



## Eritrea Organizes First National Organic Fertilizer Conference

### “Organic Fertilizers to Boost Safe and Nutritious Food Production”

Ensuring safe and nutritious food for the Eritrean people is the mandate of the Agriculture and Marine sectors. For this reason, both Ministries were working very closely together to create the ground for the production of natural fertilizers and pesticides for the last two years. As a result both ministries jointly organized a National Organic Fertilizers Conference on the 26<sup>th</sup> and 27<sup>th</sup> of April, the conference hall within the premises of the National Confederation of Eritrean Workers’ headquarters office was fully occupied by the participants of the first National Organic Fertilizer Conference, among whom were H.E. Mr. Arefaine Berhe, Minister of Agriculture; H.E. Mr. Tewelde Kelati, Minister of Marine Resources; H.E. Mr. Tesfai Gebreselassie, Minister of Land, Water and Environment; H.E. Mr. Yemane Gebremeskel, Minister of Information; H.E. Mr. Fissehaye Haile, Governor of the Central Region; H.E. Mr. Mcebisi Skwatsha, Deputy Minister of Agriculture of the Republic of South Africa, the Ambassadors of the Republic of South Africa, The Republic of Italy, European delegation, Head of UN Agencies, Director generals from different Eritrean Ministries, General Managers of corporations, College Deans, senior experts, exemplary farmers as well as invited guests from inside and outside the country.

The event commenced with a moment of silence in remembrance of the Eritrean martyrs, followed by an opening speech by Mr. Semere Amlesom, Director General of MoA’s Agricultural Extension Department (AED). He pointed out that organizing the event is the outcome of the promising achievements that have been registered in terms of production of both solid and liquid fertilizers.

Subsequently, in delivering the keynote speech, H.E. Mr. Arefaine welcomed all participants of the conference and said, “Soil is the basis of all life and a living body itself and that is precisely the reason why it should be treated with utmost care.” The Minister of Agriculture further emphasized the need to harness all resources towards production and standardization of all forms of organic fertilizer, including the domestic waste, under the theme “Even our waste is our resource.”

In conclusion, H.E. Mr. Arefaine stated, “Considering that we have to provide safe and nutritious food to our population, the government has decided to focus on organic fertilizers.” He also said that it has been only over two years since Eritrea embarked upon such an important initiative, and hence the



H.E Arefaine Berhe



*Mr. Semere Amlsom*

experience accumulated so far is very modest. “That is precisely the reason why we have organized this platform: In order to share experiences with

different internal and external actors so that we can draw a much more robust roadmap for a better result,” Minister Arefaine said.

During the conference, which was organized jointly by the Ministries of Agriculture; and Marine Resources; a total of 18 papers were presented by experts from the two ministries, as well as invited professionals from Eritrea, Uganda, Rwanda and Germany, on top of a video presentation from Benin.

on Crop Yield: Case Studies of Geshnashim, Halhale and Merhano.” The study focused on compost application rates on vegetables and wheat crops and the statistical result showed significantly increase in the yield of the crops as a result of compost application. The paper concluded that the study can serve as a source of firsthand information to local farmers and especially to the progressive ones.

as Compost Production and Management. This paper is anchored on the practical experiences of the presenter, and explains how compost can be made with relative ease even under the prevailing circumstances.



*Mr. Dernas Sultan*

Mr. Dernas Sultan, Chairperson of the National Organic Fertilizer and Bio-pesticide Promotion Committee, and Head of Soil Research Unit in the National Agricultural Research Institute (NARI), presented the first paper: “The Impact of Compost

The second presentation was on “Technical Experience of Contextually Adaptive Approaches to Compost Production” by Mr. Fekadu Tesfamichael, a Consultant on Soil and Water Conservation, Irrigation Services, as well



*Mr. Abraham Michael*

“Pioneering Large Scale Compost Production in Eritrea – Achievements and Lessons Learned”: was the title of the third presentation by Mr. Abraham Michael, General Manager of Azieb Agroindustry. Mr. Abrham explained that the company’s major challenge in managing and treating the organic wastes of the dairy farm into an eco-friendly,



*Mr. Fekadu Tesfamichael*

cost effective fertilizer which was effectively used in forage production.



*Ms. Adiam Rezene*

The next presentation by Ms. Adiam Rezene, Agronomy Expert in Berik Sub-zone of the Central Region, focused on Bokashi production. Bokashi is a Fermented Organic Fertilizer, which has already become popular among the exemplary farmers and experts all over Eritrea. The essence of the technology is multiplication of essential micro-organisms in the soil to increase soil fertility.

Mr. Semere Woldeamlak, Agricultural Engineering Expert and Head of Dams and Diversions Development Unit from MoA's AED, presented the next on "Making Compost from Domestic



*Mr. Semere Woldeamlak*

Waste" as 70% of the municipality waste in Eritrea is organic, and can easily be converted into very high quality fertilizer which can boost agricultural production and productivity. The importance, preparation, application and laboratory results of domestic waste compost were explained briefly in the paper. Recommendations were also made for up-scaling domestic waste compost in all municipal administrations of Eritrea.

The next presenter was Mr. Temesgen Gebremeskel, a Lecturer in Mai-Nefhi College of Science's Department of Biology and member of the National Organic Fertilizer and Bio-pesticide Promotion Committee.



*Mr. Temesgen Gebremeskel*

His paper focused on the Impact of Organic Fish Amino Acid and Seaweed Liquid Fertilizer on Plant Health and Yield. The presentation highlighted the results of the trials and experiments conducted. The result verified the efficacy of both liquid fertilizers on different plants at different agro-ecological zones of the country.

Following, Mr. Bahlbi Goitom, Soil Science Expert and Head of Monitoring and Evaluation Unit in the MoA, presented a paper on



*Mr. Bahlbi Goitom*

"the Effect of Organic Fertilizers on Crop and Soil Properties from Farmers' Perspective," in the Central Region of Eritrea. Accordingly, he said farmers are aware that compost improves moisture holding capacity, reduces soil cracking, changes soil color (attributed to organic matter content), eases tillage and less pest appearance (related to health crop). Hence there is a growing demand for organic fertilizers by farmers.

A paper that explained the joint initiative of the MoMR and MoA with regards to development of a bioprocessing technology to convert Eritrea's underutilized marine resources into valuable fertilizers was also presented: was presented by Mr. Yihdego



*Mr. Yihdego Tewelde*

Tewelde, Marine Biologist from Marine Research and Socio-economic Division of MoMR under the title “Establishment of ‘Abdur Underutilized Marine Resources Processing Plant: A Joint Initiative of the MoMR and MoA to Convert Waste in to Organic Liquid Fertilizes,”. The plant’s entire workflow and level of production was discussed.

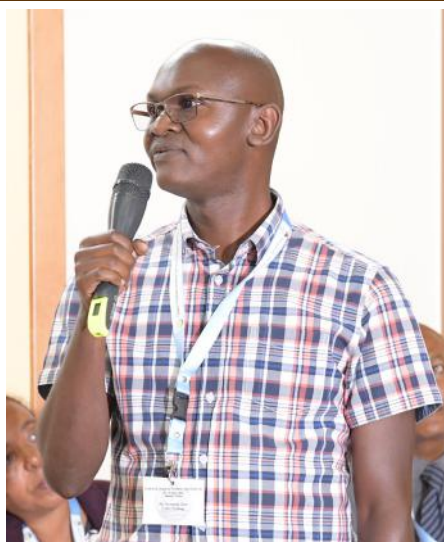
In the same vein, Mr. Jürgen Amthor, representing Eubenheimer Manufaktur of Germany, took turn to present his paper titled, “Organic Fertilizer with Microorganisms for Regenerative Farming in Eritrea, because Health Starts in the Soil.”



*Mr. Jürgen Amthor*

The contents of the presentation focused on the basics of regenerative agriculture; negative effects of conventional agriculture; how microorganisms work for the soil, and thus for humans, animals and the environment; as well as Bokashi and other liquid fertilizers with some examples from the practices of the farmers in Europe and Africa.

Following this paper on the, “Effect of Bio-Fertilizer (NARO BHL BF) on Growth and Yield of Selected Vegetables,” was presented by Mr. Muwanika Tanansi Chris, CEO of National Agricultural Research



*Mr. Muwanika Tanansi Chris*

Organization (NARO) Holdings from Uganda. Mr Muwanika elucidated that different organic fertilizers applied positively and negatively by other institutions influenced the growth and yield of selected vegetables, while application of NARO’s self-produced bio-fertilizer improved the growth and yield of cabbage, tomato, eggplant and green pepper. Accordingly, the improvement on Kale was more on vegetative growth and had no significant impact on yield. It was further discussed that, based on the findings, NARO’s bio-fertilizer production scope increased to boost vegetable yield.

“Sustainable Agriculture, Possibilities in Eritrea,” was the presentation made by Engineer Tesfay Yihdego, General Manager



*Mr. Tesfay Yihdego (Engineer)*

of Tesinma Share Company, Eritrea. This paper highlighted the areas of preservation and improvement of soil, targets for agricultural production, systems of small scale-farming, solutions for agro-industries and improvement of agricultural production through water management.

Then Mr. Dawit Tesfai, Head of Agricultural Land Regulatory Unit in the Regulatory Services Department (RSD), presented his paper of a special focus: “Regulating Organic Fertilizer: Current Situation and Future Prospects.” Explaining that the RSD has already developed guidelines and standards for registration and



*Mr. Dawit Tesfai*

certification of organic fertilizers, he pointed out that this stage can ensure implementation of the guidelines and standards for registration and certification purposes.

Next was the presentation of the paper “NOGAMU’s experience in addressing the challenge of low production and productivity to respond to local, regional and global organic market opportunities” by Mr. Chariton Namuwoza, Chief Executive Officer of National Organic Agricultural Movement of Uganda (NOGAMU). Mr. Chariton emphasised on



*Mr. Chariton Namuwoza*

promoting and supporting local manufacturing of organic inputs. His organization provides a cocktail of services including advocacy, standards and certification, as well as market linkage services to local organic input manufacturers with the aim of ensuring increased farmer access to more affordable, effective and certified organic inputs. He concludes that this holistic approach – involving a combination of services - for both farmers and local organic input manufacturers is necessary to address the challenge of low production and productivity and is due to significantly impact Uganda’s volume and value of organic trade in the short and long run.



*Mr. Zerai Sultan*

Following, two distinct but interrelated papers, “Crop Response to Green Manure Application from Selected Shrubs and Tree Species in Smallholder farms in Eritrea” and “Effect of biomass application of intra hedge-row spacing of *Leucaena leucocephala* on the yield of Wheat,” were presented by Mr. Zerai Sultan, NARI’s Forestry Research Unit Head, and Mr. Huruy Frezghi from Watershed Research Unit of NARI, clearly confirmed that tree/shrub biomass transfer technology could be used as an alternative to synthetic fertilizers for vegetable production, while application of *L. leucocephala*



*Mr. Huruy Frezghi*

biomass as green manure is of potential use to farmers as organic source of nutrients.

Mr. Medhanie Mihreteab, Lecturer in Hamelmalo Agricultural College of Eritrea, presented a paper on his research findings entailed emphasis “Effects of Tillage, Farm Yard Manure and Mulch on Soil Physico-Chemical Properties and Yield of Sorghum (*Sorghum bicolor* L. Moench)”

Mr. Eugene Rurangwa, Land and Water Officer representing FAO’s Sub-regional Office for West



*Mr. Medhanie Mihreteab*

Africa, was given an opportunity to present his paper on promoting sustainable soil management to increase organic resources in farmlands and landscapes of Sub-Saharan Africa. This paper elaborated the need to promote sustainable soil management in Africa. He also highlighted the potential threats of soil function in Africa, also addressing several favorable approaches including that of boosting soil health through enhanced soil organic matter, agro-forestry, integrated crop-livestock-aquaculture management. This approach optimized nutrient management based on soil organic matter and innovative technologies in organic agriculture, among others.



*Mr. Eugene Rurangwa*



One of the sessions of the conference constituted handing of certificates of merit to three experts, three exemplary farmers and two private dairy processing businesses, Azieb Agroindustry and Tsegana Dairy Farm and Milk Processing Plant. The special award of the conference went to Ms. Adiam Rezene, Agronomy Expert in the Berik Sub-zone, for her pioneering role in nurturing the initiative of promoting organic liquid and solid fertilizers with special emphasis on Bokashi and domestic waste.



*Ms. Adiam Rezene receiving her award from H.E. Arefaine Berhe*

Mr. Filimon Afewerki, Plant Protection Expert in Keren Sub-zone of Anseba Region, was another expert who was awarded certificate of appreciation in the conference for his outstanding contribution in raising the awareness of farmers regarding organic fertilizer. The experts have been carrying out trials that ensured commendable degree of participation on the part of farmers. "In the beginning, majority of our farmers thought that usage of organic fertilizers was only a theoretical idea but when, later, they learned farmers who successfully utilized it in vegetable production, the idea of using it started to sink in. The use of Bokashi, fish amino acid and see weed fertilizer gave rise to a noticeable increment of productivity of many varieties of vegetables and their

shelf-life. So far, we have reached more than 30% of our farmers through our awareness-raising activities, accompanied participatory demonstrations. As a result, even farmers who did not have training on organic fertilizers were motivated to use them by seeing other successful farmers. We could confirm this with a growing demand of Indigenous Micro-organisms Level-3 (IMO-3).



*Mr. Filimon Afewerki receiving a certificate from H.E. Tewelde Kelati*

Mr. Teklehimanot Teweldemedhin, Agriculture Expert in Adi-quala Sub-zone of the Southern Region, is another expert who was worthy of receiving this certificate of appreciation. The three exemplary farmers who received certificates of appreciation are: Mr. Fesehatsion Kidane, Mr. Angesom Isaac and Mr. Teweldebrhan Zeweldi.



*Mr. Teklehimanot Teweldemedhin*



*Mr. Fesehatsion Kidane*



*Mr. Angesom Issac*



*Mr. Teweldebrhan Zeweldi (represented by his son)*



*Tsegana Dairy Farm and Milk Processing Plant, represented by Mr. Mussie Gaim*



*Azieb Agroindustry, represented by Mr. Abrham Michael*

Exposure visits were parts of the event where a team of participants of the conference, including all of those from abroad, visited ABDUR Underutilized Marine Resources Processing Plant in Massawa, and Azieb Agroindustry in Halhale. The team had also a chance to spend some hours beyond the coastal line of the Red Sea, swimming in the shores of the spectacular Green Island, which is important both ecologically and historically. In Halhale, the visiting team had ample time to observe the entire steps of workflow in the plant's cheese-making procedures and the subsequent activities that are being carried out to convert its entire byproducts to compost. It is after the winding up of this trip that our guests from abroad shared their overall impressions on the conference with us and we have quoted them as follows:

**Mr. Jürgen Amthor**

I am a biologist from Germany, founder of Eubenheimer Manufactur Private Company. I develop world-wide fertilizers and probiotic products with microorganisms, which I think is special. The conference was really great. This is my first visit to Eritrea and I could see a wonderful country with special perspectives. The conference was of a great profile and organization. We could see that there is a way to do away with chemical fertilizer and adhere to

regenerative farming system, giving sustainable life to the soil. I can say that the conference was further interesting and more helpful as a result of the fact that it materialized as the fruit of a cooperative initiative between the two Eritrean ministries. I feel that the National Organic Fertilizer and Bio-pesticide Promotion Committee has now ensured a promising network for the future.

There are a number of things that we can do together. I think Eritrea needs a high-standard organic fertilizer



*Mr. Jürgen Amthor*

factory, while taking the standardization capacity thereof to a higher level. Farmers need additional training on regenerative agricultural system. As an expert, I can help in these areas, and with the microorganisms that I produce. This can help Eritrea in securing both healthy and nutritious food.

**Mr. Eugene Rurangwa**



*Mr. Eugene Rurangwa*

I am Land and Water Officer at the Food and Agriculture Organization of United Nations (FAO). I was privileged to be nominated by our Assistant Director General and FAO Regional Representative for Africa to honor the invitation from the Minister of Agriculture to attend this important conference and make a presentation on FAO' work in promoting sustainable soil management and soil health to increase organic resources in farmlands and landscapes in Sub-Saharan Africa. I take this opportunity to convey my sincere gratitude to H.E. the Minister of Agriculture for having invited FAO.

I was impressed by the leadership of this Country. To see two Ministers of different portfolios (MoA and MoMR) to jointly hand and organize a Conference of such importance and going further in jointly putting in place a framework to promote organic fertilizers is a lesson learned in itself and very commendable. National experts and researchers have clearly shown, through different experiments conducted on the field and labs, that use of different types of organic fertilizer improved both soil productivity and soil health. It was amazing and insightful to see how solid and liquid organic fertilizers are being processed locally too.

I believe that this conference has awakened many people and raised the expectation high in exploring

all sustainable means possible to maintain soils alive through different innovative methods of sustainable soil health and fertility management. Such methods can improve soil organic matter and nutrients for sustainable production of safe food while preserving the natural capital and conserving biodiversity as well as the environment for the wellbeing of people and the planet as a whole. Experiences from Eritrea and Uganda showed how liquid and solid waste are valuable resources that could generate many benefits for people and the environment: production of organic fertilizers, electricity, cooking gas, soaps, etc. All these new ideas show how the works of researchers are fundamental.

It is beneficial that production and standardization of organic fertilizers go together because production of good quality of organic fertilizers will boost the efficiency of the products and the economic, social and environmental interests by all stakeholders. This also opens wider the doors for national, regional and international markets.

Production of organic fertilizers requires huge amount of biomass, manure from livestock and good quality of water. My advice would be to intensify agroforestry and forestry practices in farmlands and landscapes ecosystems, as well as in towns (urban forestry), intensify and diversify livestock practices, promote aquaculture, promote integrated water resource management and water access through rain water harvesting technique to ensure water supply all along the year without relying on sporadic rain fall.

It is within the mandate of FAO to mainly support technically countries in many areas of agri-food systems transformation like: land and water management, plant production and protection, livestock development, forestry, fisheries and aquaculture, agri-business and agro-industries and many more. And FAO has a Country Representation here in Eritrea who works closely with the MoA and other Ministries. Let me tell you also that such initiative from the Eritrean MoA towards development of organic fertilizers in a bid to improving soil health and boosting soil productivity as well as nutrition is in perfect coherence with the new FAO's Strategic Framework through FAO's Conceptual Framework of 4 Betters: Better Production, Better Nutrition, Better Environment, Better Life, letting no one behind. I believe that FAO will continue to support technically the ministry in this area through its diverse land and water management programs, such as AFRISOILS,



SOILS DOCTORS, AFRILAB, DIGITAL SOIL MAPPING, and Rain Water Harvesting, based on training and sharing of technical tools.

So, I would like to congratulate the Leadership of both Ministries (MoA and MoMR for the brilliant and important initiative of promoting organic fertilizers, essential to maintain soil health for many advantages. "WHERE THERE IS A WILL THERE IS A WAY," and as someone who has a good will, I wish them success in the near future.

**Mr. Chris Muwanika**

I am Crop Scientist and Agribusiness Manager representing NARO. The conference was well organized, coordinated and facilitated. I can say that the momentum generated and network created could be exploited to translate prototypes into tangible products for wider impact. Moreover, the conference provided a great platform to learn, unlearn and return new insights about organic inputs. It clearly demonstrated the potential of organic inputs in sustaining productivity and alleviating environmental challenges. The level of stakeholder engagement as well as participation was commendable. The desire of the Eritrean experts for intellectual challenge is highly appreciated.

Having said this, I would like to encourage the National Organic Fertilizer and Bio-pesticide Promotion Committee to further focus on concretization of evidence/data and development of standardized plan protocols etc. NARO espouses partnerships and is open to collaboration in aspects that lead to agro-transformation. Exchange of scientists to provide technical support or training could be possible, in addition to joint proposal draft for regional projects. Additionally, I do recommend annual events of this type to give added momentum to the initiative.



*Mr. Chris Muwanika*

**Mr. Chariton Namuwoza**



*Mr. Chariton Namuwoza*

I am the CEO of NOGAMU, the umbrella organization for organic producers in Uganda, which has been in existence for 22 years. Our government made a declaration in the form of approving the national organic agriculture policy in 2019 and, consequently, we have seen a number of investors, including organic fertilizer manufacturers. So, we are very excited, as an organization, to be part of the National Organic Fertilizer Conference organized by Eritrea. We have had a wonderful stay since our arrival. We especially enjoyed the warmth, love, the peaceful and welcoming nature of the Eritrean people, and most importantly, the peace across we have visited: Asmara, Massawa and here in Halhale.

We have further seen a lot of commitments from the government regarding this conference: Many ministers participated in every single session of the conference. We also came across an extraordinary experience of the simple lifestyle the high-ranking Eritrean officials have. Everybody interacted very freely with them and their zeal to take Eritrea to a higher level of organic farming was clearly noticeable. Such a commitment on the part of the Eritrean government is an important strong side. There is, of course, a considerable degree of commitment from the private sector too. It was a wonderful time for me as I just visited Eritrea for the first time. And I am excited, on behalf of my organization, that we can happily and freely share our knowledge and experiences, as Uganda is the African country with the first certified organic project, and a country with the leading number of organic farmers in Africa and the second one in the world. I have learnt a lot

that I should take back home as well. I think that it is also right to consider ourselves as resources, not only to our individual countries but for other African countries too.

Summary of the lessons learnt: By Mr. Dermas Sultan, Chairperson of the National Organic Fertilizer and Bio-pesticide Promotion Committee:

1. Need for further improvement in terms of standardization and productivity of organic fertilizers
2. Need for further improvements in the process of identification, culturing and handling of organic fertilizers

3. Need to import equipment and raw materials needed for production of high-quality and bumper organic fertilizers (IEO concentrate, molasses etc)
4. Need for further improvements in the fermentation and packaging process of liquid fertilizers
5. Initiative to take part in African Summit on Organic Fertilizer
6. Linkages and relationships to target need to pursue:
  - A. Training opportunities
  - B. Lab facilities
  - C. Accreditation and certification of production (at national and regional level)
7. Looking for prospects of export of organic fertilizer

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