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Wilderness

ABSTRACTS

REFERATE/PAPERS

AN EVALUATION OF POST HARVEST FUMIGATION WITH EDB ON FLUE-CURED TOBACCO

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Early planting of tobacco tends to be a problem with temperatures being unsuitable for effective fumigation. Therefore a practice such as post harvest fumigation required investigation. Post harvest fumigation can be beneficial because at that stage the nematode population is at its highest and soil moisture and temperatures are suitable for fumigation. During 1987 a long-term trial was initiated to determine whether there was a difference between post harvest fumigation with EDB or fumigation with EDB 14 days prior to planting. Treatments included EDB (20 litres/ha); EDB (20 litres/ha) + EDB (20 litres/ha); EDB (20 litres/ha + Temik (240 g/100 m row); EDB (20 litres/ha + Vydate (350 g/100 m row) and the untreated controls. The EDB treatments consisted of post harvest and pre-plant applications. Temik and Vydate were applied prior to planting. There was no significant difference between the post harvest EDB treatments and the EDB treatments applied two weeks before planting.

THE DEVELOPMENT OF A TECHNIQUE FOR THE MASS CULTURE OF PARATRICHODORUS SPP. FOR THE DETERMINATION OF ITS EFFECT ON CROPS SUCH AS TOBACCO AND COTTON.

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Paratrichodorus spp. are extremely sensitive to surface sterilization; therefore in vitro culture could not be utilised for the mass culture of this species and another method had to be developed. The use of hermetically sealed glass containers were employed successfully for the reproduction of Paratrichodorus spp. With this method an average 12 times increase was achieved on tomatoes over a period of 60 days. Certain crops were also evaluated in the greenhouse to establish their status as hosts for Paratrichodorus meyeri n.sp. The aim of this exercise was to determine which plants could be used as hosts for the reproduction of the nematode in the greenhouse. It was found that tomatoes and wheat were excellent hosts, tobacco (cult. K51) and onions good hosts, tobacco (cult. TL 38) and lettuce average hosts and sweetcorn and cabbage unsatisfactory hosts for this specific nematode species.

SURVIVAL OF DITYLENCHUS DESTRUCTOR IN SOIL AND HULLS AND SEEDS OF GROUNDNUT

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The length of time that D. destructor can survive in soil with groundnut root stubble and stored pods was determined, as well as the pathogenicity of D. destructor after storage in infested pods. Soil stored for 7 months still contained sufficient D. destructor to cause yield losses. Certified seed planted with infested hull stubble can produce a harvest with a high disease severity. Storage of infested seed for 24 weeks or more, however, produced a yield with a low disease severity.

IMPORT CONTROL WITH SPECIAL REFERENCE TO NEMATODES

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The Directorate Plant and Quality Control formulates scientifically based, practical measures and the implementation of such to prevent and/or control the import, export and distribution of agricultural pests. The Agricultural Pests Act, 1983 (Act No. 36 of 1983) is administrated to this end. Services rendered include, the issuing of permits, the drafting of import conditions, laboratory tests, quarantine evaluations and control measures. Because of the importance of some nematodes as plant parasites, imported suspect plant material is sampled and tested by standardised methods. Literature studies and interaction with Nematologists are further extensions facilitating the identification of such species. It is the objective of this Directorate to ensure that high standards are maintained in the quality of imported plant material so as to protect the environment and agriculture as a whole.

POTENTIAL OF PLANT GENETIC ENGINEERING FOR NEMATODE CONTROL

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Continuing advances in tissue culture and recombinant DNA technology enable the transformation of an increasing number of higher plants with new genetic properties. Transgenic plants are plants in which functional foreign genes have been inserted. Transgenic crop plants tolerant to herbicides and resistant against viruses and insects have already been engineered. Plant genetic engineering also offers exciting opportunities for the production of crop plants with tolerance or resistance against nematodes. Indeed, research in this area is increasing. An overview of different methods for the production of transgenic plants and the potential of this technology for nematode control is presented and discussed.

DECREASE OF HETERODERA SCHACHTII POPULATIONS IN VEGETABLE SOIL

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In a regularly irrigated vegetable soil a H. schachtii population of 37.2 eggs and juveniles per gram soil decreased below 4 eggs and juveniles per gram soil eighteen months after cabbage, the last host crop, was harvested. Juveniles emerged continuously from cysts kept in moist soil. The remaining encysted population infested roots of beetroot seventeen months after the last host crop, but the infestation was mild in soil irrigated regularly.

A NEW APPROACH TO PESTICIDE KINETICS APPLICABLE TO NEMATOLOGY

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The binding of specific pesticide molecules with target enzyme molecules inhibits certain natural chemical reactions in an organism and may cause paralysis or death. This affinity of pesticides for enzymes allows one to relate pesticide kinetics to enzyme kinetics. Relatively simple laboratory procedures can be followed to determine the activation energy of the catalytic reaction of the uninhibited enzyme, the activation energy of inhibition, the binding constant of the inhibitor on the enzyme, the type of inhibition a certain pesticide induces, and the minimum or maximum temperature of inhibition. These procedures can be applied in Nematology as well as in any other plant protection disciplines. Practical applications of these qualities of pesticides are of notable scientific and economic value.

EFFECT OF ALDICARB, FENAMIPHOS AND METHYL BROMIDE ON A CRICONEMELLA SP., MELOIDOGYNE JAVANICA AND XIPHINEMA ELONGATUM

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Three compounds were compared for their effectiveness in controlling different nematode populations in a peach replant site. Methyl bromide was applied as a cold gas in the planting hole 3 months before planting. Aldicarb and fenamiphos (ec and gran) were applied 6 weeks after planting and thereafter annually in autumn and spring. From the first autumn onwards the numbers of a Criconemella sp. were significantly lower ($P=0.01$) in the fenamiphos and methyl bromide treatments. There was no difference between aldicarb and the untreated control. After 3 years the Criconemella sp. populations were still lower ($P=0.01$) in the fenamiphos ec and methyl bromide treatments. Six weeks after the 2nd spring application the Meloidogyne javanica populations in all the treatments except aldicarb and control were reduced ($P=0.01$). However, from autumn onwards there were no differences between the M. javanica populations of the different treatments and control. Throughout the trial none of the treatments had any effect on the Xiphinema elongatum compared to the control.

RESISTANCE OF COTTON TO THE ROOT-KNOT NEMATODE MELOIDOGYNE INCOGNITA RACE 4

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Imported cotton breeding lines and cultivars were screened in the greenhouse for resistance to South African populations of the root-knot nematode M. incognita race 4. Gall indices were used to indicate nematode damage to the plants and the effect of the cotton plant on the nematode population was expressed by a reproduction factor, based on egg counts. The most resistant breeding lines were evaluated in the field by inoculating half of the plants with M. incognita at planting time. Significant differences between inoculated and uninoculated plants were found for the total yield.

PLANT-PARASITIC NEMATODES IN LUCERNE FIELDS IN SOUTH AFRICA

Mariette Marais

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To establish the incidence and distribution of plant-parasitic nematodes of lucerne a survey was conducted. From April 1986 to October 1989, 189 soil, root and leaf samples were collected from the major lucerne producing areas in the Cape Province, Orange Free State and the Transvaal. Results are given.

METHYL BROMIDE IN AGRICULTURE

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Landkem (Pty.) Ltd., P.O. Box 52437, Saxonwold 2132.

Methyl bromide is used to control and eradicate nematodes as well as other diseases and soil pests which have a negative effect on plant growth and yield. Soil preparation prior to fumigation is discussed and the different application methods including the use of dripper lines for fumigation are demonstrated.

DITYLENCHUS DESTRUCTOR ASSOCIATED WITH GROUNDNUT IN SOUTH AFRICA : A REVIEW OF A 4-YEAR RESEARCH PROGRAM

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In May 1987, D. destructor was for the first time isolated from hulls and seeds of groundnut from the Transvaal Province. Today, this nematode is considered as the most important pest of groundnut in South Africa, causing considerable economic damage to the production of groundnut. Since May 1987, the biology of D. destructor and its association with groundnut has been studied extensively by a multidisciplinary research group at the Grain Crops Research Institute, Potchefstroom. A review of the results so far is presented. Future prospects for the control of D. destructor on groundnut, based on the information now available is discussed.

THE INFLUENCE OF PRATYLENCHUS ZEA, P. BRACHYURUS AND MELOIDOGYNE JAVANICA ON NINE MAIZE LINES

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Pratylenchus zea, P. brachyurus and Meloidogyne javanica were inoculated alone and in combination on nine maize lines. The genetic lines differed in response to the pure nematode populations and the combination. Less susceptible lines were identified. The nematodes in the combinations reacted differently in respect to population development than the nematodes inoculated in pure populations.

CYST-FORMING NEMATODES IN SOUTH AFRICA

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Globodera rostochiensis, Heterodera schachtii, H. fici and H. humuli have been known in South Africa for a long time. Five further species from agricultural and natural soils, are tentatively identified as G. tabacum, from wheat fields, H. mani, from wheat fields, H. graminis, from a golf-links and around grass and arum lily, H. trifolii, around grass and Afenestrata africana, around grass and ferns.

THE ROLE OF PLANT PARASITIC NEMATODES IN POOR ESTABLISHMENT OF GRAPEVINES

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Grape establishment on old vineyard soils was investigated in different soil types and climatic regions. Preplant treatment of soil with broad spectrum chemicals and nematicides gave divergent results regarding growth of newly planted vines. The results also seem to contradict present knowledge regarding rootstock resistance to nematodes. This suggests that other factors than parasitic nematodes are involved in poor establishment of grapevines.

THE INCREASE IN THE POPULATIONS OF THE CITRUS NEMATODE TYLENCHULUS SEMIPENETRANS IN CITRUS REPLANT SITUATIONS

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An old, declining citrus orchard infested with citrus nematodes and Phytophthora was removed. The soil was properly prepared and was replanted in January 1984. Pre- and post-plant fungicide and nematicide treatments were conducted. The citrus root pathogen Phytophthora, could never be isolated since

soil preparation took place. Fusarium spp. were eliminated from all the MBr treatments but population recovered within two years. No nematodes could be isolated during the first two years after planting. Thereafter it was found sporadically during the following two years and reached peaks of up to 1 000 juveniles/250ml of soil. During the fifth and sixth years after planting the populations rose to 19 700 juveniles/10g of roots and 11 800 juveniles/250ml of soil in the control plots whereas the counts in the Mbr-fumigated plots were still 370 juveniles/10 g of roots and 50 juveniles/250ml of soil. The corresponding yields the next year showed an increase of 79,9% (52 vs. 28,9kg/tree) in the 100g/m² MBr fumigated plots as compared to the untreated controls.

TRANSMISSION OF GRAPEVINE FANLEAF VIRUS BY A SOUTH AFRICAN POPULATION OF XIPHINEMA INDEX

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To investigate transmission of grapevine fanleaf virus (GFLV) to Vitis rupestris cv. St. George, viruliferous females of a local population of Xiphinema index were used as inoculum in a glasshouse experiment. Using the double antibody sandwich enzyme-linked immunosorbent assay systemic spread of GFLV from the roots to the leaves in the indicator vines was demonstrated. Feeding symptoms on the vine roots and an increase in the nematode population were observed after 15 months.

THE INFLUENCE ON POPULATION GROWTH OF PRATYLENCHUS ZEA AND P. BRACHYURUS AT DIFFERENT LEVELS OF FERTILIZATION OF MAIZE PLANTS

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The effect of different levels of fertilization on either Pratylenchus zae or P. brachyurus inoculated on maize were studied in a greenhouse trial. Higher dry root mass of maize plants resulted from inoculations with either species at all levels of fertilisation. The highest level of fertilisation resulted in the lowest level of P. zae. No significant differences in nematode numbers resulted from inoculations with P. brachyurus.

EVALUATION OF NEMATICIDES FOR THE CONTROL OF DITYLENCHUS DESTRUCTOR IN GROUNDNUT FIELDS

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Four field trials were conducted over three seasons to evaluate several nematicides for the control of Ditylenchus destructor on groundnut. The fields were in the districts of Schweizer-Reneke and Leeudoringstad, where heavy infestations of this nematode occurred. Most nematicides gave control of the nematode, but the degree of control varied over the seasons. This variation was attributed to different climatic conditions, while application time and dosage rates could also have played a role.

THE CUTICLE AND ANTERIOR REGION OF PRATYLENCHUS BRACHYURUS STUDIED BY MEANS OF LIGHT MICROSCOPY AND TEM

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The cuticle has a fairly thick epicuticle and a relatively thick cortex. The cortex has striations which clearly show alternating narrow and wider striations separating the lighter bands. The cortical layer does not rest on well developed fibrous layers as in the Longidoridae. It is separated from the muscle cells by a narrow area. Various morphological details of the cephalic area and the anterior region as far as the intestine, are discussed.

THE EFFECT OF PRATYLENCHUS ZEAЕ ON SELECTED COTTON CULTIVARS

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According to surveys, the lesion nematode P. zeaе has been found in association with cotton. No clear indication was found whether P. zeaе was of economic importance to cotton. Preliminary evaluations of selected cotton cultivars were done in the greenhouse with in vitro bred colonies of P. zeaе to determine whether P. zeaе has a negative effect on the growth and development of cotton plants. No clear evidence was found that P. zeaе has a negative effect on the cotton but rather the reverse, i.e. P. zeaе were reduced by the various cotton cultivars used.

ON THE USE OF A HETERORHABDITIS SPECIES TO CONTROL A SUGARCANE BORER

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A review is given of more than 20 field tests to assess the potential of a Heterorhabditis species to control Eldana saccharina. It is concluded that the cost of producing the required large number of nematodes and, in particular, the practical constraint imposed by the need to spray when humidity is high prevent the commercial use of Heterorhabditis species to control E. saccharina.

SUPPLEMENTARY NEMATICIDE TREATMENTS FOR FLUE-CURED TOBACCO

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Fumigation of soil with ethylene dibromide before planting tobacco seedlings in the land is a very effective method of controlling the rootknot nematode Meloidogyne javanica; however, as fumigants are volatile the effect is not persistent. Preplant application of more persistent nematicides is less effective, and more expensive than fumigation. The combination of fumigation and the post-planting application of low rates of nematicides can, by extending the period of control, lead to greater yields when nematode populations are high.

DITYLENCHUS DESTRUCTOR ON SIX COMMERCIAL GROUNDNUT CULTIVARS IN SOUTH AFRICA

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An initial infestation of 1 000 nematodes/seedling led to economic damage for all cultivars. Sellie did not support significantly higher numbers of nematodes than any of the other cultivars, and yielded the greatest predicted income/ha at both low and high initial infestations. All other commercial cultivars were therefore no more able than Sellie to reduce either nematode numbers or economic losses caused by D. destructor.

NEMATICIDE TREATMENTS FOR MELOIDOGYNE JAVANICA RESISTANT CULTIVARS

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Meloidogyne javanica resistant breeding lines and hybrids with commercial cultivars were tested with various nematicide application rates in lightly and heavily infested lands. When planted in lands with a low Meloidogyne javanica infestation, nematicide applications had little effect on yields of the resistant cultivars which were often similar to the susceptible cultivars. When the infestation was severe, the yields of the resistant cultivars were improved by the recommended treatments and were superior to those of the susceptible cultivars.

CROP LOSS IN SUGARCANE DUE TO NEMATODES

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Results of more than 120 field trials with nematicides, principally aldicarb, were grouped according to clay content and parent material of the soil upon which the trials were conducted. The loss in yield due to nematodes, based upon the response to treatment, was extrapolated from the field trials to the total area under sugarcane for each soil group. It was provisionally estimated that, within the South African Sugar Industry, plant parasitic nematodes are responsible for a loss in production of more than 900 000 tons cane per annum.

CRICONEMATIDAE FROM FOREST AREAS IN NORTHERN NATAL

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Problems encountered with poor eucalyptus growth in forest areas in northern Natal resulted in a survey to establish the presence and numbers of nematodes in these areas. Samples were taken in eucalyptus forest and natural vegetation between the commercial plantations. Results are given and some species discussed.

THE INFLUENCE OF WATER STRESS ON THE PARASITISM OF PRATYLENCHUS ZEA AND P. BRACHYURUS ON MAIZE

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The effect of Pratylenchus zea and P. brachyurus on growth of maize plants, using four water stress levels, was studied in two separate greenhouse trials. Plant growth measurements were reduced progressively by increasing water stress. P. zea reduced root mass significantly and P. brachyurus reduced both root and aerial mass. In neither trial were there correlations between nematode numbers and plant growth measurements. Nematode numbers were not affected by water stress. It is concluded that water stress has a greater influence on the growth of the plants than enhancing the effect of the two nematode species on the plants.

PLAKKATE / POSTERS

A SEM STUDY OF AN UNDESCRIBED DORYLAIMUS SPECIES FROM SOUTH AFRICA

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The genus Dorylaimus, described by Dujardin in 1845, presently comprises some 40 species, of which only two have thus far been reported from South Africa, viz D. asymphydorus Andr assy, 1969 and D. gigas Kleynhans, 1970. Specimens of an undescribed species were collected in rivers in the Kruger National Park, and studied with the aid of SEM. For examination with SEM, mounted specimens were slowly hydrated to distilled water and postfixed in 1% osmium tetroxide (O_5O_4), critical point dried, and sputtercoated with gold. Useful new data on the surface structure of the cuticle were obtained. The thick cuticle carries 33 prominent longitudinal ridges which are present over the greater part of the body, but gradually disappears towards both ends. The cuticle is also marked by minute transverse striae, which continue over the longitudinal ridges. The adanal and ventromedian supplements are situated on a distinct midventral ridge, bordered by subventral grooves. The anteriormost as well as posteriormost ten ventromedian supplements are elevated above the body contour, in contrast to the central ones which are flush with the outline of the body. A description of the new species is being prepared.

IN VITRO CULTURING OF NEMATODES

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Nematodes are cultured aseptically in vitro on a number of mediums in order to supply sufficient numbers of pure populations for experiments. Successful cultures of the following species are being maintained: Pratylenchus zea on maize roots, Pratylenchus brachyurus on soybean roots, Ditylenchus destructor on peanut leaf callus, Meloidogyne incognita race 1, 2 and 4 as well as Meloidogyne javanica on tomato roots.

PRELIMINARY RESULTS OF A SURVEY OF NEMATODE GROUPS FROM BOTSWANA

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No comprehensive study has yet been undertaken on the nematode fauna of Botswana and apart from some isolated reports on nematodes from this region, nothing is known in the literature. During July 1989, Heyns and Coomans took several samples from the Chobe, Savuti and Moremi nature reserves as well as from the Okavango. These samples yielded specimens of about thirty nematode genera belonging mainly to the families Panagrolaimidae, Cephalobidae, Tylenchidae, Criconeematidae, Aphelenchoididae, Plectidae, Tripylidae, Dorylaimidae, Dorylaimellidae, Aporcelaimidae, Actinolaimidae, Nygolaimidae and Mononchidae. This material is now being studied taxonomically.

TESTING OF NON-REGISTERED PESTICIDES AGAINST NEMATODES OF WILLIAMS BANANAS

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Nematodes, especially Radopholus similis (Cobb), are the most important pests on bananas. The damage caused by high population levels can result in considerable yield losses. Pratylenchus spp., Meloidogyne spp., Helicotylenchus spp. and Scutellonema spp. are other important nematodes on bananas. There are currently two nematicides registered on bananas in South Africa namely, aldicarb (150 g/kg granules @ 17-20 g per mat) and fenamiphos (100 g/kg granules @ 30-50 g per mat). Ebufos, isazofos, oxamyl, aldicarb and fenamiphos were tested at several concentrations in a Williams banana plantation near Hazyview. Ebufos, isazofos, aldicarb and fenamiphos were applied as granules to the soil, while oxamyl was applied into the leaf axils. During the fourth sampling aldicarb (17 g per mat twice a year) gave a 73% reduction of the total number of nematodes, ebufos 2 (30 g per mat twice a year) 69%, fenamiphos (30 g per mat twice a year) 61%, ebufos 3 (30 g per mat once a year) 41%, isazofos (160 g per mat twice a year) 37% and ebufos 1 (20 g per mat twice a year) 23%. The percentage of the total amount of nematodes increased in the oxamyl (5 ml per plant twice a year) and control plots with 68% and 134% respectively.

PLANT-PARASITIC NEMATODES ASSOCIATED WITH HOPS (HUMULUS LUPULUS L.) IN SOUTH AFRICA

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Soil samples from the hops producing areas in South Africa were analyzed for the presence of plant-parasitic nematodes. Sixteen species and 12 genera were identified. Spiral nematodes of the genera Scutellonema, Helicotylenchus and/or Rotylenchus were the most abundant followed by Pratylenchus, Paratrichodorus and Paratylenchus.

REPRODUCTION AND FEEDING OF XIPHINEMA INDEX ON GRAPEVINE ROOTSTOCKS

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Grapevine rootstocks were compared with regard to their host status for Xiphinema index and the transmission of grapevine fanleaf virus (GFLV). Rooted cuttings of eight cultivars, grown in pots, were inoculated with equal numbers of X. index from GFLV-infected vines and were kept in a glasshouse at 22-25°C for 120 days. Host preference by X. index was demonstrated by nematode reproduction and root feeding symptoms on the different cultivars e.g. on cv. US 1-6 the number of nematodes increased six-fold with gall formation, while no reproduction or root symptoms were noted on cv. Freedom. Virus transmission, however, occurred to all rootstocks, indicating that an increase in population is not prerequisite for virus transmission.

A TECHNIQUE USING PETRI DISHES AS OBSERVATION CHAMBERS FOR STUDYING PLANT PARASITIC NEMATODES ON ROOTS

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A technique was developed using disposable petri dishes as observation chambers. This allowed the observation of nematodes feeding on roots under a dissecting microscope in their natural habitat. The exact root section fed upon could then easily be removed for histopathological studies without destroying the rest of the root system.

SCREENING OF SOYABEAN CULTIVARS FOR RESISTANCE AGAINST MELOIDOGYNE JAVANICA AND MELOIDOGYNE INCOGNITA RACE 4

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Nineteen of the most popular soyabean cultivars in South Africa were screened for resistance against Meloidogyne javanica and Meloidogyne incognita Race 4 in a greenhouse trial. Using artificial infestation, different numbers of Meloidogyne eggs were found among the cultivars after eight weeks of growth. However, the levels of resistance were relatively low to moderate.

MOST PROMINENT MORPHOLOGICAL DIFFERENCES BETWEEN TRICHODORUS AND PARATRICHODORUS

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Six characters are illustrated to distinguish between South African Trichodorus and Paratrichodorus males and females under the research microscope.

A MORPHOLOGICAL STUDY OF THE ANTERIOR REGION OF
ISOLAIMIUM AFRICANUM HOG EWIND & HEYNS, 1967 (NEMATODA:
ISOLAIMIDA)

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Cobb (1920) proposed the monotypic genus Isolaimium, which he placed in the order Isolaimia (emended to Isolaimida by Timm, 1969). T. Goodey (1951) stated that the systemic position of the genus was uncertain due to lack of information on its morphology, and since 1961 it has been placed in a variety of different families and subfamilies by various authors. Although Maggenti (1982) recognized the order Isolaimida and placed it in the class Adenophorea, subclass Enoplia, the systemic position of Isolaimium cannot be satisfactorily resolved until important characters such as the number and position of oesophageal glands and the origin and nature of the inner labial receptors are known. To clarify this the anterior region of I. africanum-specimens were stained with the azocarmine-azan method and sectioned. Micrographs showing the results of these are presented here, and in our opinion it is justified to retain Isolaimida as a separate order, probably most closely related to Dorylaimida, with a few features remarkably close to that of the genus Cryptonchus, order Enopliida.

ENIGMA OF OOCYTE MOVEMENT THROUGH THE OVIDUCT OF
XIPHINEMA

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The nematode oviduct transports germ cells from the ovary to the uterus. Ripe oocytes are seldom seen in the narrow region of the oviduct, which seems to lack a clear lumen. A light microscopic study of the dissected female reproductive tract of several Xiphinema species indicated an oviduct consisting of uninucleated, disc-shaped, slightly biconcave cells (25 - 35 in number), tightly packed together in a single row inside a clear membrane. In some of the species, slightly constricted and considerably elongated oocytes were seen to move through the oviduct in one continuous streaming motion. The actual movement from ovary to spermatheca took 10 to 15 minutes in most cases. A distinct lumen was not observed.

A STUDY OF THE HEAD MORPHOLOGY OF THE GENUS
PARALONGIDORUS WITH THE AID OF THE SCANNING ELECTRON
MICROSCOPE

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The genus Paralongidorus (fam. Longidoridae) was described by Siddiqi (1963). Heyns (1965), described the first Southern African species and since then eight species from South Africa and one from Namibia have been described. Swart and Heyns (1987), discovered by means of the scanning electron microscope (SEM), four cephalic lobes at the base of the lip region of some Paralongidorus species. In the present study, the head morphology of several species were examined with the aid of SEM; the results of which are shown here.

NEMATODES ON WHEAT IN SOUTH AFRICA

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Nineteen plant-parasitic nematodes species were recovered from 175 wheat fields in the wheat producing areas of South Africa. Of the endoparasitic species, Pratylenchus neglectus and Pratylenchus thornei were the most prominent and had the highest average population densities. The most prominent ectoparasites were Paratrichodorus minor and Merlinius brevidens. Some of the nematode species showed a significant preference for specific areas. These are shown together with the main environmental factors of these areas.