian Research Centre RAS, Pushkinskaya St., 11, Petrozavodsk, 185910, Russia. E-mail: gruzdeva@krc.karelia.ru**

GRUZDEVA, L.I., MATVEEVA, E.M. & SUSHCHUK, A.A. Soil nematodes of forest communities at different stages of recovery after clear-cutting.

Soil nematode fauna of forest communities at the different stages of recovery after clear-cutting on the territory of Republic of Karelia was investigated. Soil samples were collected in 2003-2010 just after clear-cutting with burning and storing of dead fallen wood, 1 and 20-25 years later. Nematological data were compared with ones from secondary forest (age 60-80 years) and old-aged spruce and pine forests (150-170 years). It was established that soil nematode communities were similar to each other, except for the sites with disturbances of ecotopes. Representatives of all six eco-trophic groups were observed. Clear-cutting with burning and storing of dead fallen wood influenced unfavourably on nematode populations, making scanty their trophic structure up to two eco-trophic groups (bacterial- and hyphal feeders). The number of genera, diversity, maturity and structure indices (H' , $\sum MI$, SI) were sharply decreased. Indices EI and CI in clearing space with disturbances of ecotopes changed differently. In the burning plot EI values were very high and CI values were too low. In the fallen wood storing plot, contrary, CI index was very high. After 1 year the total nematode quantity was low, the populations of bacterial feeders increased. With time of forest recovery the nematode fauna become more diverse and communities – more mature. Under the domination of bacterial feeders a share of phytotrophs in the community was raised. Research was supported by Programme of fundamental researches of Department of Biology RAS (№ 01200955238). – **Institute of Biology of Karelian Research Centre RAS, Pushkinskaya St., 11, Petrozavodsk, 185910, Russia. E-mail: gruzdeva@krc.karelia.ru**

HAROON, S. Molecular identification of root knot nematode as a major pest in Egypt and their control.

Root-knot nematode (*Meloidogyne* spp) is considered as major pest in Egypt causing serious problem to many field crops, vegetables and fruit orchard. Survey that was done all over Egypt found that *Meloidogyne incognita*, *M. javanica* and *M. arenaria* are the most frequent species in most governorates. *Meloidogyne hapla* reported in sugar beat and peanut in Delta region and Nubaria north of Egypt. Data indicated that root-knot nematodes are associated with most cultivated area, including cucumber, bean, pepper, squash, carrot and tomato among vegetables, cotton, corn, peanut, sunflower and strawberry among other crops. Also banana, peach and grapevine were involved. Galling, stunting and poor growth were recognized as important symptoms in infested plants. Most new land in North of Egypt, cultivated mainly with banana, peach, colored pepper, ornamentals, strawberry, and grapevines are infested with different root-knot nematodes causing reduction in crop growth and productivity at different levels. The new valley in Upper Egypt is heavily infested with *M. incognita*, especially in cucurbitaceae producing areas. Molecular techniques were manipulated for accurate identification and population distribution of root knot nematode. Results indicated that *M. incognita* is the major species in Egypt. *M. javanica* is ranking second, while *M. arenaria* is found in few locations. Dendrogram shows

the development of new population of *M. incognita* in different location in Egyptian soil. Certain medicinal plants were used as a new method of biocontrol. - **Department Of Plant Protection, Nematology & Biotechnology Lab, Faculty Of Agriculture, Fayoum University, Fayoum, Egypt. E-mail: sanaaharoon@hotmail.com**

HOSSEINIKHAH CHOSHALI, A.¹, SERAJI, A.², REZAEI, S.¹ & SHIRINFEKR, A.² Correlation of soil pH with population density of tea root lesion nematode (*Pratylenchus loosi*) at tea plantations in Iran.

Tea is known as one of the oldest sedative drinks. The tea root lesion nematode, *Pratylenchus loosi*, is a damaging pest of roots in tea plantations of Iran. The objective of this study was to evaluate correlation of soil pH with population density of this pest. For this aim about 170 soil and root complex samples were collected from all tea gardens in Iran. The nematodes were extracted from root samples with Coolen & d'Herde (1972) techniques and were counted with counting slide. Soil pH measured in two methods; 1:1 dilution of soil: distilled water and 1:1 dilution soil: 0.01M CaCl₂. The results showed that no positive and negative correlation between soil pH of tea plantation in Iran and population density of *P. loosi* in roots in samples. Range of pH in soil samples was 3.41 to 6.61 and mean range of population density of *P. loosi* in one gram of roots was 0.6 to 884. It was observed among infested samples with population range less than 100 nematodes in one gram of root, 62.6% being at pH<4.5, 32.9% at 4.5<pH<5.5 and 4.5% at pH>5.5, respectively. In this pH ranges and population range between 100 to 200 nematodes was observed 72.4%, 24.1% and 3.5%, respectively. And also in population range higher 200 nematodes in one gram of roots, 82.4% were at pH<4.5 and 17.6 at 4.5<pH<5.5. From all of samples, 85.6% were infested by this nematode that respectively 72.5%, 24.9% and 2.6% of infested samples were at pH<4.5, 4.5<pH<5.5 and pH>5.5. Although no assigned negative or positive correlation between soil pH and nematode populations were revealed total results showed that *P. loosi* population density and activity was larger at pH<4.5 than higher soil pH levels. - **Department of Plant Protection, College of Agriculture and Natural Resource, Research and Science Branch, Islamic Azad University, Tehran, Iran. E-mail: Sagh_i_hkh@yahoo.co.uk; ²Iranian Tea Research Institute, Lahijan, Guilan, Iran.**

IESHKO, E.P. & MATVEEVA, E.M. Modeling distribution and abundance of the potato cyst nematode *Globodera rostochiensis*.

It is traditionally accepted that parasitic infections in host populations are aggregative and the negative binomial distribution (NBD) provides the most adequate fit to data. Based on the analysis of occurrence of the parasite species in hosts a mathematical model of host-parasite relationships based on the NBD has been constructed (Pavlov, Ieshko, 1986). This model assumed that parasite survival is modeled by a Poisson regression model, whereas host resistance obeys the Gamma Probability Law. Host-parasite system «potato cyst nematode *Globodera rostochiensis* - potato *Solanum tuberosum*» is a convenient model for experimental study of host-parasite interactions. Experiments were conducted on susceptible (3 cvs) and resistant to *G. rostochiensis* potato cultivars. The same dosage (10 cysts) was applied in all treatments. Significant differences in the response of potato cultivars to infestation were found. The highest and lowest nematode infection rates were found in var. Nevsky and Sudarynya, correspondingly. With the growth of plant resistance to the infection apparent decreases in the range of numbers variability, variance, and mean values was observed. For the susceptible potato cultivars nematode abundance was modeled by the Gamma Probability Law. For the resistant varieties of the distribution of nematodes corresponded to the NBD. These findings have shown the adequacy of the parasite abundance model proposed by Pavlov and Ieshko (1986) and the prospects of its use for the evaluation of the effectiveness of potato breeding work. Research was supported by Russian Ministry of Education (№ P 1299). - **Institute of Biology of Karelian Research Centre of RAS, Pushkinkaya St., 11, Petrozavodsk, 185910, Russia. E-mail: ieshko@krc.karelia.ru**

KHUSAINOV, R.V. & ROGOZHIN, E.A. On the issue of the study of wood nematodes from Tylenchida and Aphelenchida orders in the territory of Russia.

Five genera from four families of Tylenchida and Aphelenchida wood nematodes were found as a result of the survey of eight regions of Russian European Part. Three *Deladenus* spp., one *Ditylenchus* sp., five *Aphelenchoides* spp., five *Laimaphelenchus* spp. and four *Bursaphelenchus* spp. have been isolated from various timber parts. The general number of all nematode populations is 31. *L. montanus*, *L. silvaticus* and *L. sp.* were reported for the first time in Russia. *Laimaphelenchus* species were isolated from the rind of natural wood in the abundance, whereas in the rind of perished trees the amount of nematodes was low. *Bursaphelenchus* species were discovered in the rind with bark beetles galleries exceptionally. These results are evidence of further studying necessity of wood nematodes fauna and ecology. - **Center of Parasitology of Institute of Ecology and Evolution, RAS, Leninskiy prospect, 33, Moscow, 117071, Russia. E-mail: ren_khusainov@yahoo.com**

KOROPETS, S.I.¹, SIGAREVA, D.D.², GALAGAN, T.A.² & NIKISHICHEVA, E.S.² Plant nematodes complex of Scots pine seedlings in forestry nurseries of Ukrainian Polesye.

The complex of plant nematodes, which associated with Scots pine seedlings in Ukrainian forestry nurseries, was investigated. We have detected 67 species of plant nematodes belonging to 61 genera, 31 families and 7 orders. Representatives of orders Tylenchida and Rhabditida were the most typical. Species of *Ditylenchus dipsaci* (frequency of occurrence is 52,3%), *Aglenchus agricola* (72,6%), *Aphelenchoides asterocaudatus* (58,3%), *Acrobeloides buetschlii* (95,4%) were dominated. According to the ecotrophic characteristic, all species are divided into 4 groups: phytohelminths (17 species), mycohelminths (9 species), saprobionts (36 species) and predators (5 species). Number of nematodes was lower in the beginning of vegetative period and considerably increased to the end. Deterioration of health status of plants directly depends on the intensity of accumulation plant parasites in plant rhizosphere. Close indicators of acidity and mechanical structure of soil testifies to absence of their considerable influence on number and a species diversity of plant nematodes. – ¹National University of Life and Environmental Sciences, Heroyiv Oborony str., 15, Kyiv-041, 03041, Ukraine. E-mail: bulterius@mail.ru; ²Institute of plant protection of NAAS of Ukraine, 33, Vasylykivska str., Kyiv-022, 03022, Ukraine.

KOSAKA, H.¹, KAJIMURA, H.², KANZAKI, N.³ & TABATA, M.³ Nematode parasite of the Japanese woodwasp.

The Japanese woodwasp (horntail), *Urocerus japonicus*, transmits its symbiotic fungus, *Amylostereum laevigatum*, during its oviposition to host trees such as Japanese cedar, *Cryptomeria japonica*, or Japanese cypress, *Chamaecyparis obtusa*. Usually, the woodwasps lay eggs onto the dying trees. The hatched larvae feed on the wood and the symbiotic fungus. However, if the population density of woodwasps increases they lay eggs on the healthy trees even if the larvae cannot grow. When the symbiotic fungus is introduced to the healthy trees it stains the wood. The Japanese cedar and cypress are quite important in Japanese forestry. The stain by the fungus decreases the economic values of trees. So, the Japanese woodwasp is a pest of Japanese forestry. To search the biological control agents of the woodwasps, they were caught in Shikoku Island, the western Japan, and in Tohoku region, the northeastern Japan, and then dissected. A tylenchid nematode, *Deladenus* sp., was found from the woodwasps. The mother worms and juvenile nematodes were found in the host insects. The percentage parasitism was 0% to ca. 50%. The nematode also propagated with feeding on the symbiotic fungus of woodwasp, *A. laevigatum*, other than in the body of host insect. It has been reported that *D. rudyi* is the parasite of the Japanese woodwasp, but also stated that *D. rudyi* feeds only on the fungus, *A. chailletii*. Now we are carefully identifying the species of this nematode. – ¹Kyushu Research Center, Forestry and Forest Products Research Institute, Kurokami 4-11-16, Kumamoto 860-0862, Japan. E-mail: hkosaka@ffpri.affrc.go.jp; ²Forest Protection Laboratory, Nagoya University, Chikusa-ku, Nagoya 464-8601, Japan; ³Forestry and Forest Products Research Institute, Matsunosato 1, Tsukuba 305-8687, Japan.

KUDRIN, A.A., LAPTEVA, E.M. & DOLGIN, M.M. Influence of some environmental factors on soil nematodes of floodplain forests.

Influences of some properties of alluvial soil on the abundance of trophic groups and genera of nematodes on the basis of the canonical correspondent analysis (CCA) were studied. It was shown that two factors, *pH* and soil type, defining all physical and chemical parameters (including soil acidity and moisture) influenced soil nematodes of floodplain forests of a taiga zone. Carbon content in water-soluble organic compounds influenced nematodes abundance less. It was established that the most of nematode genera revealed in alluvial soils were steady to the change of the investigated factors. Genera such as *Aphelenchus*, *Acrobelodes* and *Pratylenchoides* responded more actively on the changes of *pH*, the others – *Mononchus*, *Dorylaimus*, *Tobrilus*, *Eumonchistera*, *Prismatolaimus*, *Aporcelaimus*, *Wilsonema* and *Cervidellus* - on moisture conditions. - Institute of biology KomiSC, RAS, Kommunisticheskaya st., 28, Syktyvkar, Russia. E-mail: allkudrin@gmail.com

KULINICH, O.A.¹, ARBUZOVA, E.N.¹, MAZURIN, E.S.¹, RYSS, A.Yu.², MAGOMEDOV, U.SH.¹ & KOZYREVA, N.I.³ Bacteria associated with wood-inhabiting *Bursaphelenchus mucronatus* nematodes.

Recent research by Chinese scientists has shown the pathogenic role that bacteria associated with the pinewood nematode (PWN), *Bursaphelenchus xylophilus*, play in pine wilt disease (PWD). The closely-related nematode *B. mucronatus* is some times pathogenic to conifer trees. Our preliminary work shows that 10 species of bacteria, in 8 genera, i.e. *Achromobacter* sp., *Bacillus subtilis*, *Burkholderia xenovorans*, *Flavobacterium* sp., *Pseudomonas fluorescens*, *Pseudomonas lurida*, *Pseudomonas* sp., *Rahnella aquatilis*, *Rahnella* sp., and *Stenotrophomonas maltophilia* are associated with nineteen *B. mucronatus* isolates from different regions of Russia. *Pseudomonas fluorescens* species was extracted from two *B. mucronatus* isolates from Zabaykalsky and Altai Krai. The bacterium *Pseudomonas fluorescens* was also found in all *B. xylophilus* populations by Chinese researches (Zhao, 2008) and they

propose that this bacterium is a general agent of PWD. The work was supported of Russian Foundation for Basic Research, N 10-04-01644a. – ¹All-Russian Plant Quarantine Center, Pogradichnaya 32, Moscow oblast, 140150 Russia. E-mail: okulinich@mail.ru; ²The Center of Parasitology, Institute of Ecology and Evolution RAS, Moscow, Russia; ³Zoological Institute of RAS, St. Petersburg, Russia.

KUZNETSOVA, L.A.¹, YEVSTRATOVA, L.P.¹ & MATVEEVA, E.M.² Effect of plant pathogens and potato cyst nematode on plant growth and biomass.

In Republic of Karelia a significant reduction in potato productivity and loss in yield quality are connected with crop infestation by fungal, viral diseases and globoderosis. Potato plants are often infected by two or more pathogenic organisms, and in these cases phytopathocomplexes are formed. Aim of study was to investigate potato plant responses to infection by pathogens and combined with potato cyst-forming nematode (PCN) infestation. The effect of rhizoctoniosis (agent of a disease – fungus *Rhizoctonia solani* Kuhn.), virosis (X- and Y-viruses), globoderosis (PCN *Globodera rostochiensis* Woll.) on potato (cv. Nevsky) growth and biomass formation was studied. It was established that all infestation combinations, especially with PCN, stimulated plant growth at early stages of ontogenesis and inhibited at the late stage of plant development. Morphometric parameters and weight of above- and underground parts of potato plants were lower as compared with control plants. Combinations “fungus+nematode” and “fungus+nematode+X virus” were the most unfavourable for plants. – ¹Petrozavodsk State University, Lenina pr., 33, Petrozavodsk; ²Institute of Biology of Karelian Research Centre RAS, Pushkinskaya St., 11, Petrozavodsk, 185910, Russia. E-mail: matveeva@krc.karelia.ru.

LEBEDEVA, D.I., ANDREEVA, G.A. & ARTEMYEV, A.V. Some nematode species of geese in South Karelia.

Biology of geese resting on the flight in Karelia has been investigated enough well, but nothing is known about their parasites. So, 2 species of geese *Anser albifrons* (Scop.) and *A. fabalis fabalis* (Lath.) resting on the agricultural fields of Olonets plain during the White Sea-Baltic flyway were studied in April-May, 2010. Preliminary study of the digestive tracts revealed only 3 species of nematodes, which are typical goose parasites. Parasites of other groups were not found due to the feeding of geese on mostly grass crops. Under the cuticle of the gizzard nematode *Amidostomum anseris* (Zeder, 1800) Railliet *et al.*, Henry, 1908 was found. This parasite infected 100% specimens of both host species, abundance was as 18-21 worms in bean goose and 14-22 worms in white-fronted goose. Two species – *Capillaria anatis* (Schrank, 1790) and *Heterakis dispar* (Schrank, 1788) – were recorded in the cecum. Both parasite species were also characterized by 100% occurrence. Intensity of infection for *C. anatis* was 10-29 specimens in bean goose, and 4-41 specimens in white-fronted goose. Nematode *H. dispar* was also revealed (3-82 and 2-42 individuals in bean goose and in white-fronted goose, respectively). All three species are obligate parasites of geese. Parasite *A. anseris* was soil-transmitted helminth with a direct cycle of development. The life cycle of *H. dispar* has not been studied. But the development of *C. anatis* occurs with the participation of earthworms. Infection of this type indicates that the geese also feed on the worms additionally to herbal crops. The study was supported by Russian Ministry of Education (№ P 1299). – Institute of Biology of Karelian Research Centre of RAS, Pushkinskaya St., 11, Petrozavodsk, 185910, Russia. E-mail: daryal78@gmail.com

MARDASHOVA, M.V.¹, ALEOSHIN, V.V.² & NIKITIN, M.A.² The origin of marine parasitic nematodes.

Marine parasitic nematodes are nearly as numerous as those of terrestrial and freshwater habitats; though their biodiversity is rather different. Parasites of land vertebrates, insects and soil invertebrates appear to be a large group of nematodes closely related to different groups of free-living nematodes hence they came to parasitism repeatedly from various origins. On the other hand marine parasitic nematodes comprise mostly Spirurida + Ascaridida complex of species associated with marine vertebrate hosts. This group originates in coastal region of the ocean and has been coevolving with ancient forms of marine fish. The few species beyond the Spirurida + Ascaridida complex are either considered as relatives of terrestrial parasites or their placement in nematode taxonomy is uncertain. Embryology and comparative anatomy data is not enough to clarify the possible origin of marine parasites. We obtained LSU rDNA sequences of two marine parasitic species from White Sea intertidal zone, *Nematimermis enoplivora* and *Trophomera* sp. Phylogenetic analysis have shown that *N. enoplivora* belongs to Mermithidae therefore it turned to marine parasite being a well developed terrestrial insect parasite. Thus we obtained the first forcible evidence of terrestrial parasite converting to marine apart from Spirurida + Ascaridida complex. Analysis of *Trophomera* sp. Sequences have shown that Benthimermithidae is segregated from any other families of nematodes but is a remote relative to both freshwater and marine Leptolaimida and Plectida. So we first found the placement of Benthimermithidae in nematode taxonomy and suppose this parasitic group originated in the sea. – ¹Department of Invertebrate Zoology, Faculty of Biology, Lomonosov Moscow State University. E-mail: buccinum@mail.ru; ²Section of Evolutionary Biochemistry, A.N. Belokobylsky Institute of Physicochemical Biology Lomonosov Moscow State University, Moscow, Russia, 119899.

MATVEEVA, E.M., SYSOEVA, M.I., SHERUDILO, E.G. & LAVROVA, V.V. Responses of potato plants to the low temperature drop under pest attack.

Potato cyst-forming nematode (PCN) *Globodera rostochiensis* Woll. is one of the harmful plant parasite which leads to a significant reduction in potato productivity and loss in yield quality. PCN is endoparasite of the potato root system and almost absolutely depends on plant-host to finish life-cycle. Besides that the physiological state of plant-host in preinfested phase plays an important role in an establishment of host-parasite relationships. The aim of the study was to investigate potato plant responses to short-term low temperature drop combined with PCN infestation. Responses were estimated as formation of plant cold resistance and resistance to PCN. Experiments were conducted in the growth chambers. Before infestation by PCN (10 and 50 cysts per plant) potato plants (cv. Nevsky) were growing for 6 days under the short-term temperature drop from +23° to +5°C for 2 h at the end of night (DROP treatment) and at +23°C (control). Plant cold resistance was estimated by LT50 method and the differences between temperatures that caused death in treated and control plant cells was accepted as plant cold resistance increment. Results have shown that independently of the dose plant infestation by PCN after DROP-treatment led to an increment in plant cold resistance compared with healthy drop-treated plants, which remained at higher level for three weeks. Nematode population in infested plants was much lower (2-3-folds) than in healthy plants under the both infestation levels. Thus, increment in plant cold resistance was accompanied by the rising in resistance to PCN. Research was supported by the Russian Ministry of Education (№ P 1299). - **Institute of Biology of Karelian Research Centre RAS, Pushkinkaya St., 11, Petrozavodsk, 185910, Russia. E-mail: matveeva@krc.karelia.ru**

NASR ESFAHANI, M., RAHMANI, H. The biodiversity of root knot nematodes in interaction with ecological niche and medicinal plants in Isfahan conditions.

The biodiversity and severity of the root-knot nematodes on some medicinal plants (MP) were assessed on the basis of galling scale and number of eggs and juveniles in roots and soil in Isfahan, Iran. Results indicated that there were MP species infected to RKN, *Meloidogyne javanica*, including Pot marigold, Horehound (*Marabium vulgare* L.), Starflower (*Echium amoenum*), Borage, Klamath weed (*Hyperium perforatum* L.), Absinthium (*Artemisia absinthium* L.), Meadow salsify (*Tragopogon pratensis*), Camomile, Garden thyme, Greaterer burdock (*Arctium lappa*), Common sage, Jerusalem Artichoke, *Pelargonium*, Rosemary, Milk thistle (*Silybium marianum*), Lemon balm (*Melissa officinalis* L.), Madder (*Rubia tinctorum* L.), Yarrow, Common lavender, Alehoof (*Nepeta hederacea*) and Celery to varying degrees in Isfahan areas. Whereas, in Najafabad regions, the infected MP species were Common rue (*Ruta graveolens* L.), Syrian beancaper (*Zygophyllum* sp.), Greater burdock, Pot marigold and Hempseed (*Cannabis sativa* L.) were infected by *M. javanica*. And, the species in Kashan were of Common lavender, Yarrow, Wormweed (*Lavandula angustifolia* L.), Black mulberry (*Morus nigra*), Terracotta gazania (*Gazania* sp.) and Century (*Agave* sp.) which were infested by *M. incognita*. Most of the medicinal plants investigated were reported to be new host records for *M. javanica* and *M. incognita*. While four species (fennel, spearmint, valerian and yarrow) in Isfahan, fifteen species (Aniseed, Blueweed (*Echium* sp.), Cardoon (*Cynara drancunculus*), Dragonhead (*Dracocephalm kotschy*), Wild basil, Salad burnet (*Sanguisorba minor*), Hyssop, Iris, Klamath weed, Lambs ear (*Stachys byzanthina*), Milk thistle, Moldavian balm (*Dracocephalum moldavica* L.), Motherwort (*Leonurus cardiaca*), Oregano and Peanut were free from these nematodes (RKN). Whereas, six species were free from *M. incognita*. – **University of Applied Science and Technology, Center for Islamic Kargaran Society, Isfahan Branch (Imam Sadegh) and Agricultural and Natural Resources Research Center, Isfahan 81785-199, Iran. E-mail: mne2011@gmail.com**

PAVLYUK, O.N.¹, TREBUKHOVA, Y.A.² Intertidal communities of free-living marine nematodes of Jeju Island.

For the first time, the structure of the community marine nematodes in particular was examined in the different intertidal zones of Jeju Island (South Sea of Korea). Sixty eight species belonging to 60 genera and 19 families of nematodes were found in the whole area. Dominant feeding groups in this nematode community were omnivores (2B) and epistratum-feeders (2A). The highest number of non-selective deposit-feeders (1B) was detected in the lagoon with the bottom silty sediments. The highest number of non-selective deposit-feeders (1B) was detected in the lagoon with the bottom silty sediments. As a result of cluster analysis, four taxocenosis of nematodes were defined and they were clearly distinguished by four types of the intertidal zone with different granulometric composition of benthic sediments. The sediment type is a major factor that determines the structure and distribution of meiobenthos communities of Jeju Island. This research was supported by the project ARCP2010-18NMY-Lutaenko. - ¹A.V. Zhirmunsky Institute of Marine Biology, Far East Branch, Russian Academy of Sciences, Vladivostok, 690041, Russia. E-mail: styopa_05@mail.ru; ²Far Eastern State Marine Biosphere Natural Reserve, Far East Branch, Russian Academy of Sciences, Vladivostok, 690041, Russia.

PERRY, R.N. How widespread is the dauer phenomenon in the phylum Nematoda?

The term dauer describes an alternative developmental stage enabling nematodes to survive adverse environmental conditions. There has been extensive research on the regulation of dauer development in *Caenorhabditis elegans* and comparative molecular studies between *C. elegans* and either other species are underway. The dauer phenomenon appears to be widespread in free-living nematodes and dauers are also present in parasitic species of nematodes. *Bursaphelenchus xylophilus* has a dauer stage and nine homologues for *daf* (dauer formation) genes have been identified. *Meloidogyne hapla* has 14 orthologues of *C. elegans daf* genes as well as three further matches that are weak. The formation of infective juveniles of entomopathogenic nematodes is similar to dauer formation, and the survival forms of some plant-parasitic nematodes, such as second-stage juveniles of species of *Anguina* and fourth-stage juveniles of *Ditylenchus dipsaci*, should be regarded as dauers. The indications in some species of parasitic nematodes of an alternative developmental stage similar to a dauer are persuasive but there are differences in expression patterns between *C. elegans* and other nematodes indicating different developmental response to adverse conditions. However, there is strong justification for using the term dauer to describe the survival form of some parasitic nematodes and future molecular studies are likely to consolidate the more widespread use of the term dauer. - **Plant Pathology and Microbiology Department, Rothamsted Research, Harpenden, Herts AL5 2JQ, UK. E-mail: roland.perry@bbsrc.ac.uk**

PRIDANNIKOV, M.V. Cereal cyst nematodes in Russia.

Production of cereals is the most part of Russian agriculture policy. The Russian Federation had the third place in the world in export of grains in 2010. One of dangerous pests of cereals is complex of cereals cyst nematodes (CCN) of family *Heteroderidae* (Tylenchida). There are *Heterodera avenae*, *H. filipjevi*, *H. latipons*, *H. hordecalis* etc. This complex is major problem in crop rotations where cereals have part more than 50%. Basic investigations of distribution and injuriousness of CCN in Russia were in 60-90th of last century. Since then and to present day, studies of CCN were carried out only occasionally but during this period there have been great changes in Russian politics of agriculture. Part of cereals in all crop rotations was increased from 45-50 to 60-70%. Our task was study of present range of CCN in Volga and Ural regions where about 60 % of all cereals are growing. During 2009-2010, some fields on territory of Samara, Saratov and Chelyabinsk regions were investigated and two populations of CCN were found on wheat and oat fields of Saratov and Chelyabinsk Agriculture Research Institutes. Morphometric analysis of perineal patterns of cysts was shown that there were of *H. filipjevi*. All materials of cysts, eggs and juveniles were used for inoculation of wheat and oats plants in a greenhouse for next study of biology and morphology different stages of CCN. - **Centre of Parasitology, A.N. Severtsov Institute of Ecology and Evolution, RAS, Leninskiy prospect, 33, Moscow, Russia, 119071. E-mail: mikhail.pridannikov@yahoo.com**

ROGATYKH, T.A. Meiobenthos of meromictic lakes of Kandalaksha bay of the White Sea.

Meromictic lakes have two chemically stratified layers. The difference in salt concentrations creates constant density stratification between near-bottom and shallow water. The lower layer (monolimnion) possesses higher salinity and does not mix with the upper layer (mixolimnion). These two layers are separated by chemocline. Fauna of meromictic lakes around White and Baltic Sea is not investigated well. In this work we studied meiofauna, and especially nematodes of meromictic and related lakes of Kandalaksha Bay of the White Sea. We took and investigated probes from nine highly different lakes. For Kislo-Sladkoye lake situated in Primorskii settlement (White Sea Biological Station of Moscow State University) vicinity we created a full species list. Nematodes make the majority of bental community in this lake. They amount to a million individuals per square meter and comprise 22 species. For the other lakes we obtained quantitative data for different taxa of meiobenthos. – **MSU, Biological faculty, Zoology of invertebrates department, Akademika Pilugina street, 20/2/175, Moscow, 117393, Russia. E-mail: rotanyaro@gmail.com**

ROGOZINA, YE.V.¹, LIMANTSEVA, L.A.² & MIRONENKO, N.V.² New sources of nematode resistance among hybrids based on wild potato species.

In the present study 90 previously selected hybrids based on 11 wild potato species was tested to the golden potato cyst nematode resistance. Resistant forms were identified among the hybrids that are based on 8 species: *Solanum abancayense*, *S. alandiae*, *S. amboinum*, *S. doddii*, *S. famatinae*, *S. gandarillasii*, *S. okadae*, *S. vidaurrei*. Occurrence of their resistance to the parasite can be accounted for coincidence of the centers of origin - an area bounded by the triangle South of Peru-Argentina-Bolivia. Valuable sources of resistance to pathotype Ro1 *G. rostochiensis* are species: *S. alandiae*, *S. doddii*, *S. famatinae*, *S. okadae*. In our studies 50-70% of the hybrids created with their participation were resistant. Species *S. alandiae*, *S. doddii*, *S. okadae* are new for breeding to this feature. - **¹Vavilov's All-Russian**

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SEIML-BUCHINGER, R. & RUEß, L. Food-attractants and behavior of *Plectus acuminatus*.

Feeding bacterivore nematodes like *Plectus acuminatus* Bastian, 1865 have to face the decision to stay and feed on a food-source or to forage another, perhaps a better one. To investigate *P. acuminatus* preferences and behavior, different designed food choice experiments were performed. In food-choice experiment (N=5), 20 starved individuals were offered four distinct separated bacterial diets (*Pseudomonas putida*, *Bacillus subtilis*, *Escherichia coli* & *Serratia liquefaciens*). The position of each nematode was monitored for 12 hours in one hour time intervals. In a behavior experiment (N=15) one individual was monitored in five minute interval for two hours. The final Position was monitored after four hours. They had the same died range as in the food choice experiment. The results of the choice experiment display a significant preference of *E. coli* against *B. subtilis* and indicate a preference for *E. coli* compared to the other bacteria. *B. subtilis* was generally avoided by *P. acuminatus*. The results of the behavior experiment facilitate the assumption, that once a food source is detected, this is preferentially used and the search-behavior for alternative recourses is suppressed. - **Humboldt-Universität zu Berlin, Institute for Biology/Ecology, Philippstraße 13 H 18, 10115, Berlin, Germany. E-mail: rseimlbuchinger@yahoo.de**

SERAJI, A.¹, POURJAM, E.², JAMALI, S.³, SAFAIE, N.² & TANHAMAAFI, Z.⁴ Measuring and modeling crop loss of *Pratylenchus loosi* at tea plantations of Iran.

Tea root lesion nematode (TRLN), *Pratylenchus loosi*, is one of the most important crop loss agents on tea plants in Iran and most of tea growing countries in the world. The aim was to study crop loss assessment caused by this nematode on tea using epidemiological models in three years (2004-6). Research has carried out in the figure of factorial experiment based on random complete blocks design in eight plot of tea garden infected with TRLN which were located in Shahid Eftekhari tea research station of Fouman related to tea research institute of Iran. Different mean levels of natural infection with three methods; without control, chemical control using Fenamiphous and non chemical control by virtue of yield amount and pathogenicity indexes (nematode population per 100 gram soil, one gram root and the number of lesions in 20 cm of hairy roots) were compared and surveyed. Results showed that the nematode reduces yield, moreover in this conditions population rate which host can tolerant to winter population was assigned 40 nematodes per 100 g of soil. In garden situation, connection between nematode populations and reducing of yield, connection between crop loss percentage and primary nematode population in soil, the number of lesions on root and the final nematode populations on root were used in the evaluation of crop loss. In this situation, the best model which analyzes the connection between yield reducing and increase in TRLN population was exponential model. About other relations, logistic model and monomolecular model have good results Also, linear connection between mentioned relations in order to evaluate crop loss had been meaningful and has high regression coefficient. – **¹Iranian Tea Research Institute, Lahijan, Guilan, Iran. E-mail: seraji_a1974@yahoo.com; ²Department Plant Pathology, College of Agriculture, Tarbiat Modarres University, Tehran, Iran; ³Department Plant Protection, College of Agriculture, Guilan University, Rasht, Iran; ⁴Iranian Crop Protection Research Institute, Tehran, Iran.**

SHEPELEVA, N.S. Molecular-phylogenetic analysis of symbiotical relationships between the etomoparthogenic nematodes of the genus *Steinernema* and *Xenorhabdus* bacteria.

The comparison of 16S DNA sequences of several strains of *Xenorhabdus* extracted from two strains of *Steinernema carpocapsae* (Russia), three strains of *S. feltiae* from Europe and Asia (Armenia) and two not described steinernematid species (USA and Cameroon) revealed high level of nucleotide differences between the bacteria originating from different nematode species and nearly complete identity of bacteria from conspecific nematode strains. Thus, *Xenorhabdus nematophila* strain from *Steinernema carpocapsae* collected in Moscow region demonstrates the differences in only 3 positions from typical *X. nematophila* from Western Europe. This 16S-sequence clusters together with those of *X. nematophila* from USA, Poland, Portugal, Jordan and Peru. Bootstrap support (maximum parsimony analysis) for this group was weak only. Three cultures of *S. feltiae* used to extract *X. bovienii* were isolated in reciprocally remote points (Central Europe, Armenia, Moscow region). Still 16S-sequences of obtained *X. bovienii* were identical. Pronounced similarity was found between 16S-sequences of *X. szentirmaii*, *X. koppenhoeferi* и *X. japonica* and that of *Xenorhabdus* from undescribed *Steinernema* sp. «Bush-Augusta» (MO, USA). The closest bacterial species is *X. szentirmaii*. The sequences of *Steinernema* sp. from Cameroon were clustering in some cladograms with *X. miraniensis*. - **A.N. Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences, Moscow, Leninskii pr., 33, 19907. E-mail: zayac_20@mail.ru**

SHOKOOHI, E.¹ & ABOLAFIA, J.² SEM observations of two populations of free-living bacetriophagous nematode *Acrobeles complexus* Thorne, 1925 from soil and media.

Nematodes of the order Rhabditida are important in biology and medicine. These animals feed on bacteria and can be easily cultured on media. *Caenorhabditis elegans* is a main model organism which has been studied previously by several authors (Sulston and Hodgkin, 1988; Epstein and Shakes, 1995; Strange, 2006). During survey on soil nematodes, a sample of humus from Karaj was obtained, nematodes were extracted by Whitehead and Hemming (1965) tray method and fixed by De Grisse (1969) method and identified as *Acrobeles complexus*. Some of them (gravid female) were transferred to WA2% plus *E. coli*. Two populations (soil & WA2%) studied with SEM and LM microscopy. For SEM studies, fixed specimens were hydrated (one day), dehydrated in a graded ethanol series (25, 30, 50, 70, 95, 100%) and finally in acetone (100%), critical point dried, coated with gold and observed with a JEOL JSM-5800 microscope operating at 4kV. Results showed that WA2% population has shorter body length (531 µm in female and 496 µm in male vs 697-841 µm in female and 669-759 µm) and male tail (48 µm vs 51-64 µm). SEM observation showed that WA2% population has fewer lines on cephalic region and rough cuticle in comparison with soil population. These morphological differences could be associated with environment and available food resources especially bacteria. These results are agree with previously studies reported in other rhabditids as *Acrobeloides nanus* (Anderson, 1968), *Panagrolaimus rigidus* (Kozłowska and Mianowska, 1971), and *Acrobeloides setosus* (Abolafia and Peña-Santiago, 2002). Measurements and illustrations, including SEM photographs, are provided for two populations. As these nematodes can be easily cultured on media, they are suitable for animal biology and genetic studies. – ¹**Department of Plant Protection, College of Agriculture, University of Shahid Bahonar, Kerman, Iran. E-mail: eshokooi@mail.uk.ac.ir;** ²**Departamento de Biología Animal, Biología Vegetal y Ecología, Universidad de Jaén. Campus “Las Lagunillas” s/n. 23071-Jaén, Spain.**

SIGAREVA, D.D., BOLTOVSKA, E.V. & KARPLIUK, V.G. Nematodal diseases of flower plants in greenhouses of the city of Kiev.

The complex of plant nematodes, which associated with ornamental crops in greenhouses of Kiev, is represented by 51 species, belonging to 40 genera, 19 families and 6 orders. According to the ecotrophic characteristics all species of nematodes can be divided to 4 groups: phytohelminths - 8 species (16%), mykohelmints - 8 species (16%) saprobic - 31 species (60%) and predatory nematodes - 4 species (8%). Species of phytohelminths concern to endoparasites. The most common representative from them, *Meloidogyne incognita*, was detected on *Coleus*, *Begonia* and *Pelargonium*. *D. dipsaci* and *D. destructor* were detected on *Coleus*, *Begonia* and *Hedera*, *Pratylenchus pratensis* and *P. penetrans* - on *Coleus*, *Echeveria*, *Begonia* and *Ageratum*. In addition, we have found 3 species of migratory ectoparasitic nematodes: *Rotylenchus robustus* on *Coleus*, *Chrysanthemum* and *Pelargonium*, *Tylenchorynchus claytoni* on *Coleus*, *Begonia*, *Tagetes* and *Paratylenchus nanus* - at *Pelargonium*, *Coleus* and *Kochia*. – **Institute of Plant protection of NAAS of Ukraine, 33, Vasilkovskaya str., Kiev-022, 03022, Ukraine. E-mail: elenab_7@ukr.net**

SIGAREVA, D.D., OLENENKO, V.V. & GRATSIANOVA, N.V. Natural distribution of entomopathogenic nematodes Steinernematidae and Heterorhabditidae on the territory of Ukraine.

For the first time in Ukraine the investigations of the orchard, forest and field biocenoses with purpose to reveal nematodes of Steinernematidae and Heterorhabditidae lines have been performed. Entomopathogenic nematodes were found in the most biocenoses. The frequency of occurrence of Entomopathogenic nematodes in field biocenoses was higher than in the orchard's ones. Different types of the orchard and forest cenoses were inhabited irregularly with Entomopathogenic nematodes. In Forest-steppe, Woodlands zones and Carpathian zone of Ukraine family Steinernematidae was dominated, representatives of genus *Heterorhabditis* – in the Crimea. The total percentage of contaminated samples in the regions and the Autonomous Republic of Crimea was 22,8% and 5,47% respectively. - **Institute of Plant Protection of UAAS, Kyiv, Ukraine. E-mail: vira_olen@yahoo.com**

SPIRIDONOV, S.E. & AKSENOV, A.P. Polymorphism of the ITS-region of ribosomal DNA in parasitic nematodes: implications and applications.

Sequence analysis reveals the presence of several haplotypes of ITS rDNA in some nematode species. Such polymorphic state of this domain provokes technical problems as ITS rDNA PCR-products can not be directly sequenced. In such cases there is a need of more laborious and costly cloning techniques, with consecutive sequencing of separate colonies. Comparative study of ITS rDNA polymorphism was performed for three nematode species; soil-inhabiting entomopathogenic *Steinernema feltiae*, intestinal parasites of ruminants *Haemonchus contortus* and *Dirofilaria immitis*, parasitic in dog heart. Single haplotype can be only found in some isolates of *S. feltiae*, widely distributed in Holarctic (e.g. *S. feltiae* from Khosrov National Park in Armenia, or *S. feltiae* from St. Bernard pass). The individuals of other isolates of *S. feltiae* (e.g. Belgium- Merelbeke ‘Va’) harbour two haplotypes of ITS rDNA, which differ by the presence/absence of 10 bp insert. An analysis throughout this species revealed that haplotypes with this insert are more common in Europe, and without that – in Asia. The study of intestinal *H. contortus* collected from domestic goats in Mongolia revealed 4 haplotypes of ITS rDNA. One of these was nearly identical (1 bp difference) with

the sequence of *H. contortus* obtained from the sheep slaughtered in Inner Mongolia (China). Four haplotypes of ITS rDNA were discovered in a single specimen of *D. immitis*. All these were quite different from other ITS rDNA haplotypes of *D. immitis*, demonstrating only remote resemblance with the nematodes of this species from Taiwan. Phylogenetic links between the ITS rDNA haplotypes of the same nematode species reveal the relationships between the geographically remote populations. Such data can be used also as an example of intraspecific variability of ITS rDNA in these nematodes. - **A.N. Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences, Moscow, Leninskii pr., 33, 199071, Russia. E-mail: s_e_spiridonov@rambler.ru**

SPIRIDONOV, S.E.¹ & BOIKO, O.V.² Molecular characterization of *Wolbachia* bacteria from nematode *Dirofilaria immitis*, heart parasite of dog in Astrakhan region.

Wolbachia are quite common intracellular symbiotic bacteria of arthropods, but also reported from a list on nematode species, mainly representatives of the superfamily Filarioidea. These bacteria are important biotic factor, which is crucial for the completion of life cycle in *Wolbachia*-bearing filariids, including dog-parasitic *Dirofilaria immitis*. The presence of *Wolbachia* in the *Dirofilaria immitis* nematodes from dogs of Astrakhan region was detected with PCR. The homogenates of single worm (male and female of *D. immitis*) were used as template for PCR. Several pairs of primers were used to amplify and partially sequence the following domains of bacterial DNA: GroEL, ftsZ and wsp. The size of obtained PCR products was about 900 bp size with primers groELf (GGTGAGCAGTTRCARSAAAGC) and groELr (AGRTCTTCCATYTTTRATTCC), 730 bp size with primers WSP81F (TGGTCCAATAAGTGATGAAGAAAC) and WSP691R (AAAAATTAAC GCTACTCCA), 550 bp size with primers ftsZ F (CTTGGTGCTGGT GCTTTGCTT) and ftsZ R (TACCAATCA TTGCTTTACCCA) and 800 bp size with primers ftsZUNIF (GGYAARGGTGCRGCAGAAGA) and ftsZUNIR (ATCRATRCCAGTTGCAAG). Primers WSPFILF (CGCTTGCAGTACAA TAGT GAG) and WSPFIL R (GCTTCTGCACCAATAGTGCT) were not working with homogenates of *D. immitis* from Astrakhan region. Obtained sequences were studied using BLAST option of NCBI GenBank. All the obtained sequences demonstrated nearly complete identity with similar sequences of *Wolbachia pipientis* from the nematode *D. immitis*. - ¹A.N. Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences, Moscow, Leninskii pr., 33, 199071, Russia. E-mail: s_e_spiridonov@rambler.ru; ²Astrakhan State University, Shaumiana Sq., 1, Astrakhan 414000, Russia.

SUSHCHUK, A.A. & GRUZDEVA, L.I. Nematodes as indicators of soil recovery of industrial landscape.

Soil nematodes were used as bioindicators to assess the initial stages of recovery of industrial landscape. The results (2006–2010) have shown that in the early stages nematode genera resistant to unfavorable environmental conditions and having low values on the *c-p* scale were dominated. There were bacterial-feeders (g. *Panagrolaimus*, *Wilsonema*). At later stages the number of predators (g. *Mylonchulus*) and plant parasitic nematodes (g. *Pratylenchus*) increased. It was established that appearance of phytotrophs is an indicator of the extension and complexity of soil food web. At first after degradation soil recovery occurred in upper horizon. Nematode abundance and fauna diversity were higher in the upper soil layer. It was observed that the ecological indices, which were calculated for nematode communities of degraded soils, reflected clearly the level of vegetation recovery and the degree of soil ecosystem stability. During 5-9 years of biocenosis development on the industrial dump the sharp fluctuations of the values of *EI* and *SI* indices were marked that led to the change of position of the soil ecosystem in the faunal profile (quadrates A, B, C, according to Ferris et al., 2001). After 10-14 years of soil recovery *SI* and *EI* indices were high and soil food web was assessed as mature (quadrate B). Research was supported by the Programme of Fundamental Research of Biology Department, RAS «Biological resources», № 01200955238. - **Institute of Biology of Karelian Research Centre RAS, Pushkinskaya St., 11, Petrozavodsk, 185910, Russia. E-mail: anna_sushchuk@mail.ru**

UDALOVA, ZH.V.¹, VASJUKOVA, N.I.², ZINOVIEVA, S.V.¹, GERASIMOVA, N.G.² & OZERETSKOVSKAYA, O.L.² Immunomodulating activity of chitin-chitosan oligomer with fragments of salicylic acid in system tomato - root-knot nematode.

One of perspective directions in plant protection is induced resistance to diseases and stresses by means of the elicitors. Biopolymer chitosan is one of the most effective elicitor, causing the local and system induced resistance. A study of biological activity of chitosan, salicylic acid (SA), chitosan+SA and the derivative of the chitin-chitosan oligomer with fragments of SA in system tomato-*Meloidogyne incognita*. It is shown, that addition to chitosan of salicylic acid increases its efficiency in the relation nematode. Processing of plants by, chitosan+SA in more degrees has lowered contamination of plants by nematodes, essential suppression of fertility females of nematode was marked. Showed that, N-(2-Hydroxy-3-methoxybenzyl)-N-pyridox-chitosan, which contained the pyridoxal and 2-hydroxy-3-methoxy fragments, was the most efficient, stimulating both growth and development of plants, and defense against root-knot nematode. It is obvious, that processing of plants by the investigated preparations chitosan brakes development of nematode. Comparing action of chitosan with its derivatives, it is possible to note high elicitor activity

of chitosan+SA and N-(2-Hydroxy-3-methoxybenzyl)-N-pyridox-chitosan. – ¹Center of Parasitology, IPEE RAS; ²Bach Institute of biochemistry RAS, Russia, 119071 Moscow, Leninskii pr. 33. E-mail: udalova.zh@rambler.ru

VALDES, Y.¹, VIAENE, N.¹, MOENS, M.^{1,2} & PERRY, R.N.³ Effect of green manures on hatching of *Globodera rostochiensis*.

The potato cyst nematode, *Globodera rostochiensis*, is a quarantine organism. Environmentally benign control measures for this economically important pest are needed. Green manures, in particular plants from the Brassicaceae, suppress some plant-parasitic nematodes and have potential as control agents. This study examined if growing and incorporating three commonly used species of green manures, *Sinapis alba*, *Brassica napus* and *Raphanus sativus*, from the Brassicaceae family influenced hatching of *G. rostochiensis*. The effect of root diffusates and plant extracts, as well as soil incorporation of plant material was studied in *in vitro* bioassays and pot tests. The results showed that brassica diffusates and plant extracts were not nematicidal. In addition, although they did not cause hatch by themselves, pretreatment with these solutions enhanced subsequent hatch in host root diffusates. The results are discussed in the context of the hatching response of *G. rostochiensis* and the likely influence on field usage of these green manures. - ¹Institute for Agricultural and Fisheries Research, Burg. Van Gansberghelaan 96, 9820 Merelbeke, Belgium; ²Ghent University, Laboratory for Agrozoology, Coupure links 653, 9000 Ghent, Belgium; ³Plant Pathology and Microbiology Department, Rothamsted Research, Harpenden, Herts AL5 2JQ, UK. E-mail: roland.perry@bbsrc.ac.uk

YUSHIN, V.V.¹ & MALAKHOV, V.V.^{2,3} Origin of nematode sperm.

The nematode spermatozoon represents a highly modified (aberrant) type of male gametes which origin is obscure. Analysis of the nematode sperm together with data on aberrant spermatozoa of other metazoan with internal insemination showed several common characters.

1. Absence of flagellum and axoneme, unusual arrangement of centrioles.
2. Amoeboid shape and amoeboid motility due to cytoskeleton components.
3. Poor condensation of nuclear chromatin which may be diffuse, thread-like, discrete.
4. Absence of nuclear envelope.
5. Absence of acrosome.
6. Development of unique membranous components derived from Golgi complex.
7. Plural non-modified mitochondria that is unusual for bilaterian spermatozoa which generally have enormously enlarged mitochondria.
8. Large size of spermatozoa due to prominent cytoplasm filled with a lot of components.

These common peculiarities of aberrant spermatozoa may be easily explained by conservation of cell features characteristic of primitive undifferentiated cell (predecessor of all specialized gametes). The primitive cell features of numerous versions of aberrant sperm reflect arrest of cytoplasmic specialization of male gamete at early stage of development. This way of gamete evolution reminds well the conception of *progenesis* (retention of juvenile characters by precocious, sexually mature morphologically juvenile stage). Thus, the origin of the nematode (as well of many other metazoans) aberrant sperm may be interpreted as *progenesis* at a cellular level. The spermatozoa of the enoplid (Enoplida) nematodes are characterized by the common complex of features which may be considered as primitive for the phylum. Evolution of primarily aberrant spermatozoa of nematodes may be analyzed on the basis of modification of unique cytological features such as membranous organelles (MO) and fibrous bodies (FB). Five main patterns of such modifications may be distinguished clearly:

1. In Enoplida, separate MO and FB occur but they develop asynchronously and independently.
2. In Dorylaimia, only MO occur but no FB form.
3. In Chromadorea (Monhysterida, Araeolaimida, Rhabditida), typical MO-FB complexes form.
4. In some Chromadorea (Chromadorida, Desmodorida, Monhysterida, Rhabditida), only FB forms but no MO occur.
5. In Dorylaimida, some Chromadorida, Desmodorida, Rhabditida, neither MO no FB occur that could be a result of reduction.

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YUSHIN, V.V.¹, CLAEYS M.² & HOUTHOOFD W.² Mature spermatozoa of *Brevibucca* sp. (Nematoda: Rhabditida: Brevibuccidae).

The nematode family Brevibuccidae Paramonov, 1956 has questionable relationships within the order Rhabditida (sensu De Ley and Blaxter, 2002); new information on morphology of the family representatives is desirable. The spermatozoon morphology and development have potential to be used as clear and easily comparable morphological characters in taxonomic and phylogenetic analysis. We present the original study of *Brevibucca* sp. (SB117) sperm ultrastructure as the part of the international project on nematode reproduction. The nematode spermatozoa represent an aberrant type of male gametes; they are characterized by the absence of an axoneme and acrosome. The mature spermatozoa of *Brevibucca* are amoeboid bipolar cells *ca* 4.3 μm in size; each cell is subdivided into a pseudopod devoid of organelles and a main cell body. The main cell body includes a condensed nucleus, many mitochondria and so called 'membranous organelles' (MO). These unique, aberrant, organelles are characteristic to developing as well as mature sperm of many nematodes studied. The MO in *Brevibucca* sperm look like large (*ca* 0.6-1.0 μm diam.) vesicles with transparent content and a system of internal finger-like projections of the outer membrane. Each MO is joined to the plasmalemma of the main cell body and open to the exterior *via* a pore. Each spermatozoon has a prominent pseudopod filled with the filamentous components of the cytoskeleton. The spermatozoa of this type have been described in representatives of several higher taxa of the 'rhabditids' (Spiruromorpha, Ascaridomorpha, Panagrolaimomorpha, Tylenchomorpha, Diplogastromorpha, Rhabditomorpha) and are known for free-living marine species from the orders Monhysterida and Araeolaimida. This "rhabditid" type of spermatozoa may be considered as symplesiomorph character for the chromadorean branch of nematodes. (Support: EUMAINE; RFBR 11-04-00368; RFBR 11-04-98555; FEB RAS 09-III-A-06-216; RF government grant 2010-220-01-180). – ¹A.V. Zhirmunsky Institute of Marine Biology, FEB RAS, Vladivostok, Russia. E-mail: vvyushin@yandex.ru; ²Nematology Unit, Department of Biology, Ghent University, Belgium.

ZAHABI ASLI, S.¹, SERAJI, A.², JAMALI, S.¹, JALALI SANDI, J.¹ & SHIRINFEKR, A.² Effect of some plant extracts on *Pratylenchus loosi* in comparison with Fenamiphos nematicide.

Tea root lesion nematode (*Pratylenchus loosi*) has been shown greatly to be serious nematode disease causing quality and quantity loss in tea plantations. The objectives of this research were to study the effects of aqueous extract (20% w/v, 100 ml aliquots) of whole plants, root and stem portions of *Tagetes erecta*, *Tagetes patula* and *Artemisia annua*; 5, 7/5 and 10 grams of Fenamiphos (Nemacur, 10 % G) and untreated checks on the tea clone 100 that inoculated with *P. loosi* amount economic threshold population (one nematode/gram of soil) with five replicates in the Randomly Complete Design (RCD) at tea research institute of Iran (Guilan, Fuman). The results of variances analysis showed that in the cultural morphological and pathological measured indices, all of the treatments had statistical meaningful. Whole plant extracts of *Artemisia annua*, *Tagetes erecta*, *Tagetes patula* were more effective than stem extracts. The best treatment was Fenamiphos (amount 7.5 gram for tea seedling) that increased 78% aerial parts wet weight (the best index of yield) in tea seedlings. This treatment decreased nematode population in the soil and roots (54 and 66% reduction of population, respectively). Between aqueous extract of these plant species, *Artemisia annua* had better result and causes 34% aerial parts wet weight to increase. Also, 61 and 40% causes populations of *P. loosi* at soil and root to decrease, respectively. So respect to high danger of Fenamiphos for environment, we can use the aqueous extract of these plants. The value of applying plant extracts as an alternative to intercropping for tea farmers is discussed. - ¹Department Plant Protection, College of Agriculture, Guilan university, Rasht, Iran. E-mail: Saharzahabi83@yahoo.com; ²Iranian Tea Research Institute, Lahijan, Guilan, Iran.