

CURRICULUM VITAE

Chantelle Girgan Ph.D

Cand.Sci.Nat.

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Introduction:

Dr Chantelle Girgan obtained a Ph.D. in Environmental Sciences and Management, Nematode taxonomy and Plant-Protection early 2019. In her thesis she focused of nematode diversity of a protected area in one of South Africa's most endangered biomes, the Grassland Biome. During this research Dr Girgan described three new species and six new species reports for the country. In her research Dr Girgan identified over 100 nematode genera and more than 50 species. Dr Girgan also completed a compendium of the family Pratylenchidae in South Africa as a speciality in her research. Dr Girgan also has experience in nematode ecology and the use of nematodes as ecological indicators of soil and water ecosystem health. As a Junior Researcher and Curator of the National Collection of Nematodes, Dr Girgan is a part of several project which includes the identification and enumeration of nematodes in both natural and agricultural ecosystems.

1.PERSONAL INFORMATION:

SURNAME: Girgan

MAIDEN NAME: Jansen

FIRST NAME: Chantelle

IDENTITY NUMBER: 8909080109089

DATE OF BIRTH: 8 September 1989

GENDER: Female

NATIONALITY: South African

MARITAL STATUS: Married

CRIMINAL RECORD: None

HEALTH: Healthy

LANGUAGE PROFICIENCY: Afrikaans (First language), English (Second language) – Read, write and speak.

DRIVERS LICENSE: Code B

1. CONTACT DETAILS:

E-MAIL ADDRESS: JansenC@arc.agric.za

ALTERNATIVE E-MAIL ADDRESS cjansen038@gmail.com

2. EDUCATION:

Tertiary education: North-West University (Potchefstroom Campus)

2019.

- Ph.D. in Environmental Sciences – Plant Protection, Nematode taxonomy

Research Project: Nematode fauna of the Telperion Nature Reserve.

- Identification of free-living and plant-parasitic nematodes to genus.
- Identification of some free-living and plant-parasitic nematodes to species level.
- Nematodes as biological indicators of soil health: methods to conduct a faunal analysis and interpret results in ecological studies

2014.

- M.Sc. in Environmental Sciences – Plant Protection

Research Project: The microbial community structure and nematode diversity in glyphosate-resistant soybean cropping systems.

- Obtaining samples from various farms in the soybean production areas of South Africa.
- Performing Phospholipid Fatty Acid (PLFA) analysis on various samples obtained.
- Isolating plant-parasitic and non-plant parasitic nematodes from soil samples.
- Identifying nematodes up to functional group (plant-parasitic and non-plant parasitic) or genus (free-living / non-parasitic).

2012.

- B.Sc. Honours degree in Environmental Sciences – Plant Protection (Obtained with distinction).

Subjects included: Genome analysis and Bioinformatics; Microbial Ecology; Nematode-Plant interaction and Nematode management; Pest phenology and symptoms of damage; Principals of Integrated Pest Management; Environmental Management and Sustainable Development.

Honours Project: A comparative study to evaluate the effect of three *Bacillus firmus* strains on the mortality of the root-knot nematode *Meloidogyne incognita*, an important pest of agricultural crops.

2009-2011

- BSc. Microbiology and Zoology (with distinction).

Secondary education: Riebeeckrand High school

- **Highest grade passed:** Grade 12 – 2007.
- **Subjects:** Afrikaans, English, Biology, Computer studies, Mathematics (Distinction), Natural Sciences.

3. OUTPUTS AND WORK EXPERIENCE:

a. Professional Registrations:

- Registered as a Candidate Natural Scientist in the field of practice Agricultural Science by the South African Council for Natural Scientific Professions. Registration number 117013.

b. Memberships:

- Member of the European Society of Nematologists (ESN).
- Member of the Nematological Society of Southern Africa (NSSA).

c. Current Position:

- Company: Agricultural Research Council, Plant-Protection Research Institute, Biosystematics.
- Position: Junior researcher and Curator of the National Collection of Nematodes
- Duration: November 2019-present
- Duties / Responsibilities:
 - i. Curation of the National Collection of Nematodes;
 - ii. Identification of plant-parasitic and free-living nematodes to genus;
 - iii. Identification of species in the family Pratylenchidae;
 - iv. Writing of client reports and analyses of nematode data in soil health analysis;
 - v. Participation in research projects.
 - vi. Enumeration of nematodes in diagnostic samples.

d. Previous positions:

- Company: Agricultural Research Council, Plant-Protection Research Institute, Biosystematics.
- Position: Research technician and Curator of the National Collection of Nematodes
- Duration: July 2019-November 2020
- Duties / Responsibilities:

- i. Curation of the National Collection of Nematodes;
 - ii. Identification of plant-parasitic and free-living nematodes to genus;
 - iii. Identification of species in the family Pratylenchidae;
 - iv. Enumeration of nematodes in diagnostic samples.
- Company: Agricultural Research Council, Plant-Protection Research Institute, Biosystematics.
- Position: Professional Development Programme (PDP) Student
- Duration: April 2015 – March 2019
- Duties / Responsibilities: In the PDP Programme I completed a Ph.D. based on the nematode fauna of the Telperion Nature Reserve (Thesis submitted March 2019). During this study various samples were collected from the reserve including soil, root, substrate and grass seed samples. Nematodes were extracted from all these samples and identified. Plant-parasitic nematodes was identified to species level based on morphology and morphometrics. As part of the identification of plant-parasitic nematodes I focused on the Family Pratylenchidae. Nematodes belonging to this group are important agricultural pests in South Africa and can be identified only by Dr Esther van den Berg, retired Specialist Scientist and mentor to me. Free-living nematodes from soil samples were identified to genus level and from water samples to species level with the description of three new species.
- During the study of the nematodes of the Telperion Nature Reserve the ecology of nematodes were also studied where the nematodes were used as biological indicators of the effect of drought and seasonal changes on the soil environment in the Grassland Biome.
- As part of the PDP I was trained as a Nematode Taxonomist (Criconeematidae, Pratylenchidae and Hoplolaimidae) by leading experts in the field. I also gained experience in the Nematology extraction laboratory by learning the daily routines at the Nematology Unit.
- Apart from doing a Ph.D. I have thus been involved in extracting and counting nematodes from samples received by the diagnostics laboratory as well as the statistical analyses of the nematode data for clients. I have also trained students that visited the unit on the basic methods used in a nematode extraction laboratory.
- I have gained experience in the curation of the National Collection of Nematodes housed at the Nematology Unit, Biosystematics, Plant Health and Protection – Agricultural Research Council. And I have also gained experience in the workings of the database that is linked to the collection.
- As part of the PDP I was also involved in various projects with the Nematology Unit where I participated in field work, and counting and identification of nematodes

e. Publications:

- Jansen-Girgan, C., Claassens, S. & Fourie, H., 2016, 'In vitro evaluations to determine the effect of *Bacillus firmus* strains on the motility of *Meloidogyne incognita* second-stage juveniles Tropical Plant Pathology 41(5): 320–324.
- Swart, A., Schmidt, C., Marais, M., Girgan, C. Nematode en Pekanneute: Dit wat jy nog nie gehoor het nie. *Kommuniek* – 'n Handelsmerk van GWK. February / March 2017. Pp 37 – 40.
- Girgan, C., Swart, A., Marais, M. & Fourie, H. 2018. *Aphelenchoides* spp. (Nematoda: Aphelenchida) and *Panagrolaimus leperisini* (Nematoda: Rhabditida) found associated with grass seeds in the Telperion Nature Reserve, South Africa. *Zootaxa* 4370(2): 137-155.
- Girgan, C., Marais, M., Fourie, H., Tiedt, L.T. & Swart, A. 2019. Description of two new species, *Aphanolaimus strilliae* n. sp. (Nematoda: Aphanolaimidae) and *Makatinus africanus* n. sp. (Nematoda: Aporcelaimidae), and SEM observations on three known species from freshwater sources in the Telperion Nature Reserve (Mpumalanga, South Africa). *Zootaxa* 4651 (2): 201-234.
- Knoetze, R., Van den Berg, E., Girgan, C. & Van der Walt, L. 2019. First Report of the Root Lesion Nematode, *Pratylenchus hippeastri*, on Apple in South Africa. *Journal of Plant Diseases and Protection* <https://doi.org/10.1007/s41348-019-00259-z>
- Girgan, C., Claassens, S. & Fourie, H., 2020. Nematode assemblages and soil microbial communities in soils associated with glyphosate-resistant soybean. *South African Journal of Plant and Soil* 37(1)1-12 <https://doi.org/10.1080/02571862.2019.1640297>
- Girgan, C., Du Preez, G., Marais, M., Swart, A., and Fourie, H.. 2020. Nematodes and the effect of seasonality in grassland habitats of South Africa. *Journal of Nematology* Volume 52, Pages 1-22, DOI: <https://doi.org/10.21307/jofnem-2020-118>
- Girgan, C., Shokoohi, E., Marais, M., Fourie, H., Tiedt, L.R., and Swart, A. 2021. Description of *Ironus telperionensis* n. sp. (Nematoda: Ironidae) and two known species of *Chronogaster* (Nematoda: Chronogastridae) and *Paraphanolaimus* (Nematoda: Aphanolaimidae) from the Telperion Nature Reserve (Mpumalanga, South Africa). *Nematology* <https://doi.org/10.1163/15685411-bja10087>
- Girgan, C., Du Preez, G., Fourie, H., Rashidifard, M. 2021, Morphological and molecular characterization of *Butlerius butleri* Goodey, 1929 (Nematoda: Diplogastridae) from South Africa: First report. *Journal of Nematology* 53: 1-12 <https://doi.org/10.21307/jofnem-2021-026>
- Girgan, C. & Marais, M. 2021. National Collection of Nematodes _Microscopic Giants Natural Science Collection Facility, Value-of-Collections-Showcase no 1 July

f. Reviewer of manuscripts

- Journal of Nematology: *Pristionchus trameses* n. sp. (Diplogastridae) isolated from the mushroom *Trametes orientalis* in Kyoto, Japan
- Journal of Plant Disease and Protection: Population distribution and characterization of *Pratylenchus bolivianus* (Nematoda, Pratylenchidae) on rooibos (*Aspalathus linearis*) tea from South Africa
- Journal of Plant Disease and Protection: Prevalence of plant parasitic nematode *Pratylenchus coffeae* in Musa in Tamil Nadu and assessment of resistant genotypes for its management
- Journal of Plant Disease and Protection: Morphological and molecular characterization of a new record *Pratylenchoides nevadensis* Talavera and Tobar, 1996 from Wheat in Turkey, and its comparison with other world populations

g. Other qualifications and achievements:

- Received Golden Key Award 2011. (This award is given to the top 15% of students in any discipline for academic achievement).
- Awarded best presentation at the 6th Annual Diamond Route Research Conference. JANSEN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2015. Nematode fauna in the Telperion Nature Reserve. *6th Annual Diamond Route Research Conference*, Johannesburg, South Africa, 20-21 October 2015.
- Awarded best poster presentation at the 21st Symposium of the Nematological Society of Southern Africa. GIRGAN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2017. Nematode diversity of the Telperion Nature Reserve. *21st Symposium of the Nematological Society of Southern Africa*, Fairmont Zimbali Resort, Balito KwaZulu Natal 7 - 11 May 2017.
- Awarded second place for best paper presentation at the “*Studentesimposium in die Natuurwetenskappe*, Universiteit van Pretoria, Pretoria, 2 – 3 November, 2017” GIRGAN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2017. Die ekologie en diversiteit van nematodes van die Telperion Natuurreseervaat, Mpumalanga, Suid-Afrika.

h. Conference outputs:

- JANSEN, C., CLAASSENS, C., FOURIE, H. 2013. A comparative study to evaluate the effect of three *B. firmus* strains on the motility of the root-knot nematode *Meloidogyne incognita*. *The Organization of Nematologists of Tropical America (ONTA) 45th Annual Meeting*, La Serena, Chile, 20-25 October 2013. (Poster presented by myself)
- JANSEN, C., CLAASSENS, C., FOURIE, H. 2013. Microbial community structure and nematode diversity in glyphosate-resistant soybean cropping systems. *The Organization of Nematologists of Tropical America (ONTA) 45th Annual Meeting*, La Serena, Chile, 20-25 October 2013. (Paper presented by myself).

- PRETORIUS, M.S.A., JANSEN, C., FOURIE, H., MCDONALD, A.H. 2013. *In vitro* and *in vivo* evaluation of a biological soil culture as a potential organic control agent for root-knot nematodes. *The Organization of Nematologists of Tropical America (ONTA) 45th Annual Meeting*, La Serena, Chile, 20-25 October 2013. (Research presented by M.S.A. Pretorius).
- JANSEN, C., CLAASSENS, C., FOURIE, H. 2014. Nematode assemblages and microbial communities in glyphosate-resistant soybean cropping systems. *The 6th International Conference of Nematology*, Cape Town, South Africa, 4 – 9 May 2014. (Poster presented by myself).
- PRETORIUS, M.S.A., VAN AARDT, W., MCDONALD, A.H., JANSEN, C., AND FOURIE, H. 2014. Evaluation of a biological soil culture as a potential organic agent for managing root-knot nematodes. *The 6th International Conference of Nematology*, Cape Town, South Africa, 4 – 9 May 2014. (Poster presented by M.S.A. PRETORIUS).
- JANSEN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2015. Nematode fauna in the Telperion Nature Reserve. *6th Annual Diamond Route Research Conference*, Johannesburg, South Africa, 20-21 October 2015. (Paper presented by myself was awarded best presentation of this meeting).
- GIRGAN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2016. Fresh-water nematodes of the Telperion Nature Reserve. *7th Oppenheimer De Beers Group Research Conference*, Johannesburg, South Africa, 18 - 19 October 2016. (Paper presented by myself).
- GIRGAN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2016. Nematodes found in grass seeds in the Telperion Nature Reserve. *Annual ARC-Professional Development Programme Conference, ARC-VOPI, Roodeplaat*, 24-25 October 2016. (Paper presented by myself).
- GIRGAN, C., SWART, A., MARAIS, M. AND FOURIE, H. 2017. Nematodes found in grass seeds in the Telperion Nature Reserve. *21st Symposium of the Nematological Society of Southern Africa*, Fairmont Zimbali Resort, Balito KwaZulu Natal 7 - 11 May 2017. (Paper presented by myself).
- GIRGAN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2017. Nematode diversity of the Telperion Nature Reserve. *21st Symposium of the Nematological Society of Southern Africa*, Fairmont Zimbali Resort, Balito KwaZulu Natal 7 - 11 May 2017. (Poster presented by myself).
- GIRGAN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2017. Nematode diversity of the Telperion Nature Reserve. *Youth Day hosted by Deputy Minister of Agriculture Hon. Gen. Bheki Cele, ARC-VOPI, Roodeplaat*, 23 June 2017. (Paper presented by myself).
- MARAIS, M., SWART, A., SHUBANE, A. AND GIRGAN, C. 2017. The succession of nematodes in a Free State potato rotation system. *Potato Research Symposium, Mykonos, Langebaan*, 25-26 July 2017. (Paper presented by Dr. M. Marais).

- GIRGAN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2017. Nematode diversity of the Telperion Nature Reserve. *8th Oppenheimer De Beers Group Research Conference*, Johannesburg, South Africa, 17 - 18 October 2017. (Poster presented by myself).
- GIRGAN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2017. Die ekologie en diversiteit van nematodes van die Telperion Natuurreseervaat, Mpumalanga, Suid-Afrika. *Studentesimposium in die Natuurwetenskappe*, Universiteit van Pretoria, Pretoria, 2 – 3 November, 2017 (Paper presented by myself).
- GIRGAN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2018. Nematode fauna of the Telperion Nature Reserve, *1st Unit for Environmental Sciences and Management Prestige PhD Conference*, Faculty of Natural and Agricultural Sciences, North-West University, Potchefstroom, 30 August 2018 (Paper presented by myself).
- GIRGAN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2018. Nematode diversity of the Telperion Nature Reserve, South Africa, *33th Symposium of the European Society of Nematologists*, Ghent University, Ghent Belgium, 9-13 September 2018.
- GIRGAN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2018. Nematode fauna of Telperion Nature Reserve. *9th Oppenheimer De Beers Group Research Conference*, Johannesburg, South Africa, 16-17 October 2018. (Poster presented).
- GIRGAN, C., MARAIS, M., SWART, A., AND FOURIE, H. 2019. Nematodes of Telperion – unseen diversity. *10th Oppenheimer Research Conference*, Midrand, South Africa, 1-3 October 2019. (Poster presented).

i. Radio interviews

- RSG Landbou - Eloise Pretorius (21 September 2021) about the new service YourSoil that will be available at the ARC
- Landbou radio - Gerda le Roux (14 September 2021) about the new service YourSoil that will be available at the ARC
- Landbounuus – Karen Pieterse (4 October 2021) about the new service YourSoil that will be available at the ARC
- Landbou radio - Gerda le Roux (17 November 2021) about the new service YourSoil that will be available at the ARC
- Landbou radio - Gerda le Roux (17 November 2021) about National collection of nematodes in a separate interview

j. Skills

- Extraction of both plant-parasitic and non-plant parasitic nematodes (free-living nematodes) using standard extraction techniques.
- Fixation and mounting of nematodes on permanent slides.
- Counting of nematodes including feeding groups and to genus level for both plant-parasitic and free-living nematodes.
- Identification of nematodes, both free-living and plant-parasitic, to genus level.
- Identification of plant-parasitic nematodes and some free-living nematodes to species level based on morphology and morphometrics.
- Identification of soil fauna (nematodes and arthropods).

- Identification of nematode symptoms on roots of various crops.
- *In vitro* experiments on root-knot nematodes.
- Preparation of nematode specimens for Scanning Electron Microscopy.
- Compound and stereo (dissection)-microscope skills.
- Fieldwork - Sampling soil, roots, substrate and seeds.
- Standard laboratory skills including: Bacteria isolation and culturing, DNA extraction, 16S PCR techniques, molecular and biochemical identification of bacteria.
- Phospholipid Fatty Acid analysis.
- Basic report writing and nematode data analysis.
- Glasshouse trials and rearing of root-knot nematode inoculum
- Project management and writing of proposals

k. Computer literacy

- MS Word, MS Excel, MS Power Point & Statistica.

l. Courses completed

- Introductory Molecular Biology course, *Agricultural Research Council*, Pretoria, South Africa. Date: 15-17 March 2016.
 - Modules included: Eukaryotic cell structure, Genetic information, Molecular markers and recombinant DNA techniques, Evolutionary change and DNA barcoding
- Applied Plant Nematology, North-West University, Potchefstroom, South Africa. Date: 21 September – 2 October 2015. SAQA accredited. (Obtained Cum Laude (80%).
- IP (Intellectual Property) Wise Workshop, Agricultural Research Council, Pretoria, South Africa. Date: 27 October 2016.
- Basic Statistical course, Agricultural Research Council, Pretoria, South Africa. Date: 12 September 2017.
- Statistical Guidelines for choosing research methods, sampling methods and experimental designs, Agricultural Research Council, Pretoria, South Africa. Date: 13 September 2017.

4. REFERENCES:

Name : Dr. Mariette Marais
Occupation : Specialist Scientist- Nematology
Address : Nematology Unit, Biosystematics, ARC-PPRI, Private Bag X134, 0121 Queenswood.
Telephone number : 012 808 8263
E-mail : MaraisM@arc.agric.za

Name : Dr. Antoinette Swart
Occupation : Specialist Scientist- Nematology
Address : Nematology Unit, Biosystematics, ARC-PPRI, Private Bag X134,
0121 Queenswood.
Telephone number : 012 808 8279
E-mail : SwartA@arc.agric.za

Name : Prof. Hendrika Fourie
Occupation : Professor (Nematology): Environmental Sciences and
Management – Plant Protection.
Address : North-West University, 2520 Potchefstroom, South Africa
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