

## CURRICULUM VITAE

### PERSONAL DETAILS

Name: Tulu Degefu ለኩብ

Birth date: J

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**LANGUAGE:** Excellent in English, Afan oromoo and Amharic (Ethiopian).

**CAREER OBJECTIVE:** By applying professional skills and occupational experiences to bring about increased farm productivity, food security and better income opportunities for small-holder farmers; but also for achievement of my employer's intended goals.

### QUALIFICATION

#### Academic degrees

**Ph.D.**, Soil microbiology (specialisation rhizobiology), Norwegian University of Life Sciences, Norway, 2012.

**MSc.**, Applied Microbiology (Soil microbiology), Faculty of Sciences, Addis Ababa University, Addis Ababa, Ethiopia, 2006

**B.SC.**, Biology, Faculty of Sciences, Addis Ababa University, Ethiopia; 2003.

#### Other trainings

- *Certificate on Mainstreaming Gender into Legume Value Chains, organized by N<sub>2</sub>Africa partner institutions at International Livestock Institute (ILRI), Addis Ababa, 15-18 December, 2014, Ethiopia.*
- *Certificate on mainstreaming Biofarming to higher learning institutions, Funded by EDULINK project, Addis Ababa, 15-20 September, 2014, Ethiopia (under the coordination of prof. Andrea Sciarretta, project manager, University of Molise)*
- *Certificate on Bioinformatics for Environmental scientists NOVA soilsoc course from Helsinki University, 11-15 August, 2008, Helsinki, Finland.*
- *Certificate on Microbial N transformations and NO/N<sub>2</sub>O emissions' from Norwegian University of Life Sciences, 7-12 June, 2009, Ås, Norway.*
- *Certificate Intensive Microsoft office/Basic computer application certificate from African Virtual University, April-August, 2003, Addis Ababa, Ethiopia*

### SKILLS AND TECHNICAL COMPETENCE:

#### Research:

- Isolation (from soil/nodule), identification, morphological and molecular characterization and metabolic profiling and genetic fingerprinting of rhizobia;
- Screening of rhizobial strains/legume genotypes for N-fixing efficiency and host range;

- Inoculant preparation and application, need for inoculation, strain competitiveness and persistence studies;
- Legume agronomy:- screening for adaptability, N fixation, field management, soil fertility issues (Nitrogen transformations, legumes N delivery to non legumes)
- On-farm participatory experimentation through establishment of demonstration using FTDG (Farmers Technology Dissemination Group) as an approach
- Management and analysis of research data

#### **Management:**

- Results-based formulation of research projects and programs
- Align research with national and regional development priorities and programs
- Development and implementation of participatory rural development projects
- Evaluation of research projects against set objectives, strategic plans and programs
- Administration of human and financial resources.

#### **Coaching and mentoring of young researchers:**

- Advising Msc and PhD research undertakings
- In the design and implementation of laboratory, on-station and on-farm experimentation
- Scientific communication, both oral and written
- Career development in Soil Microbiology and agricultural research

#### **Computer**

- Microsoft package (Word, Excel, PowerPoint); Statistical analyses of field plot experiment data, DNA sequence analyses programs (extensively used genetic computer group packages and phylogeny software including BioEdit, MEGA).

#### **CAREER HISTORY**

- *Employed at Hawassa University in Ethiopia as graduate assistant (from August, 2003 – August, 2004), then as Lecturer (from August 2006–December 2007), then as Assistant professor of Microbiology (December 2012 – present). In this institution, in addition to teaching courses in Microbiology, conducted basic and applied research on various aspects of BNF (Biological Nitrogen Fixation) culminating in peer-reviewed articles, reports, MSc theses.*
- *Academic program and Quality Assurance coordinator of the College of Natural and Computational Sciences, Hawassa University, August 2014 – Present, fairly mobilized resources in various programs within the college*
- *Coordinator of the Bill and Melinda Gates Foundation funded N2Africa project (<http://www.n2africa.org/>) April 2014 – Present, coordinated research and extension and assembled network of national institutions (Universities, Agricultural Research Institutes) on rhizobia and agronomy research and inoculant production technologies for promoting BNF with small-holder farmers.*

#### **Visiting Scholar**

At the Ghent University in Belgium (December 15-30, 2010) conducting specialized laboratory research (DNA-DNA hybridization) on rhizobia, in Prof. Anne Willem's lab, at the Ghent University, Ghent, Belgium.

## PROFESSIONAL/OCCUPATIONAL EXPERIENCES

### Teaching:

**Graduate and under graduate courses:** Environmental Microbiology, Applied Microbiology, General Microbiology, Mycology, Molecular Biology

**MSc and PhD thesis research advisor:** Altogether supervised 21 graduate students (3 PhD and 18 M.Sc., in the area of rhizobia, legumes, soil fertility, Food, Water) at Hawassa in Ethiopia; at the Norwegian University of Life Sciences, Norway.

### Administrative positions held

- *Academic program and Quality Assurance coordinator of the College of Natural and Computational Sciences, Hawassa University, August 2014 – Present. Thus, I am responsible for coordinating academic and quality assurance issue, at the college level*
- *Coordinator of the Bill and Melinda Gates Foundation funded N2Africa project (<http://www.n2africa.org/>) April 2014 – Present, coordinated research and extension and assembled network of national institutions (Universities, Agricultural Research Institutes) on rhizobia and agronomy research and inoculant production technologies for promoting BNF with small-holder farmers. In here, I am responsible for coordinating and providing all supports for implementation of the projects thus represented South cluster in network of national institutions and oversee financial, technical and human resources linked to the project.*

## RESEARCH AND PUBLICATIONS

Publications in peer reviewed international journals

1. **Degefu T.**, Wolde-meskel E. and Frostegård Å. (2013) Phylogenetic diversity of Rhizobium strains nodulating diverse legume species growing in Ethiopia. *Systematic & Applied Microbiology*. 36, 272 - 280.
2. **Degefu T.**, Wolde-meskel E., Liu B., Cleenwerck I. Willems A. and Frostegård Å. (2013) *Mesorhizobium shonense* sp. nov., *Mesorhizobium hawassense* sp. nov. and *Mesorhizobium abyssinicae* sp. nov. isolated from root nodules of different agroforestry legume trees growing in southern Ethiopia. *International Journal of Systematic and Evolutionary Microbiology*, 63, 1746–1753
3. **Degefu, T.**, Wolde-meskel, E., and Frostegård, Å (2012) Phylogenetic Multilocus sequences analysis identifies seven novel Ensifer genospecies isolated from less explored biogeographical region in East Africa. *International Journal of Systematic and Evolutionary Microbiology*. 62: 2286 – 2296. doi:10.1099/ij.s.0.039230-0
4. **Degefu, T.**, Wolde-meskel, E., and Frostegård, Å (2011) Multilocus sequence analyses reveal several unnamed *Mesorhizobium* genospecies nodulating *Acacia* species and *Sesbania sesban* trees in Southern regions of Ethiopia. *Systematic and Applied Microbiology* 34 (3), 216-226
5. Ashebir T, **Degefu T**, Wolde-meskel E and Davis J (2016). The effect of pond depth and lining plastic color on nitrogen fixing capacity of cyanobacteria, *Anabaena* species train E3. *Afr J Biotechnol*. **15**: 1442-1451.
6. Tena W., Wolde-meskel E, **Degefu T**, Walley F. (2016). Lentil (*Lens culinaris* Medik.) nodulates with genotypically and phynotipically diverse rhizobia in Ethiopian soils. *Accepted in Syst Appl Microbiol*.

### Papers under Review

1. Tena, W., Wolde-Meskel, E., **Degefu, T.**, & Walley, F. (2016). Genetic and phenotypic diversity of rhizobia nodulating Chickpea (*Cicer arietinum* L.) in soils isolated from southern and central Ethiopia. *Submitted to Biology and Fertility of Soils*.

### Manuscripts under preparation

1. **Degefu T**, Wolde-meskel E, Frostegård A (2016). Ethiopian *Bradyrhizobium* strains isolated from woody legumes as studied by multilocus sequence analysis are phylogenetically diverse. *In preparation*.

2. **Degefu T**, Wolde-meskel E, Rasche F (2016). Cowpea, mung bean and groundnuts growing in Ethiopia are nodulated by diverse *Bradyrhizobium* strains harboring nodulation genes of monophyletic origin. *In preparation*.

### PhD Thesis

**Degefu T.** (2012). Phylogeny and symbiotic characteristics of rhizobia isolated from legumes growing in Ethiopia. *PhD thesis, Department of Chemistry, Biotechnology and Food Sciences Norwegian, University of Life Sciences. Ås Norway. Thesis number 2012:66 ISSN 1503-1667, ISBN 978-82-575-1102-9.*

### Papers presented on the international Conference

Oral presentations

Wolde-meskel E., **Degefu T**, Åsa Frostegård. Genetic and symbiotic diversity of rhizobia in Ethiopian soils: an untapped biological resource to enhance N<sub>2</sub>-fixation to benefit smallholder farmers. October, 21- 26, 2012. ISFM conference, Nairobi, Kenya.

Wolde-meskel E., **Degefu T**, Åsa Frostegård. Genetic diversity of rhizobia indigenous to Ethiopian soils: potentials to enhance rhizobium-legume symbiosis for sustainable agriculture. Paper presented at The 13th Congress of the African Association for Biological Nitrogen Fixation, Hammamet, Tunisia, Dec. 15 – 18, 2008

### Posters

Wolde-meskel, E., **Degefu T.**, Frostegård, Å., Several unnamed *Ensifer* genospecies isolated from root nodules of *Acacia* sp. and *Sesbania sesban* trees growing at ecologically diverse sites in Ethiopia. ISME 13 conference, 22-27 August 2010, Seattle, USA.

**Degefu T**, Wolde-meskel, E., Frostegård, Å., Multilocus analyses reveal several unnamed *Mesorhizoiium* genospecies from *Acacia* sp. and *Sesbania sesban* in southern regions of Ethiopia. BAGECO 10 Conference, the 10<sup>th</sup> International Symposium on Bacterial Genetics and Ecology, 15-19 June 2009, Uppsala, Sweden

**Degefu T**, Woldemeskel, E., Frostegård, Å., Genetic diversity and phylogeny of Mesorhizobia isolated from woody legumes in Ethiopia. Poster presented at The 13th Congress of the African Association for Biological Nitrogen Fixation, Dec. 15 – 18, 2008, Hammamet, Tunisia.

**Degefu T**, Endalkachew Wolde-meskel, Binbin Liu, Anne Willems, Ilse Cleenwick and Åsa Frostegård. Genetic and symbiotic diversity of rhizobia isolated from Ethiopian soils August 19-24, 2012, Copenhagen, Denmark

**SERVICES RENDERED AS A REVIEWER FOR JOURNALS**

International journals: International Journal of Systematic and Evolutionary Microbiology.

**PROFESSIONAL MEMBERSHIP**

Ethiopian Microbiology Society.

A handwritten signature in black ink, appearing to read 'T. H. Degefu'.