



Report ISME-Ethiopia Workshop 26 December 2023

Theme: The Power of Microbes of Extreme Agro-ecologies of Ethiopia in Sustainable Bioeconomy

Venue: Addis Ababa Science and Technology University (AASTU), Red Carpet Hall

Date: December 26, 2023

I. Context of the event

The event was started with registration and a program introduction, followed by a welcome speech and opening remarks by Dr Mesfin Tafesse, Senior Country Ambassador of ISME, AASTU and Dr Abraham Debebe, Vice President for Research Technology Transfer, AASTU respectively. The agenda featured two keynote addresses, the first focused on the application of microbes from extreme environments in bioproducts development by Prof. Fassil Assefa, (AAU), and the second on the role of the microbiome of extreme habitats in enhancing stress tolerance in agricultural crops by Dr Diriba Muleta, (AAU). A tea break and poster session were provided an opportunity for participants to engage and share their research experiences.

Subsequent sessions were explored topics such as biotechnological applications of microbial enzymes and bio-cement in construction industries, the role of indigenous microbial fungicides in sustainable coffee production in Ethiopia, and the exploitation of the microbiome for revitalizing Ethiopia's agriculture. A session was dedicated to promoting the major activities of ISME (International Society for Microbial Ecology), fostering discussion among the participants. A total of over 50 participants took part in the event. The event was culminated with closing remarks that summarized the insights gained by expressing gratitude for the active participation in the conference hall. Lastly, the participants were invited to lunch and poster session.



II. Organizing committee

The organizing committees for the International Society for Microbial Ecology (ISME) include the following members:

1. Dr. Mesfin Tafesse: Oral presentation and Organizer
2. Dr. Geremew Teklu: Organizer
3. Dr. Girma Gonfa: Closing Speech and Organizer
4. Dr. Diriba Muleta: Oral Presentation
5. Dr. Tadesse Daba: Panel Chair
6. Dr. Dereje Beyene: Panel Chair
7. Ato Dereje Hailu: Panel Chair
8. Dr. Gizachew Haile: Session Chair
9. Dr Fantahun W/Senbet, Session Chair
10. Dr. Adugna Abdi: Session Chair
11. Dr. Musin Kelel: Session Chair
12. Abu Feyissa: Poster Presentation and Rapporteur
13. Etaferahu Negash: Facilitator
14. Woynishet Dechassa: Facilitator
15. Woderyelesh Alemayehu: Facilitator



II. Scientific program

Photo 1: invited experts during the ISME-Ethiopia Workshop-2023



Dr Abraham Debebe, Vice President for Research Technology Transfer, AASTU



Dr Mesfin Tafesse, Senior Country Ambassador of ISME, AASTU



Prof. Fassil Assefa, AAU



Dr Diriba Muleta, AAU



Group Photo

Welcome Address

1. AASTU, Red Carpet Hall

Opening ceremony

1. Dr. Mesfin Tafesse

Keynote Speech

1. Dr. Abraham Debebe
2. Prof. Fasil Assefa



III. Scientific Paper presentations

The scientific paper presentations at the conference cover a wide range of topics related to microbial ecology. The first presentation focuses on the "Application of microbes from extreme environments in bioproducts development," exploring the potential of microbes from extreme environment for advancements in bioproducts development. The second presentation focuses on "The role of the microbiome of extreme habitats in the enhancement of stress tolerance in agricultural crops," shedding light on the significant impact of microbial communities in extreme environments on the resilience of crops to various biotic and abiotic stresses.

The third presentation addresses "Biotechnological applications of microbial enzyme and bio-cement in constructions" that examines the innovative uses of microbial enzymes and bio-cement in the construction industry. Another crucial aspect of microbial applications in agriculture was discussed in the fourth presentation, which explores "The role of indigenous microbial fungicides in sustainable coffee production in Ethiopia," emphasizing sustainable practices in coffee cultivation.

Lastly, the fifth presentation addresses broad scope of "Exploiting the Microbiome for Revitalizing Ethiopia's Agriculture," aiming to showcase how understanding and leveraging the microbiome can contribute to the overall revitalization of agriculture in Ethiopia. These presentations collectively contribute to the comprehensive exploration of microbial applications and their potential impact on various fields.

IV. Poster Presentations

Seven posters were presented at the Consultative Workshop organized by AASTU, Ethiopian Society for Microbiology and International Society for Microbial Ecology (ISME) by the following researchers:

1. Abu Feyisa Meka

- Metagenomics and Culture-Based Exploration of Actinobacterial Diversity and Their Antimicrobial Properties from Sof Umer Cave, Ethiopia



2. Ijara Shiferaw
 - Metagenomic Analysis of Ethiopian Rift Valley Thermal vents: Microbial Diversity and Functional Potential of Thermophiles
3. Gesesse Kebede Bekele
 - Bioprospecting and Characterization of Alkalihalo-Tolerant Enzymes from Selected Ethiopian Hypersaline Lakes Using Culture Dependent and Metagenomics Approaches
4. Temasgen Getu
 - Improving bioethanol production by strain improvement of *Meyerozyma caribbica* isolate MJTm3 from sugarcane molasses using UV mutagenesis
5. Daniel Girma
 - Producing Self-healing Concrete using Calcite inducing bacteria Isolated from Alkaline soda lakes of Ethiopia
6. Assefa Nugise
 - Producing Eco-friendly Construction Materials Using Bio-enzymes: A Technology Transfer through Innovative Approach
7. Ermias Sisay
 - Shotgun Metagenomics Guided Prediction Reveals Metal Tolerance and Antibiotic Resistance in Microbes from Poly-Extreme Environments of Danakil Depression, Afar Region

Their poster presentations contribute invaluable insights and information to the diverse discussions on microbial ecology at the event.



Photos:













V. Conclusion

The Consultative Workshop organized by AASTU, ESM and International Society for Microbial Ecology (ISME) held at AASTU's Red Carpet Hall on December 26, 2023, was a resounding success, centered on the Grand Theme "The Power of Microbes of Extreme Agro-ecologies of Ethiopia in Sustainable Bioeconomy." The scientific program featured insightful paper presentations, covering a wide range of topics in microbial ecology. These presentations explored the potential of harnessing microbes from extreme environments for bioproducts development, the microbiome's role in enhancing stress tolerance in crops, and the biotechnological applications of microbial enzymes and bio-cement in construction. The significance of indigenous microbial fungicides in sustainable coffee production in Ethiopia and the broader scope of exploiting the microbiome for revitalizing agriculture were also discussed. Finally, major activities (publications, funds, etc.) of ISME were promoted to participants in order to attract potential members from Ethiopia.



Annex 1

Program Time Table
Consultative Workshop
Grand Theme: The Power of Microbiomes of Extreme Agro-ecologies of Ethiopia in Sustainable Bioeconomy
December 26, AASTU, Addis Ababa

Time	Activities	Responsible person	Modulator/chair
8:30-9:00 am	Registration	Organizers	BB CoE and VPRTT Office
9:00 - 9:05 am	Program Introduction	Dr Mesfin Tafesse, Senior Country Ambassador of ISME	Dr Geremew Teklu, VRTT office, AASTU
9:05 - 9:15 am	Welcome Speech		
9:15 - 9:30 am	Opening Remarks	Dr Abraham Debebe, Vice President for Research and Technology Transfer, AASTU	Dr Getachew Adam, Research & CoEs Director, AASTU
9:30-9:45 am	Keynote Address1	Prof. Thulani P. Makhalanyane, Director: ISME Ambassador Program, SA	Dr Fantahun Woldesenbet, BETiN
9:45- 10:15 am	Keynote Address2	Prof. Fassil Assefa, AAU	
10:15- 10:35 am	Application of microbes from extreme environment in bioproducts development	Prof Ketema Bacha, JU	
10:35-10:50 am	Health break and Poster Session	Coordinators	BB CoE and VPRTT office
10:50 – 11:05 am	The role of microbiome of extreme habitats in enhancement of stresses tolerance in agricultural crops	Dr Diriba Muleta, AAU	Dr Gizachew Haile
11:05 -11:20 am	Biotechnological applications of microbial enzyme and bio-cement in constructions	Dr Mesfin Tafesse, AASTU	
11:20 - 11:35 am	The role of indigenous microbial fungicides in sustainable coffee production in Ethiopia	Dr Tesfaye Alemu, AAU	Dr Adugna Abdi
11:35-11:50 am	Exploiting the Microbiome for Revitalizing Ethiopia's Agriculture	Dr Dejene Girma, EIAR	
11:50-12:05	Promoting major activities of	Dr Mesfin T, Senior	



	ISME	Country Ambassador of ISME	Dr Musin Kelel
12:05- 13:00 pm	Discussion	Session chair	
13:00-13:10 pm	Closing Remarks	Dr Girma Gonfa, BB CoE Head	
13:10– 14:00 pm	Lunch and Poster Session	Organizers	BB CoE and VPRTT Office