



## WEDNESDAY, November 20

*Check the website or mobile app for the latest changes*

### PLENARY SESSION

Wednesday, November 20 08:45 - 10:20 Hannibal

Chair: Nadia Cherif

#### In Hannibal Room

- 08:45 **Welcome to Tunisia – Prof. Saloua Sadok, INSTM Director**
- 09:00 **Welcome Address – Foluke Areola, President Afruican Chapter, WAS**
- 09:05 **Opening Remark from African Union – AUDA-NEPAD**
- 09:10 **Opening Remark – Ezzedine Ben Chiekh, Minister of Agriculture, Water Resources and Fisheries**

#### In Exhibit Hall

- 09:20 **Official Opening of Exhibition Hall and Break**

#### In Hannibal Room – Plenary Talk

- 09:45 **Constantinos C. Mylonas**  
FISH REPRODUCTION IN MEDITERRANEAN AQUACULTURE AND ITS CONTROL
- 10:15 **Student Spotlight Competition**

# TUNISIA'S JOURNEY TO SUSTAINABLE AQUACULTURE: BEST PRACTICES AND EMERGING TRENDS

Wednesday, November 20 10:40 - 17:40 Hannibal

Chair: Nadia Chérif, Mohamed Salah Azaza

Aquaculture in Tunisia has seen remarkable growth over the past few decades, evolving into a key contributor to food security, economic development, and sustainability. As one of the Mediterranean's leading aquaculture producers, Tunisia boasts diverse aquaculture activities ranging from inland farming to marine fish cultivation, shellfish farming, and spirulina production. This session will showcase Tunisia's aquaculture journey, with a focus on its progress in health and biosecurity, scientific innovation, and the capacity-building initiatives that drive the sector's growth. Through a combination of presentations, success stories, and expert discussions, we will highlight Tunisia's achievements while addressing the challenges and opportunities that lie ahead. The session aims to foster regional cooperation and encourage partnerships to support sustainable and resilient aquaculture development in Tunisia and beyond.

## Objective of the Session

The primary goal of this session is to showcase Tunisia's achievements and contributions to sustainable aquaculture. It aims to enhance understanding of the country's regulatory and developmental landscape, foster partnerships, and encourage knowledge-sharing. Additionally, the session will discuss how Tunisia is addressing global and regional challenges in aquaculture, including disease management, biosecurity, and sustainable feed practices, making this an important forum for future initiatives and investments.

## Expected Outcomes

This session aims to:

- Increase international visibility for Tunisia's aquaculture achievements and capacities.
- Foster regional and international partnerships for research, development, and investment in Tunisian aquaculture.
- Identify new opportunities for advancing sustainability, biosecurity, and feed innovation within the aquaculture sector.
- Strengthen Tunisia's position as a regional hub for aquaculture expertise and encourage the transfer of knowledge and best practices.

The session will gather a diverse audience, including:

- **Public sector representatives:** government officials, regulatory authorities, and public organizations.
- **Private sector stakeholders:** aquaculture farmers, industry associations, cooperatives, processors, exporters, and feed companies.
- **Investors** interested in exploring growth opportunities in the Tunisian aquaculture sector.
- **Researchers and academics** from universities and research institutions.

## Preliminary Agenda for the Session:

1. **Introduction and Context of Aquaculture in Tunisia**
  - A historical look at the evolution of the aquaculture sector and a review of the regulatory framework that has supported its growth.
  - How Tunisia is aligning its aquaculture practices with the SDGs, with a focus on sustainability and environmental stewardship.
2. **Progress in Health and Biosecurity**
  - An overview of Tunisia's health surveillance systems, biosecurity measures, and strategies for managing aquatic diseases.
  - Key accomplishments and ongoing efforts in disease prevention, control, and biosecurity that are critical for sector resilience.
3. **Scientific Research and Innovation**
  - Presentation of significant research projects that are advancing aquaculture practices in Tunisia.
  - Innovations in aquaculture technology and sustainable practices that are driving sectoral growth.
4. **Aquaculture Training and Education**
  - Review of Academic programs and vocational training in aquaculture, highlighting capacity-building efforts.
5. **Video and Testimonials: Tunisian Success Stories**
  - Testimonials from industry leaders and entrepreneurs highlighting achievements and growth stories within the sector.
6. **Questions and Discussions**
  - Open exchange with participants and international experts to strengthen collaboration and explore new development pathways.
  - A focus discussion on sustainable aquaculture feed, highlighting the challenges and opportunities in the regional and Tunisian contexts.

## COUNTRY REPORTS

Wednesday, November 20 10:40 - 12:40 Amphi Cesar

Chairs: Nevine Abou Shabana, Hichem Karaa

### Introduction

Farming of aquatic organisms such as fish, shellfish, and aquatic plants, plays a crucial role in meeting the growing demand for seafood, enhancing food security, and generating livelihood opportunities.

Country report session is focusing on the aquaculture sector, a cornerstone of our nation's food production and economic development.

In this session, we will explore a comprehensive analysis of the aquaculture industry in our country, shedding light on key aspects such as production trends, technological advancements, market dynamics, and sustainability practices. By examining the current state of aquaculture within African countries, we aim to provide valuable insights into the sector's strengths, challenges, and opportunities for growth.

Through this country report, we seek to not only showcase the achievements and potential of our aquaculture sector but also to address critical issues such as environmental sustainability, market competitiveness, and regulatory frameworks. By fostering a deeper understanding of the sector's dynamics, we can pave the way for strategic interventions, policy recommendations, and collaborative efforts that will propel the aquaculture industry towards a more resilient and prosperous future

### Objectives

- 1- Identifying Challenges to understand the current challenges faced by the aquaculture sector in each African country.
- 2- Assessing Market demands through determining the existing and emerging market demands for aquaculture products.
- 3- Exploring potential solutions by Identifying innovative technologies, sustainable practices, policy interventions, and strategic collaborations that can enhance productivity, quality, and market competitiveness in aquaculture.
- 4- Promoting Sustainability Emphasize the importance of sustainable aquaculture practices for long-term growth and environmental conservation.
- 5- Encouraging Stakeholder Engagement by fostering collaboration among government agencies, industry stakeholders, research institutions, and communities to address challenges collectively.
- 6- Strategic Planning for Growth by developing a roadmap for the sustainable growth and competitiveness of the aquaculture sector in alignment with market demands.

### Expected Outcomes from the Country Report Session on the Aquaculture Sector

- **Enhanced Understanding:** Participants will gain a comprehensive understanding of the current state of the aquaculture sector in African countries including production trends, challenges, and opportunities.
- **Insightful Analysis:** The country report session will provide in-depth analysis and insights into key aspects of the aquaculture industry, such as market dynamics,

- technological advancements, and sustainability practices.
- **Identification of Challenges:** Participants will identify and understand the challenges facing the aquaculture sector, including environmental concerns, market fluctuations, regulatory hurdles, and resource constraints.
- **Strategic Recommendations:** The session is expected to yield strategic recommendations and actionable insights to address the identified challenges and capitalize on opportunities for sustainable growth and development in the aquaculture industry.
- **Stakeholder Engagement:** The session will facilitate meaningful engagement and collaboration among stakeholders, including government agencies, industry representatives, researchers, and community members, to collectively address challenges and drive positive change in the aquaculture sector.
- **Promotion of Best Practices:** By showcasing successful practices and innovative approaches within the aquaculture industry, the session will promote the adoption of best practices and sustainable strategies for improved productivity and environmental stewardship.
- **Capacity Building:** The outcomes of the country report session are expected to contribute to capacity building initiatives, knowledge sharing, and skills development within the aquaculture sector, empowering stakeholders to enhance their competencies and competitiveness.
- **Pathway to Sustainable Development:** Ultimately, the expected outcome is to chart a pathway towards sustainable development of the aquaculture sector, ensuring food security, economic prosperity, and environmental sustainability for the country's future generations.

### Session agenda

- 10.40 Opening Remarks and Welcoming of Participants**  
**Moderators: Nevine Abou Shabana and Hichem Kara**  
 Introduction

### North African Countries

- 10.45 Tunisia presentation (as host) TBA**
- 10.55 Egypt Presentation - Sherif Sadek**  
 THE EGYPTIAN AQUACULTURE SITUATION AND PREDICTIONS FOR THE FUTURE
- 11.05 Libya presentation - Fatima Saeed**  
 DEVELOPING AN AQUACULTURE INDUSTRY STRATEGY IN THE LIBYAN BLUE ECONOMY CONTEXT
- 11.15 Algeria Presentation TBA**
- 11.25 Q & A session**

### Other African countries

- 11.35 Uganda Presentation John Walakira**
- 11.45 Nigeria presentation Lanre Badmus**

11:55	<b>Alexander Kefi</b> , Motseki Hlatshwayo, Katrina Hilundwa, Ahmed Khan GIONAL AQUACULTURE INTERVENTIONS: A CASE OF PROFISHBLUE IN SOUTHERN AFRICAN DEVELOPMENT COMMUNITY	
12.05	<b>Tanzania Report</b>	TBA
12.15	<b>Zimbabwe Report</b>	TBA
12.25	<b>Malawi Report</b>	TBA
12.35	<b>Kenya Report</b>	<b>Victoria Taurus</b>
12.45	<b>Q&amp;A and Wrap up</b>	<b>Moderators</b>

## THRIVING BLUE ECONOMY THROUGH SUSTAINABLE AQUACULTURE

Wednesday, November 20 10:40 - 12:40 Cesar

Chairs: Laila Basti, Rodrigue Yossa



### Session Overview

This session is designed to raise awareness of the WorldFish *Asia–Africa BlueTech Superhighway* (AABS) programme among its stakeholders in Africa and to engage participants in a comprehensive discussion on developing and scaling sustainable, nature-positive, and climate-smart coastal and marine aquaculture. A key focus area for engagement will be the scaling the implementation of Integrated Multi-Trophic Aquaculture (IMTA), which is one of AABS' key objectives as a pathway to fostering blue economy. The session will also delve into themes covering aquatic animal health, feed and nutrition, genetics, and postharvest challenges and solutions.

Students will be provided with an opportunity to present their research related to aquaculture, including IMTA, postharvest challenges related to food loss and waste, food safety and market access. Prizes will be awarded for the best student research presentations, with a one-year follow up by WorldFish to publicise their achievements and the impact of their work on the development of sustainable aquaculture practices.

**The Asia–Africa BlueTech Superhighway (AABS)** programme harnesses South–South collaboration to assess, adapt and scale evidence-based innovations and models for delivering nature-positive impact through aquatic food systems. Implemented by WorldFish in collaboration with multiple partners, **AABS** aims to transform the livelihoods of coastal communities across Asian and African countries, particularly for women and youth, and help restore marine and coastal ecosystems by developing sustainable and resilient aquatic food systems. Funded by UK International Development under the Blue Planet Fund, AABS is being implemented in two phases over seven years (2023–2030).

## Session objectives

1. **Raise awareness of AABS:** Provide project overview with a focus on the goals, activities, and expected outcomes of the project in Africa under its work packages WP2 and WP3, topics aligned with AFRAQ.
2. **Highlight nature-positive and climate-smart aquaculture solutions:** Explore the importance of nature-positive and climate-smart systems, such as IMTA, in addressing aquaculture challenges in Africa.
3. **Foster collaboration and knowledge exchange:** Encourage participants to engage in meaningful dialogue on key challenges in aquaculture while identifying potential solutions. Facilitate connections to promote ongoing collaboration in sustainable coastal and marine aquaculture, particularly IMTA, towards AABS' goals.
4. **Inspire innovation and support youth through student research presentations:** Provide a platform for students and emerging scientists to present innovative research related to aquaculture, offering an opportunity for feedback, learning, possible collaboration and follow-up support.
5. **Ensure long-term impact through follow-up:** Establish at least a one-year follow-up mechanism to track the progress of student award winners and showcase their contributions to the blue economy through AABS and WorldFish communication channels.

## Expected outcomes:

- **Enhanced awareness of AABS, sustainable aquaculture and IMTA solutions** that address challenges.
- **Practical insights for improving aquaculture productivity**, reducing environmental impacts, and increasing resilience to climate change.
- **New collaborations and partnerships** fostered through discussions and networking.
- **Recognition and support for emerging researchers**, encouraging continued innovation in the field of sustainable aquaculture.
- **Long-term impact through follow-up** on student research contributions, ensuring their ideas lead to meaningful improvements in the blue economy.

## 09.40 AABS Project Presentation and Panel Discussion

- **Introduction to AABS (15 minutes)** – Leila Basti
  - Concise overview of AABS goal, objectives, strategy and expected outcomes, with greater focus on WP2 and WP3 in Africa.
  - Highlight the importance of nature-positive and climate-smart aquaculture solutions, specifically Integrated Multi-Trophic Aquaculture (IMTA).

### Panel discussion

- **Panelists:** A selection of AABS project partners and experts.

Suggested panelists:

- **Andrew Wekesa Wamukota** - Head of the Department of Environmental Studies and Community Development at Pwani University in Kenya. He also serves as the Africa Regional Coordinator for the Feed the Future Innovation Lab for Fish, focusing on environmental science, socioeconomics, and fisheries conservation
- **Ismael Aaron Kimirei** – Director General, Tanzania Fisheries Research Institute (TAFIRI)
- **P. Odote, Senior Scientist** - Kenyan Marine Fisheries Research Institute, Postharvest Technologies.
- **Yahya Mgawe** - He is ex-CEO of the FETA (Fisheries Education and Training Agency, Tanzania) and an Independent Consultant on Fisheries

### Topics:

- Key challenges in improving aquaculture and IMTA, particularly for Africa.
- The role of AABS in addressing these challenges.
- Health management, innovations in sustainable feed, addressing postharvest challenges.
- Insights into implementing and scaling nature-positive and climate-smart practices.

### Q&A

## FISH BIOLOGY, ECOLOGY, ENVIRONMENTAL MANAGEMENT

Wednesday, November 20 10:40 - 15:40 Odyssey

Chair: TBA

- 10:40** **Baba Usman Ibrahim**, Balogu Dennis Odionyenfe  
FOOD AND FEEDING HABITS OF THE CICHLIDAE IN TAGWAI RESERVOIR, NIGER STATE, NIGERIA
- 11:00** **Awwal Bamanga**  
POLLUTION OF SEDIMENTS BY HEAVY METALS IN LAGOS HARBOUR AND LAGOONS-SOURCES, PATHWAYS AND MANAGEMENT
- 11:20** **Guegang Tekou**, Judith Georgette Makombu, Claudine Tekounegning Tiogue, Augustave Kenfack  
HABITAT, GROWTH AND REPRODUCTION OF THE CLAM *Galatea Paradoxa* (BRUGUIÈRE, 1797), ENDOGENOUS BIVALVE IN THE LOWER SANAGA, CAMEROON



- 11:40 António Chiloia**  
RESPOSTAS FISIOLÓGICAS DA TILÁPIA ANGOLANA *Oreochromis angolensis* EM DIFERENTES GRADIENTES DE SALINIDADE
- 12:00 Agumassi Tesfahun**, Sale Alebachew  
FEEDING PATTERN OF THE AFRICAN BIG BARB *Labeobarbus intermedius* (RÜPPEL, 1836) (PISCES: CYPRINIDAE) IN RIBB RESERVOIR, LAKE TANA SUB-BASIN, ETHIOPIA
- 14:00 Festus Adeosun**, Olamide Modinat Adeosun, Funmilayo B. Oyekanmi, Oluwadamilola E. Olemoh  
EVALUATION OF STOMACH CONTENT AND FEEDING HABITSs OF *Tilapia zillii* IN LOWER OGUN RIVER, AKOMOJE WATER RESERVOIR, NIGERIA
- 14:20 Uchenna Onyeizu**, Emeka Awom, Ugo Panebi  
COMPARATIVE ASSESSMENT OF THREE KEY PHYSICOCHEMICAL PARAMETERS AND ICHTHYOFAUNA ACROSS FOUR RIVERS IN IKWUANO LOCAL GOVERNMENT AREA, ABIA STATE, NIGERIA

## ASC'S EXPANDED MISSION AND ENGAGEMENT IN AFRICA Aquaculture Stewardship Council - ASC Workshop

Wednesday, November 20 10:40 - 12:40 Olivier

Chair: Roy van Datselaar

### Workshop Outline

Title: Scaling improvements and driving impact in the aquaculture sector in Africa

Intro presentation: Introduction to ASC and the ASC Improver Programme, strategic direction on improver space, potential role for ASC in guiding sector governance, mobilizing finance

Workshop forum: Discussion with key stakeholders to collect input and perspectives on needs for aquaculture sector in Africa and the role that ASC could play vs. other actors

- role of certification vs. Improver Programme providing support
- approaches to drive scale in Africa
- What is working well vs. Where is the need for support and what type of support is needed?
- opportunities for partnerships

## FEED NUTRITION PHYSIOLOGY

Wednesday, November 20 10:40 - 17:40 Hall 3a

Chairs: Ashraf Goda, Znati Walid, Mohamed Azaza



- 10:40 Brian C. Small**  
SUSTAINABLE FISH NUTRITION FOR AQUACULTURE IN A CHANGING CLIMATE
- 11:00 Efstratios Roussos**, Vasiliki Ilia, George Karafios, Iani Chihaia, Jan van Eys, George Triantaphyllidis, Odysseas P. Tzortzatos, Dimitra K. Toubanaki, Antonia Efstathiou, Enric Gisbert, Evdokia Karagouni, Yannis Kotzamanis  
EFFECTS OF GRADED DIETARY LEVELS OF SOLID-STATE FERMENTED SOYBEAN MEAL ON GROWTH, IMMUNITY, AND INTESTINAL HEALTH IN EUROPEAN SEABASS *Dicentrarchus labrax* JUVENILES
- 11:20 Margarida Saavedra**, Ana Vasconcelos, Ana Catarina Matias, Florbela Soares, Marisa Barata, Luís Conceição, Pedro Pousão-Ferreira  
DIETARY TRYPTOPHAN EFFECT ON MEAGRE *Argyrosomus regius* JUVENILES GROWTH, PROTEIN DEGRADATION AND ANTIOXIDANT ENZYMES ACTIVITY
- 11:40 Nicolas Tanrattana**, Sophie Reys, Pierre Fortin  
EVALUATING THE EFFECT OF ECONOMIX TO IMPROVE PROTEIN AND AMINO ACID DIGESTIBILITY OF MARINE FISHES
- 12:00 Patrik Tang**, Neda Gilannejad, Marius Nilsen, Simon Menanteau-Ledouble, Marius Takvam, Kristine O. Rostad, Marie O. Randulff, Marnix Gorissen, Giovanni M. Cusimano, Tamás Bardócz, Lars Ebbesson, Naouel Gharbi  
EFFECT OF DIFFERENT INCLUSION RATES OF YEAST *Candida utilis* AS PROTEIN SOURCE IN HYBRID AFRICAN CATFISH *Clarias gariepinus* × *Heterobranchus longifilis* STRESS RESPONSE AND LIPID METABOLISM
- 12:20 Guillaume Le Reste**, Eva Rondeau, Frédéric Mauny, Margaux Le Gourrierec  
QUALITY OF FISH MEAL USED IN AQUAFEED MANUFACTURING PLANTS IN SUB-SAHARAN FACTORIES
- 12:40 LUNCH**
- 14:00 Dominique Corlay**  
REVIEW OF THE BENEFITS OF FISH PROTEIN HYDROLYSATES FROM PELAGIC SPECIES IN AQUAFEED

- 14:20** **Menaga Meenakshisundaram**, Paul Nyangau, Zewdu Abro, Menale Kassie, Subramanian Sevgan, Jonathan M. Munguti, Kevin O. Obiero, Domitila N. Kyule, Jimmy Mboya, Rodrigue Yossa, Ahmad F. Nurulhuda, Chrysantus M. Tanga  
BASELINE ANALYSIS OF LOCAL FEED INGREDIENTS FOR ENHANCING SCALABLE AQUAFEEDS IN KENYA'S RESILIENT AQUATIC FOOD SYSTEMS
- 14:40** **Felicia Joshua**, Victor Kuri, Mike Berry, Brad Saville, Daniel Merrifield  
MANNAN OLIGOSACCHARIDE FROM COCONUT WASTE IMPROVES INTESTINAL HEALTH OF ATLANTIC SALMON *Salmo salar* (PARR)
- 15:00** **Virginie Claeysens**, Kiranpreet Kaur, H Segovia, G.O. Raymo, Geronimo Leonardi, Alberto Nunes  
EFFECT OF KRILL MEAL ON THE REPRODUCTIVE PERFORMANCE OF BROODSTOCK NILE TILAPIA *Oreochromis niloticus*
- 15:20** **Taofik Adeiza Momoh**, Folasade Damilola Damilola Amulejoye, Benjamin Eynon, Holger Kühlwein, Victor Kuri, Daniel Merrifield  
PURIFIED BREWERS' YEAST-DERIVED FUNCTIONAL FEED ADDITIVES ALLEVIATE SOYBEAN MEAL-INDUCED ENTERITIS IN ATLANTIC SALMON PARR
- 15:40** **BREAK**
- 16:00** **Bo Groth Bendsen**, Abdel-Fattah El-Sayed, Bo Groth Bendsen, Ester Santigosa  
IMPACT OF LIQUID PHYTASE SUPPLEMENTATION ON GROWTH, FEED UTILIZATION, PHOPHOROUS RENTENTION, ECONOMIC RETURN AND IMMUNE RESPONSE IN NILE TILAPIA REARED UNDER LAB AND FIELD CONDITIONS
- 16:20** **Virginie Claeysens**, Kiranpreet Kaur, Daniel Montero, Marta Carvalho, Antonio Serradell, Mónica Betancor, Marisol Izquierdo, Silvia Torrecillas  
BENEFITS OF DIETARY KRILL MEAL TOWARDS BETTER UTILIZATION OF NUTRIENTS AND RESPONSE TO OXIDATIVE STRESS IN GILTHEAD SEABREAM *Sparus aurata* JUVENILES
- 16:40** **Emmanuel Ajani**, Halwart Mathias, Bamidele Omitoyin, Oladeji Kareem, Austin Stankus, Oluwafemi Ajayi, Olugbenga Orisasona, Tajudeen B. Akinrinola, Adetola Jenyo-Oni, Oyebola Ajayi, Oladayo Akoleowo  
EFFECT OF DIFFERENT ORGANIC SUBSTRATES ON MINERAL AND FATTY ACIDS PROFILE OF BLACK SOLDIER FLY *Hermetia illucens* LARVAE
- 17:00** **Judith Georgette Makombu**, Clovis N. Chombe, Geneva O. Nkongho, Rollins N. Ndi, Mercy B. Verkijika, Cynthia A. Bih, Gerry P. Sonkeng, Jules R. Ngueguim, Janet H. Brown  
POTENTIAL INERT DIETS TO SUPPLEMENT *ARTEMIA* IN LARVICULTURE OF THE GIANT AFRICA RIVER PRAWN *Macrobrachium vollehovenii*
- 17:20** **Tafadzwa Maredza**, Charles Mutisi, Vimbai Hamandishe, Hillary Mugiyi, Claudious Gufe  
MITIGATING AFLATOXIN B1 (AFB1) TOXICITY IN NILE TILAPIA *Oreochromis niloticus* FEED USING NATURAL CLAY CHISUMBANJE VERTISOL

## IMTA AND AQUAPONICS

Wednesday, November 20 14:00 - 15:40 Amphi Cesar

Chairs: Kevan Main, Peter Britz

- 14:00 Ashraf Goda**, Nevine Abou Shabana, Ahmad Aboseif, Mostafa Taha, Eman Mohammady, Hazem Eltawab  
INTEGRATED MULTI-TROPHIC AQUACULTURE (IMTA)-AQUAPONICS SYSTEM BASED ON INTERNET OF THINGS (IOT)
- 14:20 Flower E. Msuya**  
INTEGRATED MULTI-TROPHIC AQUACULTURE (IMTA): CAN IT BE A FUTURE FOR SUSTAINABLE MARINE AQUACULTURE IN TANZANIA?
- 14:40 Henk B. Stander**  
AQUAPONICS-BASED SOCIAL ENTERPRISES IN SOUTH AFRICA, A REVIEW
- 15:00 Kevan Main**, Adam N. Bell, Lior Guttman, Andrea Tarnecki, Nicole R. Rhody, Michael Nystrom, Serina J. Ergas  
COMBINING AQUACULTURE BIOFILTERS TO IMPROVE SUSTAINABILITY AND RECOVER EXCESS NUTRIENTS IN MARINE INTEGRATED MULTI-TROPHIC AQUACULTURE SYSTEMS
- 15:20 Sherif Sadek**, Omar Badran, Khaled Sherif  
EFFECT OF MONOSEX NILE TILAPIA *Oreochromis niloticus* STOCKING DENSITY ON THE BATAVIA LETTUCE *Lactuca sativa* GROWTH PERFORMANCE IN A SANDPONIC SYSTEM

## WAS PALOP PLATFORM (PORTUGUESE)

Wednesday, November 20 16:00 - 17:40 Amphi Cesar

Chair: Francisca Delgado

**The World Aquaculture Society (WAS)** was founded in 1969 and its membership has grown significantly in over 100 countries, representing the global aquaculture community. In order to meet the expanding international nature of the Society and to address specific needs in various areas of the world, the WAS has created Chapters in the United States, Japan, Korea, the Latin American and Caribbean region, the Asian-Pacific region, and most recently in Africa.

Aquaculture will undoubtedly have to play an increasingly important role in meeting global demand for fisheries products as the world population continues to expand and fisheries stocks approach their biological limits. Through its commitment to excellence in science, technology, education and information exchange, the WAS will endeavor to contribute to the progressive and sustainable development of aquaculture throughout the world.

The African Chapter of the World Aquaculture Society (WAS-AC) was established in November 2018 as a platform to address the needs and aspirations of the African aquaculture sector. The annual meetings of WAS are recognized as the “premier” aquaculture conferences and exhibitions - bringing together a wide variety of aquaculturists from the commercial, academics, governmental, development partners and others actors in the field - in line with the WAS's vision and strategic plan.

At AFRAQ23, Zambia, the WAS-AC launched a PALOP platform (Portuguese Speaking African Countries), also known as Lusophone Africa which consists of six African countries: Angola, Cape Verde, Guinea-Bissau, Mozambique, São Tomé and Príncipe and, since 2011, the accession of Equatorial Guinea. Almost all of these countries have prioritized the aquaculture development for food and nutrition security, livelihoods and other economic benefits. However, production volumes remain low but nascent for most of these countries. This is due to a number of overarching factors, including lack of adequate skills and education.

It is against this background that WAS, through its level commitment to excellence in science, technology, education and information exchange, will endeavor to contribute to the progressive and sustainable development of aquaculture to the PALOP world. We believe this can be achieved through; strategic connections between PALOP and other Communities of Portuguese Speaking Countries (CPLP), which include Brazil, Portugal and East Timor, joint research initiatives, focused training and mentorship programmes; and other intervention-support programmes in line with to WAS mandate.

It has been demonstrated that the collaboration and exchange of experiences between African countries and amongst PALOP, in particular, are crucial for strengthening capacities in aquaculture development.

Join us as we connect with the Portuguese audience at AFRAQ24.

#### AGENDA

- Opening Adress by PALOP Co-ordinator: Dr Francisca Delgado
- Setting the scene: Overview of Aquaculture in the PALOP opportunities and challenges (TBA)
- Open discussion: What WAS can do to serve aquaculture in PALOP?
- Case Study UNIDO/MAMAP Project
- Case Study WIMAAFRICA in Portuguese zones
- Way forward actions

*English-Portuguese interpretations/translations will be available if requested.*

Contact reference: [frapidelgado14@gmail.com](mailto:frapidelgado14@gmail.com) / [africanchapter@was.org](mailto:africanchapter@was.org)

## Plataforma WAS-PALOP - EVENTO PARALELO

**Data: A Definir Horário: A Definir Localização: A Definir**

**A Sociedade Mundial de Aquicultura (WAS)** foi fundada em 1969 e o seu número de membros cresceu significativamente em mais de 100 países, representando a comunidade global da aquicultura. A fim de atender à natureza internacional em expansão da Sociedade e atender às necessidades específicas em diversas áreas do mundo, a WAS criou Capítulos nos Estados Unidos, no Japão, na Coreia, na região da América Latina e Caraíbas, na região Ásia-Pacífico, e mais recentemente em África.

A aquicultura terá, sem dúvida, de desempenhar um papel cada vez mais importante na satisfação da procura global de produtos da pesca, à medida que a população mundial continua a expandir-se e os mananciais pesqueiros se aproximam dos seus limites biológicos. Através do seu compromisso com a excelência na ciência, tecnologia, educação e troca de informações, a WAS esforçar-se-á por contribuir para o desenvolvimento progressivo e sustentável da aquicultura em todo o mundo.

O Capítulo Africano da Sociedade Mundial da Aquicultura (WAS-AC) foi criado em Novembro de 2018 como uma plataforma para responder às necessidades e aspirações do sector Africano da aquicultura. As reuniões anuais da WAS são reconhecidas como as “principais” conferências e exposições sobre aquicultura - reunindo uma grande variedade de aquicultores dos sectores comercial, académico, governamental, parceiros de desenvolvimento e outros intervenientes no terreno - em linha com a ‘visão da WAS e o plano estratégico.

Na AFRAQ23, Zâmbia, o WAS-AC lançou uma plataforma PALOP (Países Africanos de Língua Oficial Portuguesa), também conhecida por África Lusófona que é constituída por seis países africanos: Angola, Cabo Verde, Guiné-Bissau, Moçambique, São Tomé e Príncipe e, desde 2011, a adesão da Guiné Equatorial. Quase todos estes países deram prioridade ao desenvolvimento da aquicultura para a segurança alimentar e nutricional, meios de subsistência e outros benefícios económicos. No entanto, os volumes de produção continuam baixos, mas incipientes para a maioria destes países. Isto deve-se a uma série de factores abrangentes, incluindo a falta de competências e de educação adequadas.

É neste contexto que a WAS, através do seu compromisso com a excelência na ciência, tecnologia, educação e intercâmbio de informação, se esforçará por contribuir para o desenvolvimento progressivo e sustentável da aquicultura no mundo PALOP. Acreditamos que isto pode ser conseguido através de; ligações estratégicas entre os PALOP e outras Comunidades dos Países de Língua Portuguesa (CPLP), que incluem o Brasil, Portugal e Timor-Leste, iniciativas conjuntas de investigação, focados em programas de formação e mentoria; e outros programas de apoio à intervenção em conformidade com o mandato da WAS.

Tem sido demonstrado que a colaboração e a troca de experiências entre os países africanos e entre os PALOP, em particular, são cruciais para o reforço das capacidades no desenvolvimento da aquicultura.

Junte-se a nós enquanto nos conectamos com o público português na AFRAQ24.

## AGENDA

- Discurso de abertura da Coordenadora dos PALOP: Dra. Francisca Delgado
- Cenário: Panorama da Aquacultura nas Oportunidades e Desafios dos PALOP (A Definir)
- Discussão aberta: O que pode a WAS fazer para servir a aquacultura nos PALOP?
- Estudo de Caso Projecto UNIDO/MAMAP
- Estudo de caso WIMAFRICA em zonas portuguesas
- Acções futuras

## REFRAMING THE AQUACULTURE DEVELOPMENT PARADIGM IN AFRICA

Wednesday, November 20 14:00 - 15:40 Cesa

Chair: Peter Britz

Public and donor funded aquaculture farmer development interventions in Africa have a long history with generally poor outcomes, as measured in terms of increased fish production to meet national supply needs. In recent years, commercial aquaculture has begun to grow organically led by pioneer entrepreneurs, operating largely independently of traditional donor and government supported aquaculture development programmes. The workshop session presentations will diagnose the shortcomings of the 'technical fix' approach employed by public and donor funded aquaculture development programmes, and demonstrate why a shift to a more holistic, human-centred paradigm is required focusing on the empowerment of farmers as aquaculture business entrepreneurs. In practical terms, this requires a shift from public sector-led aquaculture technical 'training' focusing on fish breeding and feeding, to the empowerment of farmers as value chain actors through aquaculture business management mentorship by educators with commercial aquaculture business experience.

### Programme

1. *Framing the problem.* The shortcomings of the 'technical fix' development approach and the need for a 'human-centred' empowerment paradigm. Prof Peter Britz, Rhodes University African Union Centre of Excellence in Aquaculture and Fisheries.
2. *Defining key concepts.* Shifting the development paradigm from farmer 'training' to 'adult education'. Dr Joy Alexander, Nelson Mandela University.
3. *Case study of Empowerment in Action.* Data-led aquaculture business management mentorship of tilapia farmers on Lake Victoria by educators with commercial aquaculture experience. Mr Gavin Johnson, ACMS.
4. *Case study of Empowerment in Action.* The Bottom-Up Approach – Giving Aquaculture Stakeholders/Farmers a Voice in Leading the Way to Empowerment: The FISH4ACP Story. Ms Aisha Ebrahim, FAO Fish4ACP Nigeria Catfish Value chain Programme.
5. *Panel discussion.* Speakers and representatives of development funding institutions.

**GENDER AND YOUTH**

Wednesday, November 20 16:00 - 17:40 Cesar

Chairs: Joy Alexander, Jennifer Gee

- 16:00 Lovin Kobusingye**, Gertrude Atukunda, Cassius Aruho, John Walakira, Veronica Mpomwendwa  
GENDER-SPECIFIC ANALYSIS AND MAPPING OF THE AFRICAN CATFISH VALUE CHAIN IN UGANDA: A FOCUS ON WOMEN'S ROLES AND OPPORTUNITIES
- 16:20 Joy Alexander**  
THE MUDDY WATER OF THE UNIVERSITY GENDER POND 'WHY IS A GENDER MAINSTREAMING APPROACH NECESSARY TO ACHIEVE AFRICA'S AQUACULTURE DEVELOPMENT POTENTIAL?'
- 16:40 Karen Veverica**, Yaya Sow, Garrison Harward  
UPDATE ON DOUBLE-USE OF WATER IN THE SAHEL: FISH BEFORE IRRIGATION (FBI) BY WOMEN'S GARDEN GROUPS IN SENEGAL

**CONTRIBUTED SESSION 1**

Wednesday, November 20 16:00 - 17:40 Odyssey

Chair: TBA

- 16:00 Olamide Adeosun**, Festus Adeosun, Jacob Olaoye, Jamiu Akamo  
ASSESSMENT OF HOUSEHOLD FOOD SECURITY, CHALLENGES AND POTENTIAL INTERVENTION ON THE ARTISANAL FISHERIES VALUECHAIN AMONG FISHERFOLKS ALONG OGUN RIVER BASIN, OGUN STATE, NIGERIA
- 16:20 Mouna Fertouna Bellakhal**, Amel Dhib, Meher Bellakhal, souad Turki, Lotfi Aleya  
DISTRIBUTION OF HOTSPOT ZONES OF DINOCYST ABUNDANCE IN SURFACE SEDIMENTS OF COASTAL LAGOON IN THE WESTERN MEDITERRANEAN SEA
- 16:40 Joachim Kuzimbila Yongo**, Fabrice Amisi Muvunja  
ANALYSE DES RENTABILITES DE LA PISCICULTURE ARTISANALE ET SEMI-INTENSIF DU *Tilapia nilotica* DANS LA PLAINE DE LA RUZIZI AU SUD-KIVU EN REPUBLIQUE DEMOCRATIQUE DU CONGO
- 17:00 Daniela Lucente**, Graham Mair, Xinhua Yuan  
REGIONAL CHALLENGES AND OPPORTUNITIES FOR THE DEVELOPMENT OF SUSTAINABLE SEED SUPPLY CHAINS
- 17:20 Elysee Nzohabonayo**, Jose Parajua, Etienne Hinrichsen, Papius Tibihika  
EU-EAC TRUE FISH FARMING STORY IN THE LAKE VICTORIA BASIN (TRUEFISH)



## SEAWEED

Wednesday, November 20 14:00 - 15:40 Olivier  
Chair: Bernice McClean



### CONCEPT NOTE

Seaweeds are highly productive resources and hold vast potential for contributing to development aspirations in Africa, and particularly to the development of Africa's Blue Economy. Globally, seaweed is one of the fastest growing food production sectors in the world today. Seaweed has the potential to improve livelihoods, food security, preserve marine biodiversity, and empower value chains actors including some of the most vulnerable sectors of the population. Seaweeds also play a significant role in climate change adaptation. In East Africa, the majority of people working in the seaweed sector are women.

The AUDA-NEPAD, is working to maximise the value of Africa's Blue Economy through implementation of key objectives of the Agency's Blue Economy Programme. The seaweed sector has been identified as a priority for development. While the sector in Africa is considered nascent in many respects, it offers significant opportunities for livelihood diversification and is one to watch for blue economy expansion in Africa.

The AUDA-NEPAD has embarked on a journey to develop a broader African Seaweed Programme to raise the profile of Africa's seaweed value chains. The programme will involve support for the coordination of efforts and stakeholders involved in the industry by strengthening the community of practice and facilitating dialogue among key stakeholders on improved seaweed production, processing and marketing while moving towards women's empowerment.

This awareness raising session, is a product of workshops on Strengthening Africa's Seaweed Value Chains. Outcomes from this Session) are expected to contribute to the development of a broader seaweed programme in Africa. The session is also well in line to AFRAQ24 Conference theme and objectives on "Blue Farming: New Horizons for Economic Growth"

### AGENDA

- 14:00** **Opening Remarks** Government Rep
- 14:05** **Bernice Mclean** (AUDA-NEPAD)  
Setting the scene: Presentation of Session objectives and background
- 14:15** **Harrison Charo-Karissa** (World Bank)  
Investment in Africa's seaweed industry development
- 14:25** **Flower Msuya** (Zanzibar Seaweed Cluster Initiative)  
Status of Seaweed aquaculture value chains in Africa

- 14:35 Alexander Kefi (SADC)**  
Seaweed Value Chain Development for SADC & ProfishBlue Project
- 14:45 Betty Nyonje**  
Government support for development of the seaweed Industry in Kenya
- 14:55 Fatuma Mang'ena Healthy Seaweed Cafe**  
The Healthy Seaweed Café Experiences in Entrepreneurship in the seaweed sector
- 15:05 National Institute of Marine Sciences and Technologies (INSTM)**  
Developing sustainable seaweed potentials in Tunisia
- 15:15 Jennifer Gee, FAO**  
Gender Considerations
- 15:20 Open discussion:** A landscape profile of existing seaweed projects in Africa (including cross-cutting)
- 15:30 Bernice Mclean (AUDA-NEPAD)**  
Next steps: Development of a broader Programme to Strengthen Africa's Seaweed Value Chains
- 15:35 Way forward and closing remarks**

## INNOVATIVE SYSTEMS & PRACTICES

Wednesday, November 20 16:00 - 17:40 Olivier  
Chair: Sugantham Felix

- 16:00 Taofik Babatunde, Samaila Muazu Batagarawa, Babangida Abdulkarim, Samaila Usman Adamu**  
GROWTH, FEED CONVERSION RATIO, AND PROXIMATE COMPOSITION OF AFRICAN CATFISH *Clarias gariepinus* CULTURED IN A BIOFLOC SYSTEM USING FERMENTED AND ACID-HYDROLYZED RICE BRAN AS CARBON SOURCES
- 16:20 Margarida Saavedra, Lúgia Louro, João Cotter**  
HANDS ON AQUAPONICS: FOOD SECURITY STARTS AT SCHOOL
- 16:40 Jethro Zuwarimwe**  
INTEGRATED AQUACULTURE, VEGETABLE AND GOATS PRODUCTION FOR SUSTAINABLE HOUSEHOLD ECONOMICS. A CASE FROM VHEMBE DISTRICT, LIMPOPO SOUTH AFRICA
- 17:00 Efosa Omosigho, Karen Veverica, Sofolabi Sofela**  
IMPACT OF AERATION ON NURSERY PRODUCTION OF HYBRID CATFISH *Heteroclarias* UNDER LIMITED WATER EXCHANGE CONDITIONS

# THURSDAY, November 21

THURSDAY

## IMTA AND AQUAPONICS - CONTINUED

Thursday, November 21 09:00 - 10:20 Hannibal

Chairs: Kevan Main, Peter Britz

- 09:00** **Maryam El Bakali**, Mehdi Zaira, Samuel Ogah, Umar Bachir Ibrahim, Jal Halima, Imane Erramachi, Mohammed Ouaddane Alami, Diego Jarquin, Monica Trif, Alexandru Rusu, Daniela Lo Monaco, Cyr Couturier  
INTEGRATED MULTI-TROPHIC AQUACULTURE SYSTEMS: BEYOND FOOD PRODUCTION
- 09:20** **Elena Mente**, Nikolas Panteli Panteli, Christina Tatidou, Efi Antonopoulou, Nikolaos Vlachos, Ioannis Theodossiou  
CLOSED-LOOP AQUAPONIC SYSTEM WITH COMMON CARP *Cyprinus carpio* WHICH WAS FED A MIXTURE OF INSECT MEAL, INSECT FRASS AND HYDROPONIC BY-PRODUCTS CO-CULTURED WITH LETTUCE *Lactuca sativa*: AWARE PROJECT
- 09:40** **Henk B. Stander**, Khalid Salie  
DEVELOPMENT AND ADVANCES IN AQUAPONICS AT STELLENBOSCH UNIVERSITY
- 10:00** **Mehtap Bayir**, Abdulkadir Bayir, Serpil Turhan, Bilal Usanmaz, Haluk Caglar Kaymak, Cem Isik  
AQUAPONICS APPLICATIONS IN TÜRKIYE AND DEVELOPMENT PROPOSALS IN THIS FIELD

## SUSTAINABLE AQUACULTURE DEVELOPMENT

Thursday, November 21 09:00 - 15:40 Amphi Cesar

Chair: Fabio Leccese

- 09:00** **Fabio Leccese**, Mariagrazia Leccisi, Enrico Petritoli, Giuseppe Schirripa Spagnolo  
MEASUREMENT ASPECTS FOR THE AUTOMATION OF MARINE WATER QUALITY MEASUREMENTS
- 09:20** **Silvia Canali**  
THE CONTROL SYSTEM IN ORGANIC AQUACULTURE IN ITALY. DEVELOPMENT OF PRODUCTION, QUALITY AND INCREASE OF CONSUMER CONFIDENCE. EQUIVALENCE RELATIONS IN TRADE IN ORGANIC PRODUCTS BETWEEN TUNISIA AND THE EU

- 09:40** **Eduardo De Francesco**, Ruggero De Francesco, Sabino Giarnetti  
A NEW AMPHIBIOUS VEHICLE FOR THE AUTOMATION OF MARINE WATER QUALITY MEASUREMENTS
- 10:00** **Phillip Otiato**  
THE TRIPLE NEXUS: ADVANCING AQUACULTURE AND REGIONAL DEVELOPMENT FOR NATIONAL SECURITY IN KENYA
- 10:20** **BREAK**
- 10:40** **John Ed-Idoko**, Adegboyega Tanimowo  
BIO-TECHNICAL ASSESSMENTS OF AFRICAN CATFISH *Clarias gariepinus* (BURCHELL, 1822) AND FOUR INDIGENOUS LEAFY VEGETABLES RAISED IN A MULTILoop PYRAMID AQUAPONICS SYSTEM
- 11:00** **Jessy Lugya**, Mark Olokotum, Agnes Nabuufu  
USING ICT IN CAGE FISH FARMING EQUIPS FISH FARMERS WITH KNOWLEDGE – THE NARO CAGE AQUACULTURE APP
- 11:20** **Sandeep Nayak**, Rajadyuti Mahapatra, Jeherul Islam, Pratap Sinha  
REMOTE RURAL ENTERPRISE PROMOTION IN AQUACULTURE VALUE CHAIN
- 11:40** **Naouel Gharbi**, I-Hao Chen, Nabil Balbechir, Lars Ebbesson, Naouel Gharbi, David Izquierdo Gomez, Lars Erik Solberg, Jelena Kolarevic, Santhosh K. Kumaran, Gaute Nedberg Helberg, Christopher Noble  
LEVERAGING IMAGE SEGMENTATION MODELS: APPLICATION OF THE SEGMENT ANYTHING MODEL (SAM) IN FISH BEHAVIOUR RESEARCH IN RAS
- 12:00** **Amel Mzoughi**, Mohamed Salah Azaza  
SUSTAINABLE AQUACULTURE PLANNING THROUGH MSP: A FOCUS ON POSIDONIA MEADOWS IN MONASTIR BAY, TUNISIA
- 12:20** **Elijah Tembo**  
THE IMPACT OF AQUACULTURE IN ENHANCING FOOD SECURITY IN ZIMBABWE
- 12:40** **LUNCH**
- 14:00** **Mohammad Lokman Ali**, T.H. Surovi  
OPTIMIZATION OF THE CAGE CULTURE TECHNOLOGY OF STRIPED CATFISH *Pangasianodon hypophthalmus* AT HYPOSALINE WATER FOR THE LIVELIHOOD DEVELOPMENT OF MARGINALIZED COASTAL COMMUNITY OF BANGLADESH

- 14:20 Msumenji A Phiri**, Austin H. Mtethiwa, Daniel Sikawa, Oliver J Hasimuna, Madalitso M. Chatsika  
STATUS OF PHYTOPLANKTON BIOMASS AND WATER QUALITY DURING FISH CAGE CULTURE FOLLOWING: A CASE STUDY OF SOUTHEAST ARM OF LAKE MALAWI
- 14:40 Rodrigue Yossa**  
WORLD FISH RESEARCH PROGRAM ON AQUATIC FOOD BIOSCIENCES
- 15:00 Mary-Jane Thaela-Chimuka**, Celesté Dekker, Agnes Molebatsi  
THE AGRICULTURAL RESEARCH COUNCIL (ARC) INNOVATIVE TECHNOLOGIES ENHANCING FRESHWATER AQUACULTURE AND AQUAPONICS PRACTICES IN SOUTH AFRICA
- 15:20 Yvonne Mwanza**, Alexander Shula Kefi, Matthew Hamilton  
AQUACULTURE GENETIC IMPROVEMENT PROGRAMME IN ZAMBIA: THE CURRENT STATUS, OPPORTUNITIES, CHALLENGES AND ADAPTABLE LESSONS LEARNED FROM ITS IMPLEMENTATION

## BIOTECHNOLOGY GENETICS AND GENOMICS

Thursday, November 21 09:00 - 12:40 Cesar

Chair: Mariska Laubser

- 09:00 Metwaly S.A. Attia**, Ahmed M.D. Elshafei, Ahmed M. Abdel Wahab, Mohamed A. Al-Zahaby, Haytham A. Abd El-Ghaffar  
ESTABLISHMENT OF COLD TOLERANCE IN NILE TILAPIA *Oreochromis niloticus* NEXT GENERATION
- 09:20 Abdulkadir Bayir**, Mehtap Bayir, Burcu Naz Uzun, Eyüp Çakmak, Gökhan Arslan, Hakan Özkan  
CRISPR/Cas9-MEDIATED MYOSTATIN KNOCKDOWN PROMOTES GROWTH IN BLACK SEA TROUT *Salmo labrax*
- 09:40 Amien Mosbah**, Marouan Ghannouchi, Fairouz Abbassi, Aymen Yahyaoui, Raouf Dhaouadi, Mohamed Banni  
NERVOUS NECROSIS VIRUS VACCINATION IN EUROPEAN SEA BASS: A MULTI-OMICS ASSESSMENT APPROACH
- 10:00 Menaga Meenakshisundaram**, Jimmy Mboya, Felix Sugantham, Akshaya Panigrahi, Sevgan Subramanian, Shaphan Chia, Dennis Bessigamukama, Rodrigue Yossa, Chrysantus Tanga  
ALGAE-BACTERIA SYNERGY LEADS TO IMPROVED GROWTH AND IMMUNE DEFENSE IN RED TILAPIA *Oreochromis* sp.

- 10:20 BREAK**
- 10:40 Alla Silkina, Mohamed Emran, Jose Gayo Pelaez**  
ALGAL BIOTECHNOLOGY TO REMEDIATE THE FOOD INDUSTRY WASTEWATER AND PRODUCTION OF EPA RICH BIOMASS FOR FISH FEED AQUACULTURE IN THE CONTEXT OF THE CIRCULAR BIOECONOMY
- 11:00 Daniela Lucente, Graham Mair**  
AquaGRIS: THE FAO GLOBAL INFORMATION SYSTEM FOR AQUATIC GENETIC RESOURCES IN AQUACULTURE
- 11:20 Robert Mukiibi, Ezra Byakora, Joel Ogwang, Simon Olok Owani, Geoffrey Kisambira, Ruth Pamela Ndinawe, Moses Solimo, Clemence Frasin, Katali Kirungi Benda, Johnson Mayega, Rose Komugisha Basiita, Peter Beine, Charles Masembe, Diego Robledo**  
GENETIC BACKGROUND OF GROWTH AND SEX DETERMINATION IN INDIGENOUS FARMED POPULATIONS OF NILE TILAPIA *Oreochromis niloticus* IN UGANDA
- 11:40 Yvonne Mwanza, Victor Siamudaala, Alexander Shula Kefi, Hamilton Matthew**  
APPLICATION OF THE GEOMETRIC MORPHOMETRICS APPROACH IN THE DISCRIMINATION OF SHAPE CHANGES BETWEEN O. ANDERSONII GENERATIONS UNDERGOING GENETIC IMPROVEMENT IN ZAMBIA
- 12:00 Kwikiriza Gerald, Thapasya Vijayan, Faith Atukwatse, Juliet Nattabi, Genanaw Tesfaye, Darlington Besa, Papius Dias Tibihika, Manuel Curto, John Kariuki, Harald Meimberg**  
INTROGRESSIVE HYBRIDIZATION LEVELS AMONG TILAPIINES DRIVEN BY TRANSLOCATIONS ACROSS AFRICA
- 12:20 Yahaya Mohammad Abubakar, Magawata Ibrahim, Akin W. Hassan, Yuzine B. Esa, Turaki A. Aiyu**  
GENETIC DIVERSITY OF WILD POPULATION OF *Heterobranchus* spp. BASED ON MITOCHONDRIA DNA CYTOCHROME C OXIDASE SUBUNIT I GENE ANALYSIS

## AQUATIC ANIMAL HEALTH, WELFARE, BIOSECURITY

Thursday, November 21 09:00 - 15:40 Odyssey

Chairs: Nellie Isyagi, Peter Britz, Nadia Chérif

- 09:00** **Nelly Isyagi**, Nadia Cherif, Rafik Nouaili, Delvis Fortes, Kwame Mfodwo, Patrick Karani, Obinna Anozie, Hellen Moepi, Mohamed Seisay  
THE MERITS FOR REGIONAL COLLABORATION FOR AQUATIC BIOSECURITY AND BIOSAFETY CONTROL IN AFRICA
- 09:20** **Francesco Valentini**, Nadia Cherif, Nelly Isyagi  
THE EXPERIENCE OF REGIONAL AQUATIC ANIMAL HEALTH NETWORKS IN AFRICA
- 09:40** **Jérôme Delamare-Deboutteville**, Samuel Addo, Philip Nyaga, Laura Khor, Shimaa E. Ali, Saraya Tavornpanich, Jacob Zornu, Kofitsyo S. Cudjoe, Edgar Brun, Chadag Vishnumurthy Mohan, David Verner-Jeffreys  
INCREASED SUSTAINABILITY IN THE AQUACULTURE SECTOR IN SUB-SAHARAN AFRICA THROUGH IMPROVED AQUATIC ANIMAL HEALTH MANAGEMENT
- 10:00** **David Verner-Jeffreys**, Jérôme Delamare-Deboutteville, Sabrina Hossain, Laura Khor, Shafiq Rheman  
TACKLING THE THREAT OF ANTIMICROBIAL RESISTANCE IN AQUACULTURE IN ASIA AND AFRICA USING A ONE HEALTH APPROACH
- 10:20** **BREAK**
- 10:40** **Mariska Laubscher**, Kevin Christison  
VALIDATED PCR TESTING FOR AQUACULTURE SUCCESS AND ISO 17025 COMPLIANCE
- 11:00** **Radi A. Mohamed**, Murilo Henrique Quintiliano, Mahmoud Eltholth, Ahmad Hamzah, Mohamed E. Bakr, Wasseem Emam  
USING OPERATIONAL WELFARE INDICATORS FOR BETTER TILAPIA WELFARE IN AQUACULTURE
- 11:20** **Oluwaseun Ojelade**, Ikililu Abdurraheem, Abiodun Akinde, Ibrahim Bashiru, Divine-Love Iberia, Mahmud Badmus, Miracle Abeng, Andrew Achor  
UNCERTAINTY IN FEED SUPPLY AFFECTS THE GROWTH, HEMATOLOGICAL AND GLUCOSE RESPONSE OF AFRICAN CATFISH *Clarias gariepinus* (BURCHELL, 1822)

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- 11:40** **Souhaila Khérji missaoui**, Imen Rabeh, Telahigue Khawla, Antit Mouna, Baccouche Marouen, Dhibi Chaima, Dhouha Boussoufa, Lazhar Mhadhbi, Monia Trabelsi  
OXIDATIVE STRESS RESPONSE AND BIOCHEMICAL PARAMETERS IN LIVER, KIDNEY AND GILLS OF EUROPEAN EEL *Anguilla anguilla* EXPOSED TO SIMAZINE
- 12:00** **Oladeji Kareem**, Halwart Mathias, Emmanuel Ajani, Bamidele Omitoyin, Austin Stankus, Oluwafemi Ajayi, Olugbenga Orisasona, Tajudeen B. Akinrinola, Adetola Jenyo-Oni, Oyebola Ajayi  
HAEMATOOGICAL RESPONSES, GUT CONTENT, ANTIOXIDANT STATUS AND HISTOPATHOLOGICAL ANALYSIS OF AFRICAN CATFISH *Clarias gariepinus* FED WITH COMBINATION OF COMMERCIAL DIET AND BLACK SOLDIER FLY *Hermetia illucens* LARVAE
- 12:20** **Bamidele Omitoyin**, Halwart Mathias, Emmanuel Ajani, Oladeji Kareem, Austin Stankus, Oluwafemi Ajayi, Olugbenga Orisasona, Tajudeen B. Akinrinola, Adetola Jenyo-Oni, Oyebola Ajayi  
HAEMATO-IMMUNOLOGICAL RESPONSES AND HISTOMORPHOLOGY OF *Heterobranchus bidorsalis* FED DIFFERENTLY PROCESSED BLACK SOLDIER FLY LARVAE MEAL
- 12:40** **Ashraf El-Dakar**, Randa Thabet, Aseel Elshorbagy, Hassan Mohamed, Mohamed Abdel-aziz  
ASSESSMENT OF LAVENDER (*Lavandula angustifolia*) ESSENTIAL OIL AS A NATURAL ANESTHETIC AND SODIUM BICARBONATE AS A SEDATIVE ON PHYSIOLOGICAL AND HISTOPATHOLOGICAL STATUS OF TILAPIA ZILLI DURING THE TRANSPORT PRACTICES
- 13:00** **LUNCH**
- 14:00** **Magoti Ndaró**, Cyrus Rumisha, Silvia Materu, Antony Funga, Alexandra Mzula, Beda Mwang'onde  
PATHOGENIC BACTERIA CAUSING INFECTIOUS DISEASES IN CAGE FARMED FISH IN THE LAKE VICTORIA
- 14:20** **John Walakira**, Catherine Agoe, Mary Nantongo, Ezra Tumukunde, Kunda Ndashe, C.P. Castells, L. Lauke, Adrian Astier  
CO-OCCURRENCE AND GENETIC DIVERSITY OF EMERGING PATHOGENS ISOLATED FROM INFECTED FARMED TILAPIA IN THE LAKE VICTORIA REGION, UGANDA: *Aeromonas* sp., *Edwardsiella* sp. AND *Francisella* sp.



- 14:40** **Yaa Fosuah Tuffour**, Benjamin Apraku Gyampoh  
IMPACTS OF *Physella acuta* ON *Oreochromis niloticus* FINGERLINGS IN  
AQUACULTURE PRODUCTION
- 15:00** **Angela Ayiku**, Irene Owusu-Amoako, David Verner-Jeffreys, Richard Paley,  
Peter Quashie, Samuel Duodu  
INVESTIGATING THE MECHANISM OF HEAT-SHOCK PROTECTION IN ISKNV  
INFECTED TILAPIA BRAIN CELL LINE
- 15:20** **Maarten Jay van Schoonhoven**  
SUPPORTING HEALTH AND DISEASE TOLERANCE IN FISH AND SHRIMP
- 15:40** **BREAK**
- 16:00** **Rishita Changede**, Abhijith EK, Suruchi Sharma, Indira Ghosh  
HARNESSING BIOTECHNOLOGY FOR DISEASE MANAGEMENT AND  
ENHANCED GROWTH IN SHRIMP AND FISH
- 16:20** **Monia EL Bour**  
PROBIOTICS AS BENEFICIAL MICROBES IN AQUATIC FARMING
- 16:40** **M. Simeon Fagnon**, Abdel-Fattah M. El-Sayed, Amira M. Hamdan,  
Thibaut Chabrilat, Sylvain Kerros, Salma M.S. Zeid  
DIETARY EFFECT OF PLANT BASED ADDITIVE PHYTO AQUANITYTM ON  
GROWTH PERFORMANCE AND HEALTH PARAMETERS IN FIELD-REARED NILE  
TILAPIA *Oreochromis niloticus*
- 17:00** **Radi Mohamed**, Nermeen Shokrak, Basant Bakr, Bahaa Abdella  
INVESTIGATING THE BENEFITS OF *Bacillus rugosus* AS A NOVEL PROBIOTIC  
STRAIN FOR NILE TILAPIA: A COMPREHENSIVE EVALUATION
- 17:20** **Ahmed Mustafa**  
DECREASE STRESS: PRODUCE QUALITY PRODUCTS

# AQUAFEED PRODUCTION, PERSPECTIVE AND SUSTAINABILITY

Thursday, November 21 09:00 - 12:40 Olivier

Chair: Mohamed Salah Bouthour



**U.S. GRAINS**  
COUNCIL

THURSDAY

- 09:00 **Registration**
- 09:05 **OPENING REMARKS**
- 09:20 **James Andrew Hart**, Senior Technical Expert Feed, GLOBALG.A.P. c/o FoodPLUS GmbH  
GLOBALG.A.P. AQUACULTURE AND AQUAFEED CERTIFICATION: ADDRESSING RESPONSIBLE SOURCING THROUGH THE FULL PRODUCTION CHAIN
- 09:50 **Maier, Professor**, Iowa State University  
EXTRUSION TECHNOLOGY FOR AQUAFEED PRODUCTION DIRK
- 10.20 **BREAK**
- 10:35 **Walid Zneti**, Purchasing and R&D manager, Nutrifish  
TECHNICAL SESSION: ADDED FEED VALUE USING CORN-COPRODUCTS  
-FORMULATING AQUAFEED WITH DRIED DISTILLED GRAINS WITH SOLUBLES (DDGS)
- 11:05 **Bert Jan Roosendaal**, Managing Director, Aquaculture ID  
TILAPIA AND CATFISH OUTLOOK & FARMING
- 11:35 **Carlos Suarez**, Director of Global Sustainability, U.S.Grains Council Feed  
INGREDIENTS SUSTAINABILITY IN AQUACULTURE SYSTEMS: (VIRTUAL)  
CARLOS
- 12:05 **Panel Discussion**  
Sub Saharan Africa Aquafeed producers' perspective  
Panelists (TBD)
- 12:40 **Closing Remarks**

# BUILDING STRONG BRIDGES IN THE AFRICAN AQUACULTURE VALUE CHAIN

Thursday, November 21 09:00 - 17:40 Hall 3a  
Chairs: Ruth Garcia Marquez, Harrison Charo  
ORGANIZERS: FAO, ANAF, NEPAD and WBG



THURSDAY

## Introduction

The global aquaculture industry is growing rapidly, contributing significantly to food production, employment, and economic development. In Africa, the potential of aquaculture development for Africa's economic growth is well recognized and supported with a considerable "blue food" demand that cannot be met by capture fisheries. However, challenges persist in the development of the sector, especially in Least Developed Countries (LDCs), hindering sustainable growth. These challenges include inadequate infrastructure, limited access to inputs and credit, technical and managerial capacity constraints, limited specific regulatory frameworks and policies, weak value chain development, and climate change impacts. Addressing these challenges requires substantial human, technical and financial resources, with public and private investments playing a crucial role.

FAO, in partnership with the World Bank and the Aquaculture Network for Africa (ANAF) successfully organized a Special Day at WAS AFRAQ in Zambia. Building on the outcomes of this event and strengthening the partnership by joining hands with the African Union (AUDA-NEPAD) and collaborating with key regional aquaculture partners a follow up Special Day is being organized at AFRAQ in Tunisia to enhance understanding of relevant initiatives being developed and implemented by organizations including FAO, ANAF, NEPAD, WBG among other partners to unlock aquaculture potential in the region. The special day will build on the discussion and recommendations provided during the previous special day conducted in Zambia, and will be structured round three major themes: (1) Guidelines, frameworks and toolkits for sustainable aquaculture development and viable aquaculture investments; (2) Knowledge sharing and dissemination in the African context; and (3) Technical innovations including management of genetic resources, feed production, integrated and restorative aquaculture, among other topics.

Meeting the growth expectations of the aquaculture sector in the region in terms of volume and quality for the domestic, regional and global markets, is a task that requires coherent planning adapted to the regional context, as well as the establishment of strategic and long-lasting collaborations between public and private sector actors.

Learning from how other regions have evolved and learned from their mistakes along the path of the sector's development is also key to avoiding frustrations for producers, investors and governments. The natural resources for aquaculture production exist in the region, the workforce is clearly present, but the other pieces of the puzzle for sustainable production, such as availability of farm inputs, technology, knowledge, investment and regulatory frameworks, must also be present and adapted to the regional context.

The Special Day will inform about activities, projects, initiatives and analytical work undertaken by different organizations and serve as a platform to foster dialogue among participants to facilitate brainstorming and experience sharing on challenges and strategies for enhancing investments in aquaculture in Africa.

#### Objective

Inform participants about initiatives undertaken by organizations such as FAO, NEPAD, ANAF, WB, and other regional partners to address challenges and gaps hindering sustainable African aquaculture development. Additionally, the event aims to facilitate brainstorming and experience sharing on feasible and viable strategies to transform these challenges into opportunities. The event will be divided into three technical sessions discussing key topics in relation to Guidelines and governance, knowledge dissemination and sharing, and technology innovations.

#### Expected outputs

- Special Day Report summarizing key findings from each session and recommendations from the audience.
- List of follow-ups regionally relevant themes and topics to be prepared for a next session of the Special Day to be organized at the WAS-Africa Conference 2025.

#### **Agenda:**

**09:00 Opening remarks** - Welcoming of participants, FAO Deputy Director NFI, WB, and other organizations.

#### **Session 1: *Guiding Principles for Sustainable Aquaculture Development***

**09:10 Ana Meneses**

FAO GUIDELINES FOR SUSTAINABLE AQUACULTURE (GSA)

**09:20 Code of Conduct for Responsible Fisheries Aquaculture Questionnaire (CCRF-AQ): changes, focal points, and engagement.**

FAO

**09:30 Harrison Charo-Karisa**

A GUIDE FOSTERING GLOBAL AQUABUSINESS INVESTMENTS

**09:45 Pierre Murekezi**

GUIDE FOR ENHANCING PRIVATE INVESTMENT IN AQUACULTURE: OVERVIEW AND SCOPE

**09:55 Policy Brief and Analysis of the Aquaculture Employment Governance in Africa NEPAD and partners**

**10:20 BREAK**

**10:40 Ana Meneses**

POLICIES AND STRATEGIC PLANS IN SUPPORT OF AQUACULTURE DEVELOPMENT IN SUB-SAHARAN AFRICA – A TOOL FOR PLANNING AND RESOURCE MOBILIZATION.

**10:50 OPEN DISCUSSION – Q&A SESSION**

**Moderator: TBD**

**12:40 LUNCH**

**Session 2: *Partnerships, Knowledge sharing and dissemination***

**14:00 Fred Formanek, Tom Hecht, Jim McCafferty, Rachel Wright, Nyiko Mabasa**  
KNOWLEDGE TRANSFER, TECHNOLOGY AND INNOVATION: A CASE STUDY FROM THE KINGDOM OF LESOTHO

**14:10 Michael Phillipps**  
THE ROLE OF REGIONAL AQUACULTURE NETWORKS AND PARTNERSHIPS: LEARNING FROM ASIA AND NACA

**14:20 Harrison Charo-Karisa**  
INTEGRATION AND RESTORATION IN AQUACULTURE: PROMOTION OF ECOSYSTEM SERVICES PROVISION FROM AQUACULTURE TO ATTRACT INVESTMENTS IN AFRICA

**14:30 Role of partnerships in African aquaculture value chain:** Experience from Committee for Inland Fisheries and Aquaculture of Africa (CIFAA), Aquaculture Network for Aquaculture (ANAF), South-South Cooperation, and other Regional Aquaculture Bodies.  
CIFAA and ANAF

**14:40 Expert Panel**  
Experts from Advance Africa, Futurefish, NEPAD, CIFAA and ANAF

**Moderators: TBD**

**15:40 BREAK**

### Session 3: *Adapting aquaculture technologies to the African context*

- 16:00 Pierre Murekezi**  
REGIONAL CHALLENGES AND OPPORTUNITIES FOR THE DEVELOPMENT OF SUSTAINABLE SEED SUPPLY CHAINS
- 16:10 Fernanda Garcia Sampaio**  
AN OVERVIEW OF LOCAL ALTERNATIVE INGREDIENTS, AQUAFEED SUPPLY AND FEEDING MANAGEMENT IN SELECTED AFRICAN COUNTRIES
- 16:20 Harrison Charo-Karisa**  
INTEGRATION AND RESTORATION IN AQUACULTURE: PROMOTION OF ECOSYSTEM SERVICES PROVISION FROM AQUACULTURE TO ATTRACT INVESTMENTS IN AFRICA
- 16:30 Aquaculture in arid zones:** what are the options for aquaculture towards feeding a growing population and generate income in vulnerable subregions?  
FAO and WB
- 16:40 Working Group discussion:**
- Prioritization of technical challenges
  - Investment opportunities
- 17:30 Presentation of key findings from Working Groups to the plenary**  
**Moderators: TBD**
- 17:50 Wrap up and Closing remarks**  
DGs of FAO, WB and other organizations

### **INNOVATIVE PRODUCTION SYSTEMS AND PRACTISES**

Thursday, November 21 10:40 - 12:40 Hannibal

Chair: Sugantham Felix

- 10:40 Fidelis N. Ambeno, Benedicta O. Oben, Mbeng A. Arrey, Gregoire C. Muafor, Pius M. Oben**  
FISH STOCKING IN A WETLAND AND ITS POTENTIAL FOR AQUACULTURE PRODUCTION FOR RESOURCE-POOR COMMUNITIES IN CAMEROON
- 11:00 Farhad Rajabipour, Nassrin Mashaii**  
BROODSTOCKING OF CULTURED BELUGA *Huso huso* IN BRACKISH WATER
- 11:20 Christian Abouzeid**  
WATER QUALITY MONITORING: THE KEY TO A HEALTHY AQUACULTURE SYSTEM
- 11:40 Meher Bellakhal**  
FROG FARMING, A COMPLICATED DISCIPLINE THAT OFFERS NEW PERSPECTIVES FOR AQUACULTURE

## FEED NUTRITION PHYSIOLOGY - CONTINUED

Thursday, November 21 14:00 - 17:40 Hannibal

Chairs: Ashraf Goda, Znati Walid

- 14:00** **Menaga Meenakshisundaram**, Ekesi Sunday, Sevgan Subramanian, Rodrigue Yossa, Jimmy Brian Mboya, Damaris Kambua Kitili, Richard Pkemoi Loripongole, Juliana Livingstone Gamba, Barrack Odhiambo Opinde, Joyce Liti Njenga, Chrysantus Mbi Tanga  
BLACK SOLDIER FLY LARVAE IN AQUAFEEDS: DRIVING ECONOMIC GROWTH AND SUSTAINABLE WASTE MANAGEMENT IN KENYA'S SMALL SCALE AQUACULTURE
- 14:20** **Oyebola Ajayi**, Halwart Mathias, Emmanuel Ajani, Bamidele Omitoyin, Oladeji Kareem, Austin Stankus, Oluwafemi Ajayi, Olugbenga Orisasona, Tajudeen B. Akinrinola, Adetola Jenyo-Oni  
GROWTH PERFORMANCE AND NUTRIENT UTILIZATION OF *Heterobranchus bidorsalis* FED VARYING LEVELS OF DIFFERENTLY PROCESSED BLACK SOLDIER FLY *Hermetia illucens* LARVAE MEAL
- 14:40** **Sahya Maulu**, Benjamin Eynon, Mark Rawling, Daniel L. Merrifield  
BLACK SOLDIER FLY *Hermetia illucens* LARVAE MEAL IMPROVES GROWTH, FEED UTILIZATION AND INTESTINAL HEALTH IN MIRROR CARP *Cyprinus carpio* JUVENILES
- 15:00** **Anne Ekwerike**, Halwart Mathias, Emmanuel Ajani, Bamidele Omitoyin, Oladeji Kareem, Austin Stankus, Oluwafemi Ajayi, Olugbenga Orisasona, Tajudeen B. Akinrinola, Adetola Jenyo-Oni, Oyebola Ajayi, Oladayo Akoleowo  
GROWTH PERFORMANCE AND NUTRIENT UTILIZATION OF AFRICAN CATFISH *Clarias gariepinus* FED COMBINATION OF COMMERCIAL DIET (BLUE CROWN) AND BLACK SOLDIER FLY LARVAE (BSFL)
- 15:20** **Neila Hamza**, Ines Ben Khemis, Zied Idoudi, Mohamed Gastli, Wael Fraihi, Mohamed Salah Azaza  
TOTAL SUBSTITUTION OF FISH MEAL BY BLACK SOLDIER FLY MEAL IN NILE TILAPIA *Oreochromis niloticus* JUVENILE'S DIET: EFFECTS ON GROWTH PERFORMANCES, FEED EFFICIENCY AND FISH BIOCHEMISTRY
- 15:40** **BREAK**
- 16:00** **Victoria Tarus**, Philip Raburu, Joseph Rasowo  
EFFECTS OF REPLACEMENT OF FISHMEAL WITH A MIXTURE COWPEAS *Vigna unguiculata* AND AMARANTH *Amaranthus cruentus* IN LABEO VICTORIA *Labeo victorianus* CULTURE

THURSDAY

- 16:20 Sandrine Jueya**, Gifty Anane-Tabeah, Leandro Castello, Emmanuel Frimpong, David Nguenga, Arnold-Roger Bitja Nyom  
DIETS OF ALESTIDAE *Teleostei: Characiformes* IN TWO RIVERS OF THE CONGO BASIN (BOUMBA AND KADEI) IN EASTERN CAMEROON
- 16:40 Tewodros Abate Alemayehu**, Abebe Getahun, Akewake Geremew, Dawit Solomon Demeke, John Walker Recha, Gebermedihin Ambaw, Dawit Solomon  
EFFECTS OF DIETARY SUPPLEMENTATION OF PHYTASE AND MANNAN-OLIGOSACCHARIDE (MOS) ON NILE TILAPIA FRY FED PLANT-BASED DIET
- 17:00 Kenneth Rono**, Geraldine Matolla, Manyala Julius, Frank Onderi  
EFFECT OF AGRICULTURAL CARBON SOURCES ON GROWTH PERFORMANCE OF NILE TILAPIA *Oreochromis niloticus* (LINNAEUS, 1758) AND ASIAN RICE *Oryza sativa* (LEJEUNIA, 1753) IN A FLOCPONIC SYSTEM
- 17:20 Andrew Wamukota**, Mark L. Lawrence, Stephen R. Reichley, Gina Rico Mendez, Masey Smith, Kelly Stewart, Laura Zseleczky  
FEED THE FUTURE INNOVATION LAB FOR FISH: SUPPORTING SUSTAINABLE AQUATIC FOOD SYSTEMS FOR ECONOMIC GROWTH AND FOOD SECURITY



# STUDENT RESEARCH PRESENTATION COMPETITION

Thursday, November 21 14:00 - 15:40 Cesar

Chair: TBA



## Session overview

Students will be provided with an opportunity to present their research related to aquaculture, including IMTA, postharvest challenges related to food loss and waste, food safety and market access. Prizes will be awarded for the best student research presentations, with a one-year follow up by WorldFish to publicise their achievements and the impact of their work on the development of sustainable aquaculture practices.

## 14.00 Student abstract presentations and judging

### Student Presentations

- Selected students and young emerging scientists will present their research, a paper or poster, on topics related to aquaculture, and post-harvest challenges will present to a panel of judges (set up by WorldFish).
- Each student will have five minutes to present their research and highlight its significance to the judges. There will be up to eight presenters.

### ○ Judging and prizes

- A panel of judges will evaluate the presentations based on criteria such as innovation, relevance and the potential impact on coastal communities.
- Four to five students will be awarded prizes of \$500 USD each, with winners announced and awarded at the end of the session.

## One-year follow-up for student award winners

- Winners of the competition will be contacted to provide updates on their progress after one year.
- Their achievements and progress will be shared through WorldFish/AABS channels to highlight the impact of their work on the development of sustainable aquaculture practices.

THURSDAY

## CAPACITY BUILDING AND TRAINING

Thursday, November 21 14:00 - 15:40 Olivier

Chair: TBA

THURSDAY

- 14:00** **Jeherul Islam**, Pratap Sinha, Rimon Samah, Melanie Hinderer, Priyam Kakoti Bora, Nijira Basumatary  
AQUACULTURE BUSINESS SCHOOL (ABS) – A TOOL FOR IDENTIFYING BUSINESS RISKS, DEVELOP MITIGATION STRATEGIES AND BUSINESS DECISION MAKING
- 14:20** **Pierre Cadot**, Alexandre Beljean  
CONTINUING EDUCATION MUST DRIVE FOOD SECURITY FOR ALL
- 14:40** **Jeffery Terhune**, Evans Danso, Sejiro Oke-Tojino, Joshua Neiderman, Chris Slemp  
UPDATE AND EXPANSION OF A COMMERCIAL TRAINING PROGRAM WITHIN THE PRIVATE SECTOR FOR EMERGING AQUACULTURE INDUSTRIES IN WESTERN SUB-SAHARN AFRICA
- 15:00** **Bettina Renner**, Pratap Sinha  
OPTIMIZING CAPACITY BUILDING EFFORTS FOR SCALING IN SUSTAINABLE AQUACULTURE. SUCCESS FACTORS FOR KNOWLEDGE RETENTION
- 15:20** **David Cline**  
AQUACULTURE EDUCATION: A THREE-PRONGED APPROACH

## AQUACULTURE AND SOCIETY

Thursday, November 21 16:00 - 17:40 Amphi Cesar

Chairs: Foluke Areola, Blessing Mapfumo

- 16:00** **Abiodun Fatai Sanni**, Uchenna Onyeizu, Anthonia Esenwa, John Omoruyi, Collins Ashoro, Panebi Ugo, Innocent Ogbin, Ademola Olawale  
DEMONSTRATION OF THE AQUACULTURE VALUE CHAIN ACHIEVEMENTS AND CHALLENGES IN THE LIVELIHOOD IMPROVEMENT FAMILY ENTERPRISES PROJECT (LIFE-ND), NIGER DELTA, NIGERIA
- 16:20** **Mohammad Taj Uddin**, Sima Roy, Aurup Ratan Dhar  
CONSUMERS' ATTITUDES TOWARDS PRAWN CONSUMPTION IN BANGLADESH: AN INVESTIGATION ON PERCEIVED VALUE AND WILLINGNESS-TO-PAY
- 16:40** **Jonah Kondowe**, Rumana Peerzadi Hossain  
READINESS OF SMALL-SCALE FISH FARMERS FOR DIGITAL CLIMATE INFORMATION SERVICES IN SADC REGION: EVIDENCE FROM ZAMBIA
- 17:00** **Malebo Hellen Guebama Affaga**, Nelly Isyagi, Rafik Noauili, Mohamed Seisay, Delvis Fortes, Simon Owani, Kwame Mfodwo, Obinna Anozie, Patrick Karani  
POLICY FRAMEWORK AND REFORM STRATEGY FOR FISHERIES AND AQUACULTURE (PFRS), A BLUEPRINT FOR AQUACULTURE DEVELOPMENT IN AFRICA

THURSDAY

# FARMER OPTIONS FOR GROWTH AND PROFITABILITY IN THE FACE OF RISING INPUT COSTS, FISH HEALTH CHALLENGES AND ELASTIC MARKETS

Thursday, November 21 16:00 - 17:40 Cesar

Chair: John Domozoro, Sofolabi Sofela

THURSDAY



## Workshop Outline

WISHH, as part of its development and knowledge-sharing goals, invites all farmers and farmer-support professionals to participate in the Farmer's Day session. This year's session will include a panel discussion around the topic: Farmer options for growth and profitability in the face of rising input cost, fish health challenges and elastic markets. Panelists will share insights from around the continent and share solutions that will be useful to the farmer's development.

The second part of the session will be an open forum discussion of "bullets to bite and pills to swallow" to grow Africa's Aquaculture. This will be an honest conversation highlighting gaps that farmers, development partners, researchers and government regulators need to hear from each other to better service industry needs.

Overall, this platform will create networking opportunities for participants and allow WISHH to connect with farmers for mutual development.

Please visit the WISHH team at booths 37 and 38.

## REPRODUCTION AND SEED PRODUCTION

Thursday, November 21 16:00 - 17:40 Olivier

Chair: Nevine Shabana

- 16:00 Prince Ofori-Darkwah**, Daniel Adjei-Boateng, Regina Esi Edziyie, Nelson Winston Agbo, John Domozoro, Chris Slempe  
ENHANCING THE SURVIVAL OF THE AFRICAN BONY-TONGUE *Heterotis niloticus* FRY THROUGH TRANSPORT AND HUSBANDRY TECHNIQUES
- 16:20 Niall Vine**, Thimna Dengana, Cyril Mphatsoe  
OPTIMISING THE LARVAL STOCKING DENSITY AND USE OF EDTA ON THE SURVIVAL, DEVELOPMENT AND SWIMMING ACTIVITY OF THE PACIFIC OYSTER *Crassostrea gigas*
- 16:40 António Cabaça**, Manuel Simão  
AVALIAÇÃO DA EFICIÊNCIA DO PROCESSO DE REVERSÃO SEXUAL DE TILÁPIAS, UTILIZANDO DIFERENTES DOSES HORMONAIAS DE 17 $\alpha$ -METILTESTOSTERONA NA FAZENDA KEVE FISH NA PROVÍNCIA DE CUANZA SUL-ANGOLA
- 17:00 Walid Medhioub**, Limayem Younes, Slimani Wissem, Sondes Bchir, Amel Medhioub  
LARVAL AND POST-LARVAL GROWTH, SPAT PRODUCTION AND OFF-BOTTOM CULTIVATION OF THE GROOVED CARPET SHELL *Ruditapes decussatus* IN THE GULF OF GABES (SFAX, OUED MALTINE)
- 17:20 Mohamed Naceur Dhraief**, Leila Guerdelly, Mohamed Salah Azaza  
PRODUCING GREY MULLET *Mugil cephalus* FRY FROM CAPTIVE BROODSTOCKS AT INSTM HATCHERY; STEPS TO SUCCESSFUL BREEDERS ADAPTATION, HORMONAL INDUCTION OF GONADAL DEVELOPMENT AND SPAWNING

THURSDAY

# FRIDAY, November 22

## AQUACULTURE VALUE CHAIN, TRADE, MARKETS

Friday, November 22 09:00 - 10:20 Amphi Cesar

Chairs: Sherif Sadek, Blessing Mapfumo

- 09:00** **Sandra Langi**, John Walakira, Hilde Toonen  
UNDERSTANDING THE AQUACULTURE GOVERNANCE LANDSCAPE IN UGANDA: A PRELIMINARY ASSESSMENT USING THE AQUACULTURE GOVERNANCE INDICATORS
- 09:20** **Lilian Elekwachi**  
DEVELOPING A SMART FISH SMOKING TECHNOLOGY FOR CATFISH AQUACULTURE IN THE NIGER DELTA, NIGERIA
- 09:40** **Etienne Hinrichsen**  
AQUACULTURE IN AFRICA – IS IT GROWING FAST ENOUGH?

## AQUACULTURE PRODUCTION WITHIN PLANETARY BOUNDARIES

Friday, November 22 09:00 - 15:40 Cesar

Chair: Samantha Mapfumo



### *Aquaculture Production within Planetary Boundaries*

As aquaculture evolves to meet global sustainability goals, the new GIZ Global Programme: 'Sustainable Aquatic Food' (GP-SAF) reflects a broader approach to managing aquatic resources responsibly. This session at AFRAQ 2024 will explore how aquaculture systems can remain productive while respecting planetary boundaries, offering insights from both extensive production systems and innovative, technology-driven practices.

### **Synopsis of the Session:**

The session is divided into two slots, each addressing critical aspects of sustainable aquaculture and the transition toward more holistic resource management. An interactive discussion, supported by the 'Mentimeter' tool, will be conducted to foster a mindset shift, encouraging participants to think about how innovations can enhance aquaculture productivity within environmental limits.

**09:00** ***Integrated Aquaculture Development Concepts (examples from 8 years of implementation by GIZ)***

This slot will feature speakers from the GIZ 'Global Initiative on Fish'. The discussion will focus on how aquaculture production systems are evolving to integrate broader aquatic resource management imperatives, and the continued German cooperation support going forward. The emphasis will be on extensive production systems that balance economic, social, and environmental considerations. The International Institute for Sustainable Development (IISD) plans to present their latest study "Sustainable Asset Valuation (SAVi) of Aquaculture, Madagascar - Beyond Production: An Integrated Assessment of Aquaculture Systems Production". This presentation will serve as a bridge to the topics in the second slot, focusing on intensification and digitalisation in aquaculture.

**10:20** **BREAK**

**10:40** ***Aquaculture Production within Planetary Boundaries – Intensification and Digitalisation***

Papers from the AquaSustain 2024 Bangkok conference, which included contributions by top experts from more than 27 countries, will be presented and discussed. An introduction will provide context for the ongoing global discussions, which will focus on:

1. Intensification in Aquaculture: Challenging the concept of intensification to enhance productivity.
2. Digitalisation in Aquaculture: Investigating if and how digital tools can help producers manage their operations more efficiently and sustainably.

## CLIMATE CHANGE

Friday, November 22 09:00 - 15:40 Odyssey

Chairs: Fernanda Garcia Sampaio, Mohamed Salah Romdhan



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**09:15** **Nikos Papandroulakis**  
MEDITERRANEAN AQUACULTURE ADAPTING TO CLIMATE CHANGE

**09:25** **Peter Britz**, Warwick Sauer, Jessica Eggers, Bernice McLean  
BUILDING RESILIENT AFRICAN FISHERIES AND AQUACULTURE VALUE CHAINS  
TO MITIGATE THE THREATS OF CLIMATE CHANGE

**09:35** **Tarek M. El-Geziry**  
FEATURED CLIMATE CHANGE SIGNS IN THE SOUTHERN LEVANTINE BASIN

- 09:55 Sahya Maulu**, Oliver Hasimuna, Moses Chibesa, Ian Bbole, Joseph Mphande, Mazuba Mwanachingwala, Kundananji Nawanzi, Doubt Chibeya, Sillah Siawwapa, Joyce Mbewe, Lucy Namukonda, Friday Balungu, Inyambo Mumbula, Mwangala Kabika, Shimbetu Mweemba, Mwaanda Sikanyenyene, Enock Siankwilimba, Imikendu Imbwa, Hansel Mweetwa  
PERCEIVED EFFECTS OF CLIMATE CHANGE ON AQUACULTURE PRODUCTION IN ZAMBIA: STATUS, VULNERABILITY FACTORS, AND ADAPTATION STRATEGIES
- 10:20 BREAK**
- 10:50 Abdel-Fattah M. El-Sayed**  
AQUACULTURE FEED AND FEEDING MANAGEMENT CHALLENGES IN THE FACE OF CLIMATE CHANGE – ARE WE READY?
- 11:55 Nathan Barros**, Anderson Melo Junior, Vitor Duque, Laís Soranço, Arthur Martins, Jonas Costa, Ive Muzitano, Giovana Cardoso, Icaro Alves, Giovanni Oliveira  
HOW TO MEASURE GHG EMISSION FROM AQUACULTURE?
- 12:00 Fernanda Garcia Sampaio**, Mohamed E. Megahed, Daniela Lucente, Tarûb Bahri, Xuechan Ma, Laura Anderson, Michelle Tigchelaar  
INTEGRATING AQUACULTURE INTO NATIONAL CLIMATE STRATEGIES – MITIGATION POLICY OPTIONS
- 12:20 Ana Paula Packer**, Marcelo Gomes da Silva, Fernanda Garcia Sampaio, Gilberto Manzoni  
EMISSIONS FROM BRAZILIAN AQUACULTURE IN BOTH RESERVOIRS AND OCEAN ENVIRONMENTS
- 12:40 LUNCH**
- 14:00 David Peter Mina Baya**  
THE IMPACT OF CLIMATE CHANGE ON FISHERIES AND AQUACULTURE IN THE DEVELOPING WORLD AND OPPORTUNITIES
- 14:10 Simona Paolacci**, Giovanni Marco Cusimano, Clara A. Revue, Jui-Che Chiang, Adrian G. Hartley  
HOW TO REDUCE AQUACULTURE EMISSIONS



## TILAPIA AND CATFISH

Friday, November 22 09:00 - 10:20 Olivier

Chair: Menaga Meenakshisundaram

- 09:00 Nassrin Mashaii**, Farhad Rajabipour  
THE RELATIONSHIP BETWEEN BIOTIC AND ABIOTIC FACTORS AND THE GROWTH OF CULTURED TILAPIA IN EARTHPOUND AND INDOOR SYSTEMS
- 09:20 Ivan Abaho**, Gerald Kwikiriza, Faith Atukwatse, Andrew A. Izaara, Joseph Ekwangu, Sylvester D. Baguma, Jerome Kubiriba, Nasser Kasozi  
SELECTIVE BREEDING FOR GENETIC IMPROVEMENT OF NILE TILAPIA *Oreochromis niloticus* (LINNAEUS, 1758) IN UGANDA: CURRENT STATUS, CHALLENGES, AND FUTURE PERSPECTIVES
- 09:40 Watson Pasipamire**, Clementain Zvavahera  
AN ASSESSMENT OF BREEDING, GROWTH AND SURVIVAL OF *Oreochromis macrochir* IN COMPARISON WITH *Oreochromis niloticus* REARED IN EARTHEN PONDS UNDER COOL TEMPERATURE
- 10:00 Gamal Osman El Naggar**  
TILAPIA FARMING IN EGYPT, "ITS PROGRESSIVE DEVELOPMENT, CURRENT CHALLENGES AND PROSPECTS FOR FUTURE SUSTAINABLE GROWTH"

## SANITARY AND PHYTOSANITARY ISSUES

Friday, November 22 09:00 - 10:40 Hall 3a

Chair: Ian Goulding

- 09:00 A. David Scarfe**, Gillian D. Taylor, Nenene Qekwana  
EDUCATIONAL PROGRAMS TO ENSURE A WELL-TRAINED AFRICAN AQUATIC VETERINARY WORKFORCE
- 09:20 Ian Goulding**  
EMERGING FOOD SAFETY RISKS IN AFRICAN AQUACULTURE PRODUCTS
- 09:40 Margarida Dos Santos Correia**, Francois Denner, Mikaela Arnstein, Taku Fundira  
IMPROVING BLUE ECONOMY TRADE CORRIDORS IN THE SADC REGION: TOWARDS THE ADOPTION OF A REGIONAL STRATEGY FOR ONE-STOP BORDER POSTS (OSBPS) ON FISHERIES PRODUCTS UNDER PROFISHBLUE
- 10:00 Oliver Jolezya Hasimuna**, Hyun S. Gweon, Hong Yang  
HEAVY METAL CONTAMINATION IN TWO AQUACULTURE FISH SPECIES *Oreochromis macrochir* AND *Coptodon rendalli* FROM THE KABOMPO RIVER, ZAMBIA: IMPLICATIONS FOR FOOD SAFETY AND AQUACULTURE

# WAS STUDENT SESSION

Friday, November 22 10:40 - 12:40 Amphi Cesar  
Chair: Amel Mzoughi, Nesrine Zayene



## Introduction to AFRAQ 24 Student Session

AFRAQ 24 serves as an essential platform for aquaculture professionals, students, and stakeholders to exchange ideas, explore innovations, and promote sustainable practices in the sector. The **World Aquaculture Society (WAS)** has long been a champion of advancing the aquaculture industry, particularly through the involvement and development of students and young professionals.

This session will feature experienced speakers who will share their personal and professional journeys, providing valuable insights to inspire the next generation of aquaculture leaders. A highlight of the session will be the **Career Pitch & Mentorship Circles**, where students will have the opportunity to connect with mentors, share their career aspirations, and receive feedback in a supportive environment. This initiative aims to foster personal connections and create a sense of belonging within the WAS aquaculture community.

## Agenda

### Part 1: Welcome and Introduction

- **Welcome Words**
  - **Speaker:** Khalid Salie (WAS Africa Chapter Student Manager)
  - **Overview:**
    - Khalid will introduce the session, discussing the importance of student engagement in aquaculture and how WAS is supporting students to drive forward sustainable practices.

### Part 2: Keynote Speakers

- **Keynote Address 1**
  - **Speaker:** Dr. John Walakira (Past President, WAS Africa Chapter)
  - **Overview:**
    - Dr. Walakira will share his personal journey, reflecting on how WAS shaped his career from his student days. He will provide practical advice on how students can use WAS resources and networks to advance their careers in aquaculture.

- **Keynote Address 2**
  - **Speaker:** Dr. Leila Basti (Programme Organiser, WorldFish, WAS ACP Director)
  - **Overview:**
    - Dr. Leila Basti will share her career experiences leading to her present role leading the *Asia-Africa BlueTech Superhighway* project and her role as a leader in aquaculture development with WorldFish. She will discuss the importance of sustainable practices, international collaboration, and how students can make a meaningful impact in the field.
- **Talk on Promoting Aquaculture**
  - **Speaker:** Dr Amel Mzoughi (Specialist in Sustainable Aquaculture)
  - **Overview:**
    - Amel will discuss the importance of connecting scientific research with the private sector to promote sustainable aquaculture. Drawing on her experience working with both research and private organizations, she will highlight the benefits of collaboration in advancing aquaculture practices and ensuring the industry's long-term viability.

### Part 3: Sharing Industry Start-up Experiences in Aquaculture

This part will focus on real-world experiences from innovators in aquaculture, sharing their successes and challenges in starting a business and in promoting responsible practices.

1. **Hend Aouini (Founder, Algaplast)**
  - **Project:** Algaplast – Red Seaweed (*Hypnea*) for Biodegradable Plastic Production
  - **Overview:** Hend will present her innovative company, **Algaplast**, which focuses on cultivating red seaweed to produce biodegradable plastics. She will discuss how her project is contributing to environmental sustainability and how aquaculture can be a tool for both economic and ecological innovation. She will speak about the personal journey of how she has achieved what she has with her career.
  - **Time:** 10 minutes
2. **Mohamed Ben Ahmed (Young Entrepreneur, Aquadeep)**
  - **Project:** Aquadeep
  - **Overview:** Mohamed will share her journey of launching her own Tunisian startup offering a SaaS platform tailored for the aquaculture industry. Their solution provides real-time monitoring and automation using computer vision and AI. It helps hatcheries track production, count fish larvae, and optimize processes efficiently. Built on AWS for scalability, Aquadeep supports sustainable growth and has partnered with leading hatcheries in France, Saudi Arabia, and beyond. He will discuss the advantages and challenges of following her dream in aquaculture, sharing valuable lessons with the students.
  - **Time:** 10 minutes

### 3. NGB (Notre Grand Bleu) – Ramla Bouhleb and Kaouthar Kaziz

- **Overview:** NGB will present the transition of their organization from opposing aquaculture development to becoming a key partner in promoting co-existence and sustainable practices in the region. They will explain how their work focuses on scientific outreach, the importance of social integration in aquaculture projects, and the development of public demonstration projects in aquaponics.
- **Time:** 15 minutes
- **Key Focus:** Importance of aquaculture projects for social integration, education, and sustainable community development.

#### Part 4: Career Pitch & Mentorship Circles

- **Chair:** Nesrine Zayene (Assistant Professor at the University of Carthage, Specialist in Aquaculture Nutrition)
- **Moderator:** Amel Mzoughi, Leila Basti and Peter Britz
- **Co-Moderators:** Nourhen Rebai (PhD Student, Specialised in Blue Growth Economy and Marine Pollution)
- **Overview:**
  - Participants will be divided into small groups to facilitate intimate discussions with mentors, including the opportunity for students to pitch their aquaculture career plans.
  - This interactive segment aims to create a safe space for deeper discussions, allowing students to connect with mentors personally and receive feedback on their aspirations.
  - The segment will conclude with brief networking opportunities to foster relationships.
  - **Rodrigue Yossa**
  - A POCKET GUIDE TO SCIENTIFIC WRITING IN AQUACULTURE RESEARCH

#### Closing Remarks and Follow-Up

- Summarize key takeaways from the session, emphasizing the importance of innovation, sustainability, and student participation in the future of aquaculture.
- **Questions & Prizes (5 minutes)**
  - Open the floor for any final questions from participants.
  - Announce prizes for best participants ideas, fostering a sense of accomplishment and engagement.

## RESEARCH AND FISH HEALTH SPECIAL SESSION

Friday, November 22 10:40 - 12:40 Olivier

Chair: Viskam Wijawardena



### ***Defining Critical Aquatic Animal Health R&D Needs for Sustainable Aquaculture Development in Africa***

Despite the promising advancements in the aquaculture sector in Africa, there are significant diseases challenges that need to be addressed. The International Atomic Energy Agency (IAEA) through its mandate of peaceful uses in nuclear technologies, helps member states to achieve enhanced and superior agricultural products, better nutrition and health, conserving environment and sustainable livelihoods among other initiatives. The Department of Technical Cooperation and the Animal Production and Health Section of the Joint FAO/IAEA Center (NAFA) within IAEA have taken the leadership in these activities in Africa and other regions. Therefore, the IAEA is dedicated and eager to provide assistance and guidance in respect of R&D requirements for the sustainable development of the African Aquaculture Industry.

This special session is a call to action for member states to engage in a meaningful dialogue and collaborate on the critical yet often overlooked challenges in the African aquaculture industry. With a focus on sustainable practices, the session will feature insightful presentations from member states and experts detailing specific R&D gaps and needs, and potential solutions.

The session aims to pinpoint essential R&D avenues that are pivotal for the industry's sustainability. The IAEA stands ready to bridge these gaps, offering robust support through capacity building and knowledge transfer. The culmination of this collaborative effort will be the creation of a white paper—a strategic document that will condense the collective insights and recommendations. This paper will be presented to the IAEA and other key stakeholders..

#### **Session Agenda:**

Introduction (IAEA staff)

Keynote address: Overview of aquatic animal health status and ways to combat emerging threat in Africa.

Cameroon – Health/exports

Tunisia (vaccine +diagnostics)

Another MS on production issues (breeding)

15- Innovative tools and technologies for tackling livestock diseases and their potential applications in aquaculture (IAEAT)

FRIDAY

# THIRD ANNUAL FINANCING & INVESTMENT SESSION: Innovative Approaches to Financing Small-Scale Aquaculture

Friday, November 22 10:40 - 12:40 Hall 3a

Chair: Bernice McLean



## 1. Background:

The First Financing and Investment Session was held during the Africa's inaugural AFRAQ Conference in Alexandria, Egypt in March 2022. To continue the dialogue towards tangible results, the 2nd Finance and Investment Session was held during AFRAQ23 in Zambia which built from on the discussions and set forth a roadmap. The 3rd Financing and Investment Session has been organized during AFRAQ24 to continue the discussions and to look specifically into innovative Approaches to Financing Aquaculture Development in Africa

The potential of aquaculture development for Africa's economic growth is well recognized and supported with a considerable "blue food" demand that is consistently unmet by capture fisheries. A great deal of projects both globally and in Africa, have been financed with mixed results. The private sector, development finance institutions and governments are increasingly interested in investing in aquaculture value chains in Africa. Global investment companies are exploring opportunities and innovative approaches to further support aquaculture businesses in Africa, including those that are not yet of direct commercial interest to the commercial companies. A coordinated, strategic and innovative approach to financing and investment is needed to ensure that national, regional and continental policies, strategies and aspirations are met and that initial investments are used to catalyze additional financing to fully realise aquaculture value chains in a viable and sustainable manner.

The First Financing and Investment Session held during the 2022 AFRAQ Conference, successfully convened a wide range of stakeholders to share experiences and identify some of the priority actions. These ranged from improving coherency in the national and regional policy environment, to promoting innovative investment models, and leveraging existing financial instruments to support the small-scale entrepreneurs in Africa, to establishing a pan-African mechanism for collecting and sharing information on aquaculture issues and investment opportunities.

This session catalysed the convening of a small informal multi-stakeholder group of interested organizations and investors that collaborated since the first AFRAQ event to share knowledge and to try to identify ways to support aquaculture businesses through increased investments into sustainable aquaculture within the region. The 2nd Finance and Investment Session during AFRAQ23 built from these discussions and set forth a roadmap. The 3rd Finance and Investment Session is now being held at AFRAQ24 to take the conversations further and showcase some of the innovative approaches to financing small scale aquaculture.

## 2. Objectives & Intended Outcome:

The overall goal of this session is to serve as a platform to share information, lessons and best practices on financing and investment for development of aquaculture on the continent. The objectives of the session are to:

1. Showcase innovative approaches to financing small-scale aquaculture in Africa
2. Engage and consult with the sector on current experiences and proposed models for supporting aquaculture business development to attract finance and investment in the industry,
3. Receive feedback and energise the sector towards taking coordinated action, and
4. Agree on next steps to AFRAQ25.

The Third Financing and Investment session at AFRAQ24 will seek to further the ongoing innovative mechanisms in which respective stakeholders can engage with and support industry development over the medium - long term.

## 3. Date and time:

The session will be held on the afternoon of November 22, 2024, from 10h40 – 12h40.

## 4. Approach:

The approach to the session will be based on 3 main principles:

1. Geographically Representative of the African continent
2. Short presentations and a sufficient time for discussion/brainstorming
3. Action-oriented with practical impact-driven recommendations

## 5. Format and Content:

Moderation: AUDA-NEPAD

### Session 1: Opening Session

Opening Remarks and introductory presentation to set the scene and objectives for the discussion

### Session 2: Presentation Session

Participation in the Session will involve:

- i. Private sector multi-nationals on support for aquaculture operators
- ii. Private sector operators on innovation and business readiness for investment
- iii. Decision-makers on learning from successes and adjusting policy support for enabling industry development
- iv. Development Partners and Finance Institutions on financing for effective and coordinated implementation
- v. Investors on targeted and relevant contributions for industry needs
- vi. Research community on producing and sharing the necessary knowledge / information to incubate and advance the industry and remove bottle-necks.

### Session 3: Discussion Session

The Roundtable discussion session will respond to the key issues and opportunities arising out of the presentation session and will yield key recommendations for taking forward.

**Contact: Bernice Mclean: [Bernicem@nepad.org](mailto:Bernicem@nepad.org)**

- 10:40 Foluke Areola**, President of the African Chapter  
Opening Remarks
- 10:45 Bernice Mclean** (AUDA-NEPAD)  
Setting the scene: Presentation of Session objectives and background
- 10:50 AquaSpark**  
Investment in Africa's Aquaculture industry
- 11:00 Harrison Charo-Karissa** (World Bank / IFC)  
Perspectives on finance and investment in African aquaculture
- 11:10 Alexander Kefi**  
SADC SADC support to aquaculture development:
- 11:20 Future Fish**  
Future Fish: Enabling investment for aquaculture development
- 11:40 Gavin Johnston**, Gatsby Africa & ACMS  
Building business skills for investment readiness
- 11:50 Tayamika Chimatiro**, Lughano Kayisi  
FINTECH A PATHWAY TO FINANCIAL INCLUSION: THE CASE OF FISH FARMERS IN MCHINJI DISTRICT, MALAWI
- 12:00 Felix Sugantham**  
THE BLUE HORIZON EMPOWERMENT INITIATIVE BY AQUAFIN ENHANCED AQUACULTURE AND COMMUNITY RESILIENCE IN TAMILNADU INDIA
- 12:10 Peter Britz**, Matteo Marinelli, Aisha Ibrahim  
DE-RISKING LOANS TO SMALL-SCALE FARMERS THROUGH SOCIAL CAPITAL AND DATA-LED MANAGEMENT – LESSONS FROM NIGERIA
- 12:20 Open discussion:**
- 12:35 Next steps & Closing - Bernice Mclean** (AUDA-NEPAD)

FRIDAY



## FEED NUTRITION PHYSIOLOGY - CONTINUED

Friday, November 22 14:00 - 15:40 Amphi Cesar

Chairs: Ashraf Goda, Znati Walid

- 14:00 Samuel B. Umma**, Yetunde E. Agbeja, John Ed-Idoko  
DIETARY EFFECT OF ATAMA *Heinsia crinita* LEAVES EXTRACT ON GROWTH, PHYSIOLOGY AND ECONOMIC FEED CONVERSION RATIO OF NILE TILAPIA
- 14:20 Manuel Dias Guepe**, Eunice Cassoma  
EFEITO DA RAÇÃO ARTESANAL À BASE DE RESÍDUOS VEGETAIS E VÍSCERAS DE PEIXES NO CRESCIMENTO DA MASSA CORPORAL DO JUVENIL DE TILÁPIA DO NILO *Oreochromis niloticus*
- 14:40 Meri To So**  
TOLERANCE TO AMMONIA, NITRITE AND DISSOLVED OXYGEN IN POSTLARVAE AND JUVENILES OF WHITE SHRIMP *Penaeus setiferus* AND *Penaeus vannamei*
- 15:00 Daniel Adjei-Boateng**, Eric Boakye, Prince Ofori-Darkwah, Christian Takyo Antwi, Rashid Atoge, Regina Esi Edziyie  
EFFECTS OF DIFFERENT ARTIFICIAL FEEDS ON WEANING AGES ON THE SURVIVAL AND GROWTH PERFORMANCE OF AFRICAN BONYTONGUE *Heterotis niloticus* FRY
- 15:20 Fernanda Garcia Sampaio**, Mohammad R. Hasan, Abdel-Fattah El-Sayed, Ahmed Nasr-Allah, Mohamed Fathi Eliwa  
AN OVERVIEW OF LOCAL ALTERNATIVE INGREDIENTS, AQUAFEED SUPPLY AND FEEDING MANAGEMENT IN SELECTED AFRICAN COUNTRIES

## AQUATIC ANIMAL HEALTH 'ONE HEALTH' WORKSHOP

Friday, November 22 14:00 - 15:40 Olivier

Chair: Nellie Isyagi

- 14:00 Nelly Isyagi**, Delvis Fortes, Bodjo Charles, Cisse Boukary, Rafik Nouaili, Hellen Guebama, Mohamed Seisay, Obinna Anozie, Hiver Boussini, John Oppong-Otto  
STRENGTHENING THE CAPACITY FOR ESTABLISHING EFFECTIVE AND RESILIENT ONE HEALTH AQUATIC ANIMAL HEALTH AND BIOSECURITY CONTROL SYSTEMS IN AFRICA

## CONTRIBUTED SESSION 2

Friday, November 22 14:00 - 15:40 Hall 3a

Chair: TBA

- 14:00** **Baba Usman Ibrahim**, Balogu Dennis Odionyenfe, Usman Maryam  
COMPARATIVE GROWTH ASSESSMENT OF AFRICAN CATFISH *Clarias*  
*gariepinus* FED SWEET POTATO *Ipomea batata* LEAF MEAL AND RICE BRAN AS  
ALTERNATIVE FEED MEAL
- 14:20** **L. Nwanna**, Ganiyu Oboh, Elizabeth Ogunjobi, Samuel Opeyemi, David Ogutuga  
CITRUS PEELS FERMENTED WITH *Penicillium notatum* REPLACED UP TO 75%  
OF MAIZE IN THE DIETS OF AFRICAN CATFISH *Clarias gariepinus*
- 14:40** **Amine Chaabane**, Francisco Javier Moyano, Juan Miguel Mancera  
EVALUATION OF BIOLOGICAL EFFECTS OF WINE INDUSTRY BY-PRODUCTS  
ON EUROPEAN SEA BASS *Dicentrarchus labrax*
- 15:00** **Ashraf El-Dakar**, Yousef Talaat, Mohamed Abdel-Aziz  
IMPACT OF DIETARY ESSENTIAL OILS OF CORIANDER *Coriandrum sativum* AND  
BASIL *Ocimum basilicum* ON GROWTH, DIGESTIVE ENZYMES, ANTIOXIDANT  
ACTIVITY AND BODY COMPOSITION OF FINGERLING NILE TILAPIA *Oreochromis*  
*niloticus*

FRIDAY

# NOTES

FRIDAY

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