



Mesfin Wondafrash Gossa Curriculum Vitae

Personal information

Name: Mesfin Wondafrash Gossa
Nationality: Ethiopian
Date of birth: November 1978
Email: mesfin.gossa@fab.up.ac.za / mesfinwondafrash@gmail.com
Cell phone: +27 (61) 242 7403
ORCID: 0000-0002-1962-7941
Webpages: [Google Scholar profile](#), [FABI profile](#), [Research Gate profile](#), [LinkedIn profile](#),
[Sentinel Plant Project](#), [Publons](#)
Twitter: @Mesfinwondafrash

Profile

I am interested in the surveillance, monitoring, phylogeny, genetic diversity, ecology, biocontrol, and management of insect and nematode pests of economic importance to agriculture and forestry. Currently, I am a postdoc at the Forestry and Agricultural Biotechnology Institute (FABI), the University of Pretoria working on a project that focuses on survey, identification and management of wattle pests and diseases in Ethiopia. I have completed two other postdoc projects at FABI. One focusing on the genetic diversity and distribution of *Eucalyptus* insect pests and their natural enemies in sub-Saharan Africa and the other on monitoring plant health in botanical gardens across South Africa. I have also worked as a lecturer for two universities and as a junior and assistant researcher for a National Agricultural Research Institute in Ethiopia. I have had a chance to visit several universities and research institutes in Europe and attended and presented on several national and international conferences. The results of my research were published in peer reviewed international journals.

Education

2013-2016	PhD in Entomology , University of Pretoria, South Africa Thesis research: Ecology and diversity of introduced <i>Pissodes</i> (Coleoptera: Curculionidae) in South Africa
2010-2012	MSc in Nematology , Universiteit Gent, Belgium; Universität Bielefeld; Germany; Universidade de Évora, Portugal and Universidad de Jaén, Spain Thesis research: Effects of root feeding nematodes on shoot herbivorous insects (conducted at Radboud University Nijmegen, The Netherlands)
2005-2007	MSc in Insect Sciences , Addis Ababa University, Ethiopia Thesis research: Effects of neem extracts on the feeding, survival, longevity, and fecundity of African bollworm, <i>Helicoverpa armigera</i> (Lepidoptera: Noctuidae)
1998-2002	BSc in Plant Sciences , Alemaya University, Ethiopia Senior project: Diversity and spatial structure of home-garden plant species in Alemaya district, Ethiopia

Employment

2017 - Present	Postdoctoral Research Fellow , Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, South Africa
2008 - 2018	Lecturer and Researcher , School of Plant Sciences, Haramaya University, Ethiopia
2007	Lecturer and Researcher , Dept. of Plant Sciences, Arba Minch University, Ethiopia
2005 - 2007	Assistant Researcher , Werer Agri. Research Centre, Ethiopian Agri. Research Organization (EARO), Ethiopia
2003 - 2005	Junior Researcher , Werer Agri. Research Centre, Ethiopian Agri. Research Organization (EARO), Ethiopia
2001	Intern , National Wheat Research Project, Kulumsa Agri. Research Centre, Ethiopia

Teaching experience

Courses presented to postgraduate (MSc) students

2012	Agricultural Nematology, Haramaya University, Ethiopia
------	--

Courses presented to undergraduate students

2009-2010	Agrometeorology, Haramaya University, Ethiopia
2009-2010	Applied Climatology, Haramaya University, Ethiopia
2009	Weeds and their Management, Harar Agro-technical College, Ethiopia
2008-2010	Management of Crop Pests and Diseases of Economic Importance, Haramaya University, Ethiopia
2007	General Entomology, Arba Minch University, Ethiopia
2007	Applied Entomology, Arba Minch University, Ethiopia

Course assistance

2017-2018	Introductory Crop Protection course for Zoology and Entomology undergraduate students, University of Pretoria, South Africa
-----------	---

Student supervision (completed)

2018 – present	Agil Katumanyame , PhD student, University of Pretoria, South Africa (Co-supervisor). Thesis title: Evaluation of entomopathogenic nematodes as bio-control agents in the management of white grubs in forestry and sugarcane plantations of South Africa
2019	Lesego Malekana , Undergraduate mentorship student, University of Pretoria, South Africa
2015	Thendo Budeli , Undergraduate mentorship student, University of Pretoria, South Africa
2008-2012	Supervised 19 Senior Seminar and 18 Practical Attachment projects of undergraduate students, Haramaya University, Ethiopia

Student supervision (ongoing)

2022 – present	Mpho Mathaluga , Honors student, University of South Africa (Primary supervisor). Project title: Investigating the evidence of new infestation of the Polyphagous Shot Hole Borer (PSHB), <i>Euwallacea</i>
----------------	--

forficatus (Coleoptera: Curculionidae) in the KwaZulu-Natal National Botanical Garden.

Research experience

University of Pretoria (South Africa), Postdoctoral Research Fellow, January 2017 – present

In the first two years of my postdoc (2017-2018), I investigated *Eucalyptus* insect pests and their natural enemies in sub-Saharan Africa. This includes many eucalypt-feeding insects that have been recently introduced in the region and pose a serious threat to the sustainability of *Eucalyptus* forestry. To understand this problem, we developed ***Eucalyptus Insect Pest Project in Africa (EIPPA)***. This was a collaborative project which involved various stakeholders in 14 countries across sub-Saharan Africa. In this project, we confirmed the presence of five invasive insect pests of *Eucalyptus* across the region, mapped their geographic distribution and unravelled the genetic diversity and host utilization patterns of these pests. Similarly, we identified nine parasitoids of *Eucalyptus* insect pests and mapped their distribution in sub-Saharan Africa. Results from this project will be useful to inform management strategies of eucalypt insect pests in the region.

In the next three years (2019-2021), my research was focused on monitoring tree health at sentinel sites, specifically in botanic gardens across South Africa. The project was initiated under the framework of the International Plant Sentinel Network IPSN (www.plantsentinel.org) to improve surveillance and identification of new and emerging pest risks in South Africa. Besides using botanic gardens as an early warning system to identify new pest and pathogen threats, the project aims at identifying pre-existing plant health issues and works towards building capacity of garden staff in monitoring, detection and management of pests and diseases. It is a collaborative project conducted in partnership with SANBI, FABI and International Plant Sentinel Network (IPSN). Plant health assessments were made in ten botanical gardens across South Africa and many insect pests and pathogens were identified. Many capacity building activities, including seminars, presentations, webinars and workshops were held for garden staff and university students to build capacity in the detection and management of pests and pathogens (please refer to <https://www.fabinet.up.ac.za/index.php/sentinel-plant-network>).

Currently, I am conducting research on wattle pests and diseases in Ethiopia with the aim to identify key insect pests and diseases of wattle plantations. Three surveys were conducted in different seasons in 2022 and major insect pests and diseases were identified, their distribution was mapped, and the prevalence and severity were quantified. Potential short and long-term management interventions have been identified and efforts are ongoing to develop sustainable management practices.

University of Pretoria (South Africa), PhD student, April 2013 – November 2016

I was provided scholarship by University of Pretoria and National Research Foundation (NRF). I was trained as an entomologist with strong background in ecology and management of insect pests. I studied the diversity and ecology of introduced pine weevil in South Africa. I investigated its species identity, genetic diversity, population structure, natural enemies, patterns of host utilization and its interaction with *Sirex* wasp- another invasive pine insect

pest. By assisting at Biological Control Centre of the University of Pretoria, I have also gained critical skills in biological control of insect pests.

Ethiopian Agricultural Research Organization, Junior and Assist Researcher, January 2003 – August 2007

My career as an entomologist started when I joined this institute as a junior researcher back in 2003. I gained critical skills in research methods (proposal writing, field trials and laboratory experiments, data collection, data analysis, writing and presentation) and learnt core techniques in insect sciences (entomology). Under the guidance of senior entomologists, I studied the virulence of entomopathogenic fungi against cotton bollworm, the prevalence and distribution of natural enemies of major cotton insect pests, the efficacy of synthetic and botanical insecticides against insect and mite pests of cotton and groundnut. I evaluated the effectiveness of extracts of neem seed and leaf extracts against cotton bollworm. I have also characterized and selected cotton and groundnut varieties for their resistance/tolerance to insect pests.

Publications

[Kindly be informed that I use my first and middle name (Mesfin Wondafrash) in all my publications]

Journal articles

- Wondafrash M**, Slippers B, Asfaw BA, Makowe IA, Jenya H, Bush S, Kayumba I, Nambazimana A, van der Lingen S, Hurley BP. 2021. Tracing the distribution of natural enemies of non-native invasive *Eucalyptus* insect pests in sub-Saharan Africa. *Southern Forest: a Journal of Forest Sciences* **83**: 01-10.
- Wondafrash M**, Wingfield MJ, Wilson JUR, Hurley BP, Slippers B, Paap T. (2021). Botanical gardens as key resources and hazards for biosecurity. *Biodiversity and Conservation* **30**: 1929-1946.
- Wondafrash M**, Slippers B, Nambazimana A, Kayumba I, Nibouche S, van der Lingen S, Asfaw BA, Jenya H, Mutitu EK, Makowe IA, Chungu D, Kiwuso P, Kulimushi E, Razafindrakotomamonjy A, Bosu PP, Sookar P & Hurley BP (2020). Distribution and genetic diversity of five invasive pests of *Eucalyptus* in sub-Saharan Africa. *Biological Invasions*, *22*: 2205 – 2221.
- Wondafrash M**, Slippers B, Hurley BP & Garnas J (2019). Local antagonism and resource partitioning between two invasive pine plantation pests. *Agricultural and Forest Entomology*, *21*: 276-285.
- Van Dam NM, **Wondafrash M**, Mathur V & Tytgat TO (2018) Differences in hormonal signaling triggered by two root-feeding nematode species result in contrasting effects on aphid population growth. *Frontiers in Ecology and Evolution* *6*:88, doi: [10.3389/fevo.2018.00088](https://doi.org/10.3389/fevo.2018.00088)
- Wondafrash M**, Slippers B, Garnas J & Hurley BP (2017). Parasitoid assemblage associated with a North American pine weevil in South Africa. *Agricultural and Forest Entomology* *20*: 208 – 216.

- Wondafrash M**, Slippers B, Garnas J, Roux G, Foit J, Langor DW & Hurley BP (2016) Identification and genetic diversity of two *Pissodes* spp. Germar (Coleoptera:Curculionidae) in their introduced range in the southern hemisphere. *Biological Invasions* 18: 2283-2297.
- Abebe E, Mekete T, Seid A, Meressa BH, **Wondafrash M**, Addis T, Getaneh G & Abate BA (2015) Research on plant-parasitic and entomopathogenic nematodes in Ethiopia: a review of current state and future direction. *Nematology* 17: 741-759.
- Wondafrash M**, Van Dam NM & Tytgat TO (2013) Plant systemic induced responses mediate interactions between root parasitic nematodes and aboveground herbivorous insects. *Frontiers in Plant Science* 4: 1-15.
- Wondafrash M**, Getu E & Terefe G (2012a) Life-cycle parameters of African bollworm, *Helicoverpa armigera* (Hubner)(Lepidoptera: Noctuidae) affected by neem, *Azadirachta indica* (A. Juss) extracts. *Agricultural Science Research Journal* 2: 335-345.
- Wondafrash M**, Getu E & Terefe G (2012b) Neem, *Azadirachta indica* (A. Juss) Extracts Negatively Influenced Growth and Development of African Bollworm, *Helicoverpa armigera*(Hubner)(Lepidoptera: Noctuidae). *Academic Journal of Entomology* 5: 22-27.
- Wondafrash M**, Getu E & Terefe G (2012c) Survival and Feeding of African Bollworm, *Helicoverpa armigera*(Hubner)(Lepidoptera: Noctuidae) Affected by Neem, *Azadirachta indica*(A. Juss) Extracts. *World Journal of Agricultural Sciences* 8: 280-285.

Views and popular articles

NNanduleni M, **Wondafrash M**, Gabayi M, Paap T (2021) Battle to save iconic silver trees. *Veld & Flora*.

Wondafrash M, Paap T (2020) The vital role of botanical gardens in biosecurity. *Wood Southern Africa & Timber Times*.

Pest Risk Analysis

Wondafrash M. 2020. Risk analysis of Cypress aphid, *Cinara cupressi* in South Africa.

Podcast

Botanical gardens: why we need them and how they can also pose a risk. <https://bit.ly/3qFuTO9>

Pest and disease surveys

- Wattle, *Eucalyptus* and *Moringa* pests and diseases survey in Ethiopia, November 2022
- Wattle pests and diseases survey II in Ethiopia, July 2022
- Wattle pests and diseases survey I in Ethiopia, March 2022
- Plant health surveys in ten botanic gardens across South Africa, 2019, 2020, 2021
- Eucalyptus insect pest survey in Ethiopia, 2018
- Eucalyptus insect pest survey in Ghana, 2018
- Eucalyptus insect pest survey in Sierra Leone, 2018

- Eucalyptus insect pest survey in Zimbabwe, 2017

Presentations at conferences/meetings

- Wondafrash M**, Slippers B, Garnas J, Hurley BP. Ecology and diversity of introduced *Pissodes* (Coleoptera: Curculionidae) in South Africa. White Pine Weevil Management and Tree Improvement Workshop (virtual). 03-04 November 2021.
- Wondafrash M**, Slippers B, Asfaw BA, Makowe IA, Jenya H, Bush S, Kayumba I, Nambazimana A, van der Lingen S, Hurley BP. Tracing the distribution of natural enemies of non-native Eucalyptus insect pests in sub-Saharan Africa. 22nd Congress of the Entomological Society of Southern Africa, 28 June to 1 July 2021, Tshipise, South Africa (Poster presentation)
- Wondafrash M**, Wingfield MJ, Slippers B, Hurley BP, Hulbert JM, Wilson JR, Paap T. The value of botanical gardens to biosecurity and plant health research in South Africa. National Symposium on Biological Invasions, 5-7 May 2021, Grahamstown, South Africa (Oral presentation).
- Katayumane A, Hurly BP, Slippers B, **Wondafrash M**, Malan A (2019) Patterns and mechanisms of susceptibility of white grubs to South Africa's entomopathogenic nematodes. Entomological Society of Southern Africa (ESSA) 21 Congress, 08-11 July, Umhlanga, South Africa (Poster presentation)
- Wondafrash M**, Slippers B, Nambazimana A, Kayumba I, Nibouche S, van der Lingen S, Asfaw BA, Jenya H, Mutitu EK, Makowe IA, Chungu D, Kiwuso P, Kulimushi E, Razafindrakotomamonjy A, Bosu PP, Sookar P & Hurley BP (2019). Distribution and diversity of invasive pests of *Eucalyptus* in sub-Saharan Africa. Entomological Society of Southern Africa (ESSA) 21 Congress, 08-11 July, Umhlanga, South Africa (Oral presentation)
- Wondafrash M**, Slippers B & Hurley BP (2018) Diversity and distribution of *Eucalyptus* insect pests and their natural enemies in sub-Saharan Africa. Eucalyptus Insect Pest Project in Africa (EIPPA). The 29th Annual Meeting of the Tree Protection Co-operative Programme (TPCP) and the DST-NRF Centre of Excellence in Tree Health Biotechnology (CTHB). The University of Pretoria, 16-18 May, Pretoria, South Africa (Oral presentation)
- Wondafrash M**, Slippers B, Garnas J & Hurley BP (2017) Novel natural enemy encounters of an invasive forest insect pest. The 2017 Combined Congress of the Entomological Society of Southern Africa and the Zoological Society of Southern Africa, 03-07 July, Pretoria, South Africa (Oral presentation)
- Wondafrash M**, Slippers B, Garnas J & Hurley BP (2016) Interactions between two invasive insect species co-occurring on non-native pine trees. XXV International Congress of Entomology, 25-30 September, Orlando, USA (Oral presentation)
- Wondafrash M**, Slippers B, Garnas J & Hurley BP (2016) Ecology and diversity of introduced *Pissodes* (Coleoptera, Curculionidae) in South Africa. The 27th Annual Meeting of the Tree Protection Co-operative Programme (TPCP) and the DST-NRF Centre of Excellence in Tree Health Biotechnology (CTHB). The University of Pretoria, 16-18 May, Pretoria, South Africa (Oral presentation)

- Wondafrash M**, Garnas J, Slippers B & Hurley BP (2015) The deodar weevil, *Pissodes nemorensis* Germar, in South Africa: Identity and diversity. The 19th Congress of the Entomological Society of Southern Africa and the 37th Congress of the Zoological Society of Southern Africa, 12-17 July, Grahamstown, South Africa (Oral presentation)
- Wondafrash M**, Slippers B, Garnas J & Hurley BP (2014) The pine weevil in South Africa: Identity and diversity. The 25th Annual Meeting of the Tree Protection Co-operative Programme (TPCP) and the DST-NRF Centre of Excellence in Tree Health Biotechnology (CTHB). The University of Pretoria, 12-14 May, Pretoria, South Africa (Oral presentation)
- Hurley BP, **Wondafrash M**, Garnas J & Slippers B (2014) The genetic diversity of the deodar weevil, *Pissodes nemorensis* Germar (Coleoptera: Curculionidae) in its introduced range in South Africa. International Union of Forest Research Organizations (IUFRO), 5-11 October, Salt Lake City, UT, USA. (Poster presentation)
- Rasulova MF, **Wondafrash M**, Braeckman BP, Moens T & de Goede RGM (2012) Can nematode community analysis help students to understand the concept of bioindicators using a short-term experiment? The 2nd International Symposium on Nematodes as Environmental Bioindicators, 5-6 July, Ghent, Belgium (Poster presentation)

Workshops hosted

Training Workshop in plant health II. Durban University of Technology, 17-19 August 2021.
 Training Workshop in plant health I. Durban University of Technology, 24-26 May 2021.

Webinars hosted

Wondafrash M & Paap T (2020). Plant health in botanical gardens. 28 July 2020.

Trainings and workshops attended

- Training course on Environmental Impact Classification for Alien Taxa (EICAT), Organized by the South African Biodiversity Institute (SANBI), Virtual, 2021.
- Risk Analysis Course, South African Biodiversity Institute, Pretoria, South Africa, 2019
- Introductory Training to ArcMap, South African Biodiversity Institute, Pretoria, South Africa, 2019
- Shothole Borer (SHB) Workshop, FABI-CABI, University of Pretoria, South Africa, 2018
- TUKS Young Research Leader Program Workshop, University of Pretoria, South Africa, 2018
- Mass-rearing of Insects Workshop, Department of Conservation Ecology and Entomology, Stellenbosch University, South Africa, 2017
- Microsoft 2013 Advanced Editing Workshop, University of Pretoria, South Africa, 2015
- Advanced Phylogenetics Workshop, University of Pretoria, South Africa, 2014
- Introductory Microsatellite Workshop, University of Pretoria, South Africa, 2013
- Crop Growing and Cropping Systems Modelling Workshop, Haramaya University, Ethiopia, 2009
- SAS and GenStat Training, Haramaya University, Ethiopia, 2008
- Basic training on principles of biometrics and computer software and SAS computer program, Ethiopian Agricultural Research Organization (EARO), Ethiopia, 2006

- Biometrics in Agriculture, Ethiopian Biometrics Society and Addis Ababa University, Ethiopia, 2005
- SAS Software and Basic Biometrical Methods Workshop, Werer Agricultural Research Centre, Ethiopia, 2003

Other scientific meetings attended

- 5th Ecogenomics day of the Netherlands, Ecogenomics Research Organization (NERO), NIOO-KNAW, Wageningen, The Netherlands, 2012
- NWO-ALW meeting of Experimental Plant Sciences, Luntern, The Netherlands, 2012
- 64th International Symposium of Crop Protection, Ghent, Belgium, 2012
- 63th International Symposium of Crop Protection, Ghent, Belgium, 2011

Professional services

- Organized and hosted training workshops for horticulture students at Durban University of Technology. Durban, South Africa, 2021.
- Presented on insect pests and diseases of commercial forest crops and networking in Africa', Shothole Borer (SHB) Workshop, FABI-CABI, University of Pretoria, Pretoria, South Africa, 2018
- Assisted with practical sessions, Biological Control of Eucalypt Insect Pests Workshop, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, South Africa, 2015
- Trained crop protection practitioners about "Botanical Insecticides" and "Methods of Insect Rearing", Crop protection Practitioners Workshop, Haramaya University, Haramaya, Ethiopia, 2010
- Trained growers how to identify and manage insect pests of groundnut, Babile, Ethiopia, 2009
- Trained junior researchers on "Identification of major insect pests of cotton, sesame and groundnut and their management", Tigray Region Agricultural Research Institute, Mekele, Ethiopia, 2005

Visits to universities and research institutes

- Department of Conservation Ecology and Entomology, Stellenbosch University, Stellenbosch, South Africa, 2017
- Department of Ecogenomics, Radboud University Nijmegen, Nijmegen, The Netherlands, 2011
- E-nema Biocontrol Company, Kiel, Germany, 2011
- Department of Biotechnology and Biological Control, Christian-Albrechts-Universität zu Kiel, Kiel, Germany, 2011
- Julius Kuhn Institute, Institute for Epidemiology and Pathogen Diagnostics, Munster, Germany, 2011
- Institute of Crop Science and Resource Protection, Bonn University, Bonn, Germany, 2011
- Nematology Laboratory, Wageningen University, Wageningen, The Netherlands, 2011

- Applied Plant Research, Wageningen UR, Lelystad, The Netherlands, 2011
- Plant Research International, Wageningen UR, Wageningen, The Netherlands, 2011
- Koppert Biological System, Berkel en Rodenrijs, The Netherlands, 2011

Manuscript review

- Journal of Economic Entomology
- International Journal of Pest Management
- Frontiers in Plant Science
- Royal Society Open Science

Professional membership

- Ethiopian Professionals Association in Southern Africa (EthPASA), 2018 - present
- Entomological Society of Southern Africa (ESSA), 2017 - present
- British Ecological Society (BES), 2017 - present
- Plant Protection Society of Ethiopia (PPSE), 2004 - 2012

Leadership and administrative contributions

- Laboratory Manager, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, South Africa (January – December 2017)
- Deputy Coordinator, Summer In-service Program, Haramaya University, Ethiopia, 2009 - 2010
- Academic Coordinator, School of Plant Sciences, Haramaya University, Ethiopia, 2008 - 2009
- Head, Entomology Research Division, Werer Agricultural Research Center, Ethiopia, 2004 – 2005

Participation in committees

- Social club, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, South Africa, 2016
- Curriculum review committee, School of Plant Sciences, Haramaya University, Ethiopia, 2009
- Staff recruitment committee, Werer Agricultural Research Center, Ethiopia, 2005
- Farm Planning Committee, Werer Agricultural Research Center, Ethiopia, 2005
- Publication Committee, Werer Agricultural Research Centre, Ethiopia, 2003-2005

Awards and scholarships

- South African National Biodiversity Institute (SANBI) Postdoctoral Research Fellowship Award, 2019 – 2020
- University of Pretoria Postdoctoral Research Fellowship Award, 2017 – 2018
- National Research Foundation (South Africa) Innovation Doctoral Scholarship Award, 2014 – 2015

- University of Pretoria Postgraduate Bursary Award, 2013
- European Union Education and Culture Director General (Erasmus Mundus) Scholarship Award, 2010 – 2012
- Ghent University dean's list, Highest Distinction (MSc. Nematology), 2012
- Addis Ababa University dean's list, Highest Distinction (MSc. Insect Sciences), 2007
- Alemaya University dean's list, Distinction (BSc. Plant Sciences), 2002

Referees

- Professor Brett Hurley, Department of Zoology and Entomology, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, South Africa
Email: Brett.Hurley@fabi.up.ac.za, Tel: +27 (12) 420-3939/3939, Fax: +27 (12) 420-3960
- Professor Bernard Slippers, Dept. of Genetics, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, South Africa
Email: Bernard.Slippers@fabi.up.ac.za, Tel: +27(12)420-3939/3939, Fax: +27(12)420-3960
- Professor Mike John Wingfield, Advisor to the Executive of the University of Pretoria, Forestry and Agricultural Biotechnology Institute (FABI), President of International Union of Forestry Research Organizations (IUFRO), University of Pretoria, South Africa
Email: mike.wingfield@fabi.up.ac.za, Tel: +27(12)420-3939/3939, Fax: +27(12)420-3960

Updated on 20 December 2022