



AQUACULTURE AFRICA 2021  
Alexandria Egypt, Dec. 11-14, 2021

## SUNDAY, December 12

### WELCOME, OPENING CEREMONY AND PLENARY 1

Sunday, December 12 09:00 - 10:40 Principle Hall  
Chair: Sherif Sadek

**09:00 WELCOME WORDS**

**09:30 Abdel-Fatah El-Sayed**  
STATUS OF AQUACULTURE IN EGYPT

**10:00 OPENING CEREMONY**

### COUNTRY REPORTS

Sunday, December 12 11:00 - 12:20 Principle Hall  
Chair: John Walakira

**11:00 Noam Mozes, Amit Savaya, Guy Rubinstein, Nir Froyman**  
DESERT LAND-BASED AQUACULTURE AND OFFSHORE MARICULTURE RECENT  
INNOVATION AND DEVELOPMENT DIRECTIONS IN ISRAEL

**11:20 John Walakira, Etienne Hinrichsen, Blessing Mapfumo, Lanre Badmus, Nabil Ibrahim, Victoria Boit, Heike Baumüller**  
ENHANCING FOOD SECURITY, JOB AND WEALTH CREATION IN AFRICA THROUGH  
AQUACULTURE: CASE STUDIES OF SUCCESSFUL COUNTRIES AND INNOVATIONS

**11:40 Bernadette Fregene, Harrison Charo-Karisa, Ajibola Olaniyi**  
IMPACT OF AQUACULTURE COMPACT, TECHNOLOGIES FOR AFRICAN  
AGRICULTURE TRANSFORMATION PROGRAM ON AFRICA'S TILAPIA SEED  
PRODUCTION

**12:00 Etienne Hinrichsen**  
ADDRESSING EXPORT BARRIERS FOR SOUTH AFRICAN AND NAMIBIAN SHELLFISH  
- THE TRADE FORWARD SOUTHERN AFRICA PROGRAMME

## AQUACULTURE DEVELOPMENT

Sunday, December 12 11:00 - 12:20 Small Theatre  
Chair: Salah Mesalhy Aly

- 11:00** **Eman El-Wazzan**, Ahmed Kotit, Ahmed S.A. Abbas  
POTENTIAL AND CHALLENGES OF HATCHERY-BASED BIVALVES AQUACULTURE IN EGYPT: AN EMERGING INDUSTRY
- 11:20** **Sherif Sadek**, Mohamed Fathy Osman, Noor Ahmed  
GROWTH PERFORMANCE IN SEMI-INTENSIVE SHRIMP *Litopenaeus vannamei* PONDS FROM DIBA TRIANGLE ZONE, EGYPT, USING TWO COMMERCIAL FEEDING TYPES: SHRIMP FEED (38%CP) AND TILAPIA FEED (36%CP)
- 11:40** **Flower E. Msuya**, Elizabeth Cottier-Cook, Claire Gachon, Juliet Brodie, Louise Shaxson, Ivy Matoju, Amelia Buriyo, Sadock Rusekwa, Msafiri Andrew, Janina Brakel, Iona Campbell, Anicia Hurtado, Phaik Eem Lim, Stuart Ross, Grant Stentiford  
CHALLENGES OF THE SEAWEED INDUSTRY IN TANZANIA AND THE ROLE OF THE GLOBALSEAWEEDSTAR PROJECT
- 12:00** **Abisola Akinyemi**, Bernadette Fregene, Bolarin Omonona  
GENDER AND CREDIT CONTROL AMONG AQUACULTURE PRODUCERS IN SOUTHWESTERN, NIGERIA

## SEED PRODUCTION

Sunday, December 12 11:00 - 12:20 Multiple Purpose Room  
Chair: Steve Amisah

- 11:00** **Reham Negm**, Hadir Abdel Maguid Aly, Heba Saad El-Sayed  
DETERIORATION OF NEWLY HATCHED LARVAE AND POTENTIALITY OF REARING LARVAL AND POST-LARVAL STAGES OF EUROPEAN SEA BASS *Dicentrarchus labrax* IN STRESSED GROUND MARINE WATER THROUGH MANAGING WATER SYSTEMS
- 11:20** **Temitope Adebayo**, Adebisi Musefiu Tihamiyu, Titilope Mary Olujo, Abigael Temitope Akinsowon  
AN EVALUATION OF INDUCED FISH BREEDING TECHNIQUES IN AFRICA CATFISH *Clarias gariepinus* (BURCHELL, 1822)
- 11:40** **Buumba Hampuwo**, Daud Kassam, Jeremiah Kango'mbe, Rose Basiita, Alexander Kefi  
THE REPRODUCTIVE PERFORMANCE OF THREE POPULATIONS OF *Oreochromis andersonii* (CAUSTELNAU, 1861) BROODFISH
- 12:00** **Ahmed Md. Salem**, Sara Castanho, João Henriques, Ana Candeias-Mendes, Margarida Gamboa, Wilson Pinto, Pedro Pousão-Ferreira, Laura Ribeiro  
DECREASING ARTEMIA PERIOD AS A STRATEGY FOR *Argyrosomus regius* LARVAE EARLY WEANING: IMPACTS ON GROWTH AND DIGESTIVE PHYSIOLOGY

**TILAPIA HEALTH MANAGEMENT**

Sunday, December 12 11:00 - 12:20 Room C

Chair: Mohamed Marzouk



- 11:00 Abdel-Fattah El-Sayed**  
NUTRITIONAL FISH DISEASES – HOW TO AVOID
- 11:20 Mohamed Marzouk**  
BIOSECURITY IN FISH CULTURE
- 11:40 Win Surachetpong**, Jidapa Yamkasem, Puntanat Tattiyapong  
EMERGING VIRAL DISEASES THAT THREATEN GLOBAL TILAPIA AQUACULTURE

**NUTRITION**

Sunday, December 12 11:00 - 17:40 Lecture Hall

Chair: Marc Verdegem, Ashraf El Dakar, Guillaume Le Reste

- 11:00 Radi Mohamed**, Ahmed Abozeid, Mohamed Abdel-Rahim, Fatma Abouelenien, Asmaa Elkaradawy  
*Quillaja saponaria* AND/OR *Yucca schidigera* AMELIORATE WATER QUALITY, GROWTH PERFORMANCE, IMMUNE-OXIDATIVE STATUS, DIGESTIVE ENZYMES, INTESTINE AND GILLS HISTOMORPHOLOGY OF NILE TILAPIA *Oreochromis niloticus*
- 11:20 Robert Serwata**, Daniel Arana, Jorge Dias  
EXOGENOUS PHYTASE APPLICATION IN NILE TILAPIA *Oreochromis niloticus* FEED REDUCES THE REQUIREMENT FOR INORGANIC PHOSPHORUS AND ENHANCES GROWTH PERFORMANCE
- 11:40 Sofolabi Sofela**, Karen Veverica, Akinleye Akinwale  
FEED CONSUMPTION AND FEED CONVERSION OF *Clarias gariepinus* RAISED IN SMALL PLASTIC TANKS AFFECTED BY METHOD OF WATER EXCHANGE
- 12:00 Marc Verdegem**, Hala Saber Khalil, Daa Al-Kenawy, Sahya Maulu, Rodrigue Yossa, Alaa Badr-Eldin, Arjen Roem, Johan Schrama  
GROWTH EFFICIENCY, APPARENT NUTRIENT DIGESTIBILITY, AND NATURAL FOOD INTAKE IN NILE TILAPIA *Oreochromis niloticus* FED DIETS WITH DIFFERENT LEVELS OF BIO-AVAILABLE PHOSPHORUS
- 12:20 LUNCH**
- 14:00 Radi Mohamed**, Asmaa Elkaradawy, Ahmed Abozeid, Asmaa El-Nokrashy, Mohamed Abdel-Rahim  
SYNERGISTIC EFFECTS OF THE SOAPBARK TREE *Quillaja saponaria* AND VITAMIN E ON WATER QUALITY, GROWTH PERFORMANCE, BLOOD HEALTH, GILLS AND INTESTINE HISTOMORPHOLOGY OF NILE TILAPIA *Oreochromis niloticus* FINGERLINGS

- 14:20 Mutia Grace Mumbi**  
EFFECTS OF SEAWEEDS *Chaetomorpha crassa* AND *Ulva rigida* AS FEED ADDITIVES ON THE GROWTH PERFORMANCE AND BODY COMPOSITION OF NILE TILAPIA *Oreochromis niloticus* FINGERLINGS
- 14:40 Olufemi Akanbi**, Niall Vine, Henry Njom, Graeme Bradley  
ISOLATION AND IDENTIFICATION OF POTENTIAL PROBIOTICS FROM THE DIGESTIVE TRACT OF THE SHORT-SPINED SEA URCHIN *Tripneustes gratilla*
- 15:00 Lawrence Nwanna**, Benson Ikuesan  
ALOE VERA LEAF EXTRACTS IRON-OXIDE NANOPARTICLES IMPROVED GROWTH AND IMMUNITY OF AFRICAN CATFISH *Clarias gariepinus*
- 15:20 Mexford Mulumpwa**  
THE POTENTIAL OF INSECT MEAL IN IMPROVING FOOD SECURITY IN MALAWI: AN ALTERNATIVE OF SOYBEAN AND FISHMEAL IN LIVESTOCK FEED
- 15:40 BREAK**
- 16:00 Guillaume Le Reste**, Mamy Andriantsoa, Henri Andrianiaina, Damien Desprez, Léo Godard, Fanomezantosa Randriarilala, Samuel Rakotoambinina, Lovasoa Rakotoasimbola, David Rakotomavo, Frédéric Mauny, Sylvain Delord  
EFFECT OF GRADED INCLUSION RATE OF A LOCALLY PRODUCED PEANUT *Arachis hypogaea* MEAL IN EXTRUDED FEED ON THE GROWTH OF CARP *Cyprinus carpio* AND TILAPIA *Oreochromis niloticus* FARMED IN THE ANALAMANGA REGION IN MADAGASCAR
- 16:20 Alaa M. Badr-Eldin**, Darja Dobermann, Diaa Al-Kenawy, Hussein Alkady, Hassan Ali  
GROWTH OF NILE TILAPIA *Oreochromis niloticus* ABBASSA STRAIN FED ON INSECT MEAL, FISH MEAL OR PLANT BASED DIETS IN EGYPT

## GREY MULLET

Sunday, December 12 11:00 - 17:40 Delegate's Hall  
Chair: Kevan Main, Ashraf Goda

- 11:00 H. Lee Blankenship**, Kenneth M. Leber  
RESPONSIBLE APPROACH TO MARINE STOCK ENHANCEMENT
- 11:40 Noam Mozes**, Amos Tandler, Kevan Main, Ken Leber, Mohamed A. Essa  
STOCK ENHANCEMENT AND PRODUCTION OF THE GREY MULLET FRY - A SUSTAINABLE CHOICE. A MERC PROJECT
- 12:00 Amr Moneer Helal**, Mohamed A. Essa, Amr M. Helal, Nevine M. Abou Shabana, Basem S. Abdelaty, Mohamed A. Elokaby, Mohamed Baroma, Mohamed El Hammamy, Ahmad M. Aboseif, Ashraf M.A.-S. Goda  
EFFICACY OF CODED WIRE-TAGGING AS A TOOL TO ENHANCE THE STOCK OF GREY MULLET IN WADI EL-RAYAN LAKE AS ENCLOSED WATER BODIES

- 12:20 LUNCH**
- 14:00 Guy Rubinstein**, Iris Meiri, Hanna Rosenfeld, Noam Mozes  
STOCKING MULLET FINGERLINGS IN THE SEA OF GALILEE AS PART OF AN ECOLOGICAL BALANCE MANAGEMENT
- 14:20 Neila Hamza**, Ines Ben Khemis, Mohamed Salah Azaza  
SEEDING OF YOUNG TAGGED MULLET IN TUNISIAN RESERVOIRS: PRELIMINARY RESULTS
- 14:40 William Koven**, Oriya Nixon, Dor Israeli, Iris Meiri-Ashkenazi, Enric Gisbert, Amos Tandler  
CHANGING NUTRIENT REQUIREMENTS DURING THE TROPHIC SHIFT FROM LARVAL CARNIVORY TO JUVENILE OMNIVORY IN GREY MULLET *Mugil cephalus*
- 15:00 Mohamed Naceur Dhraief**, Leila Guerdely, Dora Zouiten, Mohamed Salah Azaza  
MANAGEMENT OF CAPTIVE BROODSTOCK GREY MULLET *Mugil cephalus* AT INSTM HATCHERY
- 15:20 William Koven**, Iris Meiri Ashkenazi, Aldo Corriero, Rosa Zupa, Oriya Nixon, Vered Zlatnikov, Chen Bracha, Hanna Rosenfeld  
ASSESSMENT OF THE EFFECTS OF CAPTIVITY ON FIRST SEXUAL MATURITY OF WILD-CAUGHT AND HATCHERY-PRODUCED MULLET *Mugil cephalus*
- 15:40 BREAK**
- 16:00 Lior David**, Dor Agiv, Itay Oz, Evgenia Marcos-Haddad, Ayana Benet-Perelberg, Boaz Ginzbourg  
DEVELOPING SEX-REVERSED MALES BROOD FISH FOR PRODUCTION OF ALL-FEMALE PROGENY POPULATIONS OF THE GREY MULLET
- 16:20 Sherif Sadek**  
PRODUCTION OF MULLET IN CAGES: EGYPTIAN CASE
- 16:40 Boaz Ginzbourg**, Noam Mozes  
COMMERCIAL SCALE HATCHERY PRODUCTION OF MULLET FRY IN ISRAEL-CHALLENGES AND SUCCESS
- 17:00 Kevan Main**  
PANEL DISCUSSION

**SUSTAINABLE AQUACULTURE**

Sunday, December 12 14:00 - 15:40 Small Theatre

Chair: Abd El Rahman Khattaby



- 14:00 Abd El Rahman Khattaby**, Technical Support Advisor, Aller Aqua Egypt  
FUNCTIONAL FEEDS
- 14:20 Hanno Slaw ski**, Group R&D Director, Aller Aqua Group  
SUSTAINABLE FEED: RAW MATERIALS AND COMPOSITION
- 14:40 BREAK**
- 15:00 Mohammed Teleb Mekawy**, Technical Support Advisor, Aller Aqua Egypt  
WATER QUALITY AND DETERMINANTS OF SUSTAINABLE AQUACULTURE DEVELOPMENT
- 15:20 Poul Rosendorf**, Project Manager, OxyGuard International  
CONTROL IS KEY! WATER QUALITY MEASURING AND CONTROL, FARM MANAGEMENT
- 15:40 QUESTIONS**
- 16:00 THANK YOU FOR TODAY**

**SEAWEED, SEA URCHINS**

Sunday, December 12 14:00 - 15:40 Multiple Purpose Room

Chair: Msuya Flower

- 14:00 Flower Msuya**, Msafiri Ndawala, Amelia Buriyo, Elizabeth Cottier-Cook  
WHAT TYPES OF MACRO-ORGANISMS FOUL SEAWEED FARMS? CASE STUDY OF ZANZIBAR, TANZANIA
- 14:20 João Araújo**, Ana Candeias-Mendes, Paulo Loureiro, Jorge Dias, Florbela Soares, Narcisa Bandarra, Pedro Pousão-Ferreira  
TESTING A NEW FORMULATED FEED FOR PURPLE SEA URCHINS *Paracentrotus lividus* ON ONGROWING CULTURE
- 14:40 Jerry Mang'ena**, Claire Gachon, Clement Mlay, Janina Brakel, Rose Masalu  
ASSESSMENT OF CAUSATIVE AGENTS IN ICE ICE DISEASE IN *Kappaphycus alvarezii* AND RELEVANT MOLECULES FOR PROLIFERATION OF ALGAL PATHOGENS IN ZANZIBAR ISLANDS

## EGYPT-FRENCH AQUACULTURE SEMINAR

Sunday, December 12 14:00 - 15:40 Principle Hall

Chair: TBA

### GENETICS OMICS

Sunday, December 12 14:00 - 17:40 Principle Hall

Chair: Morris Agaba, Nazari Sajad

- 14:00** **Mohammad Y. Abubakar**, Ipinjolu J. Kayode, Yuzine B. Esa, Magawata Ibrahim, Hassan W. Akin, Turaki A. Abdullahi  
GENETIC DIVERSITY OF WILD POPULATION OF *Heterobranchus bidorsalis* AND *Heterobranchus longifilis* BASED ON MITOCHONDRIAL DNA CYTOCHROME OXIDASE 1 GENE ANALYSIS
- 14:20** **Mohammed Nambyl A. Fagbemi**, Lise-Marie Pigneur, Adrien André, Nathalie Smitz, Vincent Gennotte, Johan R. Michaux, Charles Mélard, Philippe A. Laleye, Carole Rougeot  
STRUCTURE GENETIQUE DES POPULATIONS SAUVAGES ET D'ELEVAGE DE TILAPIA DU NIL, *Oreochromis niloticus* AU BENIN BASEE SUR LA TECHNOLOGIE SNP A L'ECHELLE DU GENOME
- 14:40** **Sajad Nazari**, Saltanat Najjar Lashgari, Mahdi Golshan  
DETECTION OF FUNCTIONAL SNP MARKERS IN RAINBOW TROUT *Onchorhynchus mykiss* FROM NEXT GENERATION SEQUENCING (NGS) DATA
- 15:00** **Mona Saleh**, Gokhlesh Kumar, Abdel-Azeem Abdel-Baki, Mohamed Dkhil, Saleh Al-Quraishy, Mansour El-Matbouli  
NEW PERSPECTIVES OF FISH-PARASITE INTERPLAY BY PROTEOMIC ANALYSES OF *Ichthyophthirius multifiliis* INFECTED COMMON CARP *Cyprinus carpio* SKIN MUCUS
- 15:20** **Edwin Kikamba**, Daniel Sikawa, Wilson Jere, Petros Chigwechokha  
ESTIMATES OF COMBINING ABILITY ON GROWTH TRAITS IN A FULL DIALLEL CROSSES OF THE THREE STRAINS OF *Oreochromis macrochir* (BOULENGER, 1912)
- 15:40** **Asma Karim**, Haji Muhammad  
DNA BARCODING APPLICATION IN STUDY OF ICTHYO- BIODIVERSITY IN RIVER INDUS AT TAUNSA BARRAGE, PAKISTAN

**AQUACULTURE DEVELOPMENT - CONTINUED**

Sunday, December 12 16:00 - 17:40 Small Theatre

Chair: Etienne Hinrichsen

- 16:00** **Mohammad Al-Zibdah**  
LAND BASED AQUACULTURE PRACTICES IN AQABA; A VISION FOR PROGRESS IN JORDANIAN IMPLEMENTATION
- 16:20** **MJohn Domozero**, Karen Veverica, Jeff Terhune, Sofela Sofolabi, Chris Slem, Josh Neiderman, Theresa Fang  
SUPPORTING AQUACULTURE DEVELOPMENT ACTIVITIES
- 16:40** **Diogo Gomes**, Rui Ferreira, João Ferreira, Jorge Mafuca, Claque Maunde  
ZONING FOR FISHERIES AND AQUACULTURE IN CAHORA BASSA, MOZAMBIQUE
- 17:00** **Etienne Hinrichsen**, Papius Dias Tibihika, John Benzie, Jose Parajua, Koffi Honouga, Elysee Nzohabonayo  
ADVANCING AQUACULTURE IN EAST AFRICA: THE TRUE-FISH PROJECT



## MONDAY, December 13

### PLENARY 2

Monday, December 13 09:00 - 09:40 Lecture Hall  
Chair: Sherif Sadek

- 09:00 Abdulhakim Elwaer**  
UNLOCKING AQUACULTURE PROSPECTS IN AFRICA AND THE NEAR EAST

### NUTRITION - CONTINUED

Monday, December 13 09:40 - 10:20 Lecture Hall  
Chair: Ashraf El Dakar

- 09:40 Ashraf El-Dakar**, Shymaa M. Shalaby, Esraa E. Mostafa, Mohamed F. Abdel-Aziz  
DETERMINING THE OPTIMUM LEVEL OF DIETARY PROTEIN AND FEEDING FOR IMPROVING THE GROWTH PERFORMANCE AND FEED EFFICIENCY OF JUVENILES HYBRID TILAPIA *Oreochromis niloticus* × *Oreochromis aurea* REARED IN BRACKISH WATER
- 10:00 Daniel Montero**, Silvia Torrecillas, Tibiabin Benitez-Santana, Marisol Izquierdo  
REPLACEMENT OF FISHMEAL BY ANTARCTIC KRILL MEAL IN DIETS OF EUROPEAN SEA BASS *Dicentrarchus labrax*: EFFECTS ON GROWTH PERFORMANCE, FEED UTILIZATION AND LIVER METABOLISM
- 10:20 Hanoch Glassner**, Margarita Smirnov, Tamir Ofek, Yiftach Cohen, Benny Ron  
USING DESALINATION BRINE FOR SEABASS *Dicentrarchus labrax* AQUACULTURE

### PHYSIOLOGY

Monday, December 13 09:40 - 10:20 Small Theatre  
Chair: Adeosun Festus

- 09:40 Abinawanto Abinawanto**, Nia Vardini, Jojo Subagja, Anang Hari Kristanto, Retno Lestari, Astari Dwiranti, Anom Bowolaksono  
VIABILITY AND FERTILIZATION RATE OF *Tor soro* SPERMATOZOA AFTER FREEZING: THE EFFECT OF EGG YOLK FREE-RANGE CHICKEN AS A NATURAL CRYOPROTECTANT
- 10:00 Md. Jakiul Islam**, Matthew James Slater, Andreas Kunzmann  
MITIGATION OF EXTREME HEATWAVE STRESS IN FISH THROUGH DIETARY MANIPULATION: THE CASE OF EUROPEAN SEABASS *Dicentrarchus labrax*

## AQUATIC ANIMAL HEALTH - VET TRAINING

Monday, December 13 09:40 - 10:20 Multiple Purpose Room

Chair: Mohamed Marzouk

Sponsor:



- 09:40** **Ajangale Nelly Isyagi**, Vivian Lee, Eva Marie Quijano Cardé, Claudia Venegas, Darbi Jones, Bartolomeo Gorgoglione  
FOSTERING OPPORTUNITIES TO ENHANCE THE AQUATIC VETERINARY EDUCATION
- 10:00** **Jeff Terhune**, Karen Veverica, John Domoroza, Sofela Solalabi, Theresa Wang, Joshua Neiderman, Chris Slemph  
IMPROVING FISH HEALTH CAPABILITIES IN EMERGING AQUACULTURE INDUSTRIES IN WESTERN SUB-SAHARAN AFRICA
- 10:20** **Selim A. Alarape**, Oluwaseun A. Ogundijo, Veronica E. Adetunji, Olufemi B. Adedeji, Olanike K. Adeyemo  
ROLES OF FACULTY OF VETERINARY MEDICINE IN AQUATIC MEDICAL TRAINING AND RESEARCH IN NIGERIA: A CASE STUDY OF UNIVERSITY OF IBADAN

## EDUCATION AND TRAINING

Monday, December 13 10:40 - 12:00 Delegate's Hall

Chair: Sofela Sofolabi

Sponsor:



- 10:40** **Sipho Mafuyeka**, Deborah Robertson-Anderson, Khalid Salie  
AQUACULTURE SKILLS AUDIT IN KWAZULU NATAL (RSA)
- 11:00** **Mary Opiyo**, Jane Fonda, Betty Nyonje, Gilbert Van Stappen  
A STRATEGIC POLICY FRAMEWORK FOR AQUACULTURE EDUCATION IN KENYA
- 11:20** **Mary-Jane Thaela-Chimuka**, Kevin Ngoepe, Anathi Mbona, Simpiwe Nini, Nkhane Nengovhela  
ASSESSING CHALLENGES AND OPPORTUNITIES FOR SMALLHOLDER TILAPIA *Oreochromis mossambicus* FARMERS USING CONTINUOUS IMPROVEMENT AND INNOVATION TOOL IN LIMPOPO PROVINCE – SOUTH AFRICA

## CONTRIBUTED SESSION

Monday, December 13 09:40 - 10:20 Room C

Chair: TBA

- 09:40** **Jenna Kolutari**, Kejsi Aga, Arjan Demiri, Rigers Bakui  
IDENTIFICATION OF GHOST NETS IN VLORA BAY, SOUTH ADRIATIC SEA
- 10:00** **Yew-Hu Chien**, I Chiu Liao, Eduardo Leano  
A NEW BOOK: MULLET AND ITS AQUACULTURE

## TILAPIA NUTRITION

Monday, December 13 10:40 - 12:00 Lecture Hall

Chair: Abd El Rahman Khattaby

Sponsor:



- 10:40 Abd El-Rahman Ahmed Khattaby**  
USING FUNCTIONAL FEED TO HELP OVERCOME STRESS AND PATHOGENIC BACTERIA AT THE EGYPTIAN TILAPIA *Oreochromis niloticus* FARMS
- 11:00 Diao Al-Kenawy**, Hala Saber Khalil, Marc Verdegem, Taofik Momoh, Rodrigue Yossa, Alaa Badreldin, Arjen Roem, Johan Schrama  
EFFECT OF DIETARY LYSINE DEFICIENCY ON NILE TILAPIA *Oreochromis niloticus* PRODUCTION IN FERTILIZED PONDS
- 11:20 Rodrigue Yossa**, Alexander M. Greiling, Rose Komugisha Basiita, Masautso E. Sakala, Wes Baumgartner, Adam Taylor, Delbert M. Gatlin III  
REPLACING FISHMEAL WITH THE SINGLE CELL PROTEIN, DY-PRO, IN NILE TILAPIA *Oreochromis niloticus* DIETS
- 11:40 Alaa M. Badr-Eldin**, Hussien Al-Kady, Mohamed Al Amir, Diao Al-Kenawy, Rodrigue Yossa  
EFFECT OF DIFFERENT LEVELS OF CORN DRIED DISTILLER'S GRAINS WITH SOLUBLES (DDGS) AND SUNFLOWER MEAL ON THE GROWTH PERFORMANCE AND BODY COMPOSITION OF NILE TILAPIA *Oreochromis niloticus*

## REPRODUCTION PHYSIOLOGY

Monday, December 13 10:40 - 12:00 Small Theatre

Chair: Besa Darlington

- 10:40 Kalima Sauti**, Wilson Lazarus Jere, Alexander Shula Kefi  
SEX RATIO, GROWTH AND SURVIVAL OF *Oreochromis tanganycae* (GÜNTHER, 1894) FED ON A DIET WITH VARYING LEVELS OF 17 $\alpha$ -METHYLTESTOSTERONE
- 11:00 Darlington Besa**, Rebecca Mainza, Chad Kancheya, Oliver Hasimuna, Mavis Sialumano, Masiliso Phiri, Bornwell Seemani, Lumbwe Kalumba, Martin Mwale, Evans Mutanuka, Mbamwai Mbewe, Harris Phiri, Alexander Kefi, Cyprian Katongo  
PRELIMINARY DEVELOPMENT IN THE ARTIFICIAL PROPAGATION OF THE GIRAFFE CATFISH *Auchenoglanis occidentalis* (VALENCIENNES, 1840) IN CONCRETE TANKS AND EARTHEN PONDS
- 11:20 Peter Allen**, Brandon Gerhart, Abby Vaughn  
TEMPERATURE EFFECTS ON GROWTH, METABOLISM AND PHYSIOLOGICAL PERFORMANCE OF CULTURED CATFISH
- 11:40 Sahya Maulu**, Hualiang Liang, Xianping Ge, Heng Yu, Dongyu Huang, Ji Ke, Mingchun Ren, Haifeng Mi  
EFFECT OF DIETARY *Clostridium autoethanogenum* PROTEIN ON GROWTH, BODY COMPOSITION, PLASMA PARAMETERS, AND HEPATIC GENES EXPRESSION RELATED TO GROWTH AND AMPK/TOR/PI3K SIGNALING PATHWAY OF THE GENETICALLY IMPROVED FARMED TILAPIA (GIFT) JUVENILES

## AQUATIC ANIMAL HEALTH

Monday, December 13 10:40 - 17:40 Multiple Purpose Room

Chair: Mohamed Marzouk, Zahran Eman

Sponsor:



- 10:40** **Amelia Paredes**, Victor Manuel Vidal-Martínez, Vanessa Papiol, Ivan Abunader, Rodolfo Del Río Rodríguez, Amelia Paredes-Trujillo  
NEGATIVE EFFECT OF ECTOPARASITE BURDENS ON THE CONDITION FACTOR FROM FARMED TILAPIA *Oreochromis niloticus* IN THE YUCATAN, MEXICO
- 11:00** **Mamdouh Elgendy**, Shimaa Ali  
MOLECULAR CHARACTERIZATION OF *Vibrio* spp. AFFECTING FARMED *Oreochromis niloticus* WITH SPECIAL REFERENCE TO VIRULENCE, ANTIBIOTIC SUSCEPTIBILITY, PATHOGENICITY AND HISTOPATHOLOGICAL ALTERATIONS
- 11:20** **Mansour El-Matbouli**, Johanna Wolfbauer, Mohamed Shaalan, Elsayed Eldessouki, Hatem Soliman, Sven Bergmann, Mona Saleh  
TILAPIA LAKE VIRUS (TILV): CURRENT STATUS AND FUTURE PERSPECTIVE
- 11:40** **LUNCH**
- 13:40** **Irom B. Okey**  
EFFICACY OF *Ocimum gratissimum* (SCENT LEAF) POWDER AS ANAESTHETIC AND ITS EFFECT ON THE HAEMATOLOGY OF *Clarias gariepinus* JUVENILES
- 14:00** **Ashraf El-Dakar**, Shymaa M. Shalaby, Heba T. Abdelshafy, Mohamed F. Abdel-Aziz  
USING CLOVE AND MINT OILS AS NATURAL SEDATIVES TO INCREASE THE TRANSPORT QUALITY OF BROODSTOCK NILE TILAPIA *Oreochromis niloticus*
- 14:20** **Adel Shaheen**, Hadeer Youssuf, Eman Abdel Gawad, Amel El Asely, Amany Abbass  
SANACORE® GM SUPPLEMENTED FEED BOOST THE HAEMATO-IMMUNOLOGICAL PATTERNS, ANTI-OXIDATIVE RESPONSES, AND *Aeromonas veronii* RESISTENCE IN NILE TILAPIA *Oreochromis niloticus*
- 14:40** **Eman Zahran**, Samia Elbahnaswy, Iman Ibrahim, Asmaa Khaled  
*Nannochloropsis oculata* ENHANCES IMMUNE RESPONSE, TRANSCRIPTION OF STRESS, AND CYTOKINE GENES IN NILE TILAPIA SUBJECTED TO AIR EXPOSURE STRESS
- 15:00** **Mai Mahmoud**, Mohamed Shaalan, Mona Saleh, Dušan Palic, Mansour El-Matbouli  
EVALUATION OF THE EFFICACY OF SALINOMYCIN/AMPROLIUM (SAL/AMP) LOADED CHITOSAN NANOPARTICLES ON THE MYXOSPORES OF *Myxobolus cerebralis*, THE CAUSATIVE AGENT OF SALMONID WHIRLING DISEASE
- 15:40** **BREAK**

- 16:00** **Guillaume Le Reste**, Rôger Oliveira e Silva, José Fernando Bibiano Melo, Mathilde Buffière, Hoa Bui, Sékhou Cissé  
EFFECTS OF GRADED LEVELS OF CITRUS EXTRACTS IN FEED ON GROWTH, BLOOD PARAMETERS AND SURVIVAL OF NILE TILAPIA *Oreochromis niloticus* BEFORE AND AFTER A CHALLENGE WITH *Aeromonas hydrophila*
- 16:20** **Christian Ayisi Larbi**, Nasif Dawda Nurudeen, Akwasi Ampofo-Yeboah  
EFFECTS OF *Eucalyptus globulus* LEAF EXTRACT ON GROWTH PERFORMANCE, FEED UTILIZATION AND BLOOD BIOCHEMISTRY OF NILE TILAPIA *Oreochromis niloticus*
- 16:40** **Saleh Al-Quraishy**, Gokhlesh Kumar, Abdel-Azeem Abdel-Baki, Mohamed Dkhil, Mansour El-Matbouli, Mona Saleh  
WOUND-HEALING BIOMARKER SIGNATURES IN COMMON CARP SKIN MUCUS IN RESPONSE TO *Ichthyophthirius multifiliis*

## SOCIOECONOMICS

Monday, December 13 13:40 - 15:40 Small Theatre

Chair: Karen Veverica

Sponsor:



- 13:40** **Karen Veverica**, Charles Ngugi, Rachael Gachui  
ON-FARM TRIALS IN CENTRAL/EASTERN KENYA TO EVALUATE OPTIONS WHEN EXTRUDED FISH FEEDS ARE EXPENSIVE
- 14:00** **Miriam Wainaina**, Nyabeta Jared, Mirera David, Ollando Jackline  
NEEDS ASSESSMENT STUDY FOR GIANT FRESH WATER PRAWN FARMING IN KILIFI COUNTY KENYA
- 14:20** **Bernadette Fregene**, Bolarin Omonona  
AQUACULTURE VALUE CHAIN ASSESSMENT IN OYO STATE, NIGERIA

## NUTRITION PHYSIOLOGY

Monday, December 13 13:40 - 15:40 Lecture Hall

Chair: Ghalwash Huda

- 13:40 Festus Adeosun**, Georgina Fiyifoluwa Leramo, Mavis Titilayo Oghenebrorhie, Olamide Modinot Adeosun  
FEEDING HABITS AND DIGESTIVE ENZYMES IN THE GUT OF *Chrysichthys nigrodigitatus* IN OYAN DAM, ABEOKUTA, OGUN STATE, NIGERIA
- 14:00 Huda Ghalwash**, Abdallah Salah, Asmaa El-Nokrashy, Ahmed Abozeid, Viola Zaki, Radi Mohamed  
DIETARY SUPPLEMENTATION WITH *BACILLUS SPECIES* IMPROVES GROWTH, INTESTINAL HISTOMORPHOLOGY, INNATE IMMUNITY, ANTIOXIDATIVE STATUS, AND EXPRESSION OF GROWTH AND APPETITE-REGULATING GENES OF NILE TILAPIA FINGERLINGS

## CIRCULARITY IN AFRICAN AQUACULTURE

Monday, December 13 13:40 - 17:40 Room C

Chair: Melle Leenstra

Sponsor: The Netherlands, Dutch Aquaculture Experts



- 13:40 Johan Verreth**  
CIRCULARITY IN AQUACULTURE AND ITS PERSPECTIVES FOR AFRICA
- 14:20 Marc Verdegem**, Johan Schrama, Kazi Kabir  
THE NUTRITIOUS POND CONCEPT
- 15:00 Kees van Dongen**, Hans Boon  
OPPORTUNITY STUDY ON CIRCULAR PROTEINS FOR AQUAFEED IN EGYPT
- 15:40 BREAK**
- 16:00 Andries Kamstra**, Hans Boon  
DUTCH AQUACULTURE EXPERTS – EXPERTISE IN SUSTAINABLE AQUACULTURE AND RECIRCULATION TECHNOLOGY
- 16:40 Frans Aartsen**  
CASE STUDIES “INTENSIVE RAS TILAPIA FARMING”: A TACTICAL APPROACH FOR INTENSIFYING AQUACULTURE IN AFRICA
- 17:00 REFRESHMENTS**

# FINANCING AND INVESTMENT: UNLOCKING THE POTENTIAL OF AFRICAN AQUACULTURE

Monday, December 13 13:40 - 17:40 Delegate's Hall

Chair: Bernice Mclean – AUDA-NEPAD

Sponsor: AquaSpark

**13:40 Welcome**

**13:45 Keynote** – Flavio Corsin, Director of Partnerships – AquaSpark

## **14:00 Presentations**

- i. WAS African Chapter: Blessing Mapfumo
- II. African Union (either AUDA-NEPAD or AU-IBAR)
- III. Governments:
  - South Africa,
  - Malawi,
  - Seychelles
- iv. Regional Economic Communities:
  - SADC (Motseki Hlatshwayo on Aquaculture Value Chain development),
  - IGAD (Eshete Dejen)
- v. Investment partners:
  - Aqua-Spark (Joel Ssemukaaya): Equity investments and the Africa Fund  
**Joel Mugwisa Ssemukaaya**  
INVESTING IN SUSTAINABLE AQUACULTURE IN AFRICA
- vi. Development Finance Institutions (talking also about debt investing):
  - AfDB (Ahmed Khan),
  - World Bank: Harrison  
**Harrison Charo-Karisa**, Lovin Kobusingye, Randall Brummett  
FINANCING SUSTAINABLE SMALL AND MEDIUM SCALE AQUACULTURE  
GROWTH IN AFRICA
- vii. Research Community:
  - Worldfish
- viii. Producers:
  - Kati Farm
  - Recommend to have videos from different farms, rather than presentations.
- ix. Feed manufacturer (as the biggest contributor to working capital and needing investment):
  - AllerAqua
- x. EU representative
- xi. Philanthropy:
  - Rockefeller Foundation

**16:00 Roundtable Discussion Session**

## SOCIOECONOMICS, GENDER

Monday, December 13 16:00 - 17:40 Small Theatre

Chair: Sofela Sofolabi

Sponsor:



- 16:00 Mexford Mulumpwa**  
A CALL FOR WOMEN INCLUSIVENESS IN FISH VALUE CHAIN IN MALAWI
- 16:20 Naga Murali Chalamalasetti, Rajiv Banerjee, Akshay Kumar Singh**  
A SUCCESSFUL AQUACULTURE MODEL WITH SOCIAL RESPONSIBILITY IN AFRICA
- 16:40 Funmilayo Oyekanmi**  
ROLES OF WOMEN IN SMALL SCALE FISHERIES IN OSUN STATE: ENHANCING HOUSEHOLD BENEFITS AND LIVELIHOOD IMPROVEMENT
- 17:00 Siyanbola Omitoyin, Esama Preye**  
GENDER ANALYSIS OF FISHERFOLKS IN THE COASTAL COMMUNITIES OF DELTA AND BAYELSA STATES, NIGERIA
- 17:20 Siyanbola Omitoyin, Sunday Ime**  
GENDER ANALYSIS OF FISHERS ALONG ASEJIRE LAKE

## ENVIRONMENTAL WATER QUALITY

Monday, December 13 16:00 - 17:40 Lecture Hall

Chair: Khalid Salie

- 16:00 Khalid Salie, Samantha Joao**  
A STRATEGIC ASSESSMENT OF GEOTHERMAL WATERS FOR AQUACULTURE IN THE WESTERN CAPE, SOUTH AFRICA
- 16:20 Julius Maremwa**  
INITIATIVES IN WIND ENERGY FOR WELL WATER EXTRACTION IN KENYAN RIPARIAN LANDS
- 16:40 Amel El Asely, Adel Shaheen, Adel Saied, Soaad Mahmoud**  
THE CORRELATION BETWEEN WATER QUALITY PARAMETERS AND CYANOBACTERIA LOAD IN NILE TILAPIA *Oreochromis niloticus* POND AND ITS IMPACT ON FISH HEALTH
- 17:00 Mohamed Bakr, Wasseem Emam, Mohamed Abdel-Rahim, Radi Mohamed**  
EFFECT OF POND MODIFICATION ON GROWTH PERFORMANCE, WATER QUALITY, HEMATO-BIOCHEMICAL PROFILE, IMMUNE-OXIDATIVE STATUS OF NILE TILAPIA



**WAS AFRICAN CHAPTER SESSION  
(ALL AQUACULTURE AFRICA EVENT)**

Monday, December 13 17:40 - 19:40 Small Theatre  
Chair: Sherif Sadek

This is a special session open to all WAS AC members, partners and African aquaculture actors/ community attending AFRAQ21. Out-of-Africa delegates interested in African aquaculture are also invited to attend. It will be an opportunity for WAS AC to present its report for the year, strategic vision and a summary of upcoming activities (including announcing upcoming events eg: WAS2025-Uganda; AFRAQ22-Zambia; AASA-South Africa; WAS West Africa-Nigeria, etc). The session will also act as a promotional platform to showcase some of our work activities during the year and encourage participants to join WAS. It will be an opportunity to introduce AC Board members to the African aquaculture community. Through short speeches or presentations, our key partners such as AUDA-NEPAD, Aller Aqua, Aquaculture Africa Magazine, etc. will have the opportunity to connect with the African aquaculture audience. A short panel discussion session will enable WAS AC to engage with the audience thus enabling them to give input in the development of a Chapter which they desire, and also to understand some of the challenges faced by the African regions, where WAS, within its mandate and work programme, can contribute to addressing these challenges.

African Chapter Members Business Meeting.

## TUESDAY, December 14

### SOCIOECONOMICS, GENDER - CONTINUED

Tuesday, December 14 09:00 - 10:20 Small Theatre

Chair: Ghulam Kibria

Sponsor:



- 09:00 David Peter Mina Baya**  
IMPACT OF COVID-19 ON FISHERIES AND AQUACULTURE IN SOUTH SUDAN
- 09:20 Netsayi Noris Mudege, Catherine M. Mwema, Dorothy Chisusu**  
THE DETERMINANTS OF INCOME FROM FISH FOR MEN AND WOMEN FISH FARMERS IN THE SOUTHERN PROVINCE OF MALAWI
- 09:40 Catherine Mawia Mwema, Netsayi Noris Mudege**  
SOCIO-ECONOMIC DETERMINANTS AND PROFITABILITY OF SMALLHOLDER AQUACULTURE FARMERS IN MALAWI: DOES WHO YOU SELL TO MATTER?
- 10:00 Carlos Guevara-Fletcher**  
SOCIO ECONOMICAL AND WATER QUALITY ANALYSIS FOR THE IMPLEMENTATION OF A TILAPIA CULTURE (POST CONFLICT AREA) IN FLORIDA-VALLE DEL CAUCA-COLOMBIA
- 10:20 Olalekan Adekola, Margaret Gatonye, Paul Orina**  
EVALUATING AQUACULTURE FARMERS RESPONSE TO CLIMATE CHANGE AND SUSTAINABLE PRACTICES IN KENYA

### ENVIRONMENTAL MANAGEMENT

Tuesday, December 14 09:00 - 10:20 Lecture Hall

Chair: Amit Savaia

- 09:00 Amit Savaya, Sharon Moscovitz, Eliahu D. Aflalo, Hanoch Glassner, Amir Sagi**  
BIOCONTROL OF DISEASE-CAUSING SNAILS USING MONO-SEX PRAWNS
- 09:20 Sharon Moscovitz, Roussel Moise Wokam Njomgang, Hanoch Glassner, Eliahu D. Aflalo, Amir Sagi, Ofer Ovadia**  
PINPOINTING POTENTIAL BIOCONTROL PATCHES IN FRESHWATER SYSTEMS: REGIONAL MODELING OF PARASITES AND PARASITE-CARRYING SNAILS
- 09:40 Shahid Mahboob Rana, Zubair Ahmed, Muhammad Farooq, Promy Virik, Norah A Al-Mulhm, Almohannad A.A. Baabbad**  
ASSESSMENT OF HEAVY METALS POLLUTION IN SEAWATER AND SEDIMENTS IN THE ARABIAN GULF, NEAR DAMMAM, SAUDI ARABIA
- 10:00 Hiam Elabd, Hong Yao, Adel Shaheen, Amany Abbass, Han-Ping Wang**  
DIFFERENT REARING ENVIRONMENTAL TEMPERATURES MODULATES GROWTH, ANTIOXIDATIVE, IMMUNE AND GENE EXPRESSION RESPONSES IN BLUEGILL SUNFISH *Lepomis macrochirus*

## FRESH / BRACKISH AQUACULTURE

Tuesday, December 14 09:00 - 12:00 Room C

Chair: Awad Mohamed

- 09:00 Akeem Dauda**, Zainab Bashir, Joseph Ikpe  
INFLUENCE OF WATER CHANGING FREQUENCY ON GROWTH PERFORMANCE AND NUTRIENT UTILISATION OF TROPICAL FISH SPECIES
- 09:20 Md. Amimul Ehshan**, Md. Akbor Hossain, Md. Enaet Hossain, Shams M. Galib  
FIRST COMMERCIAL TRIAL OF IN-POND RACEWAY SYSTEM AQUACULTURE TECHNOLOGY IN BANGLADESH WITH *Labeo rohita*
- 09:40 Rose Komugisha Basiita**, Trong Q. Trinh, Masausto Sakala, Patience Chungu, Tom Malambo, Buumba Hampuwo, Alexander Shula Kefi, John A.H. Benzie  
PERFORMANCE EVALUATION OF TILAPIA SPECIES: THE CASE OF *Oreochromis niloticus* AND *Oreochromis andersonii* IN ZAMBIA
- 10:00 Rameshwar V. Bhosle**  
CULTURE POTENTIALITY OF GIFT TILAPIA BY UTILIZING LOW SALINE WATERS IN INDIA
- 10:40 Olamide Adeosun**, Dominic. Olaniyi Odulate, Festus Idowu Adeosun, Oluwatoyin Bukunmi Onireti, Victoria Olajumoke Soyoye  
PHENOTYPIC CHARACTERIZATION AND NATURAL DIET OF *Chrysichthys nigrodigitatus* IN EPE LAGOON, LAGOS STATE, SOUTHWEST, NIGERIA
- 11:00 Mohamed Awad**, Malik Khalafalla, Riad Khalil, Radi Mohamed  
EFFECT OF FERMENTED FEED ON THE GROWTH PERFORMANCE, HEALTH CONDITION AND IMMUNE RESPONSE OF WHITELEG SHRIMP *L. vannamei*

## ECOLOGY, BIODIVERSITY, MORPHOLOGY

Tuesday, December 14 09:00 - 10:20 Delegate's Hall

Chair: Jere Arthertone

- 09:00 Abubakar Usman**, Kiran Dube, S.P. Shukla, Pramod Salaskar, P.B. Sawant, D.A. Nakhawa  
REMOTE SENSING OF CHLOROPHYLL-A AND TSM AS A MEASURE OF PRODUCTIVITY USING SENTINEL-2A IN POWAI LAKE FOR AQUACULTURE
- 09:20 Arthertone Jere**, Wilson W.L. Jere, Austin Mtethiwa, Daud Kassam  
BREEDING PATTERN OF *Oreochromis niloticus* (LINNAEUS, 1758) (PISCES: CICHLIDAE) VERSUS NATIVE CONGENERIC SPECIES *Oreochromis macrochir* (BOULINGER, 1912) IN THE UPPER KABOMPO RIVER, NORTHWEST OF ZAMBIA
- 09:40 Oluayo Bello-Olusoji**, Damilola Ayinla  
ECOLOGY ASPECTS OF WEST AFRICAN FRESHWATER CRAB *S. africanus* IN THREE SELECTED FRESHWATERS IN AKURE METROPOLIS (NIGERIA)

## AQUATIC ANIMAL HEALTH - CONTINUED

Tuesday, December 14 09:00 - 12:00 Multiple Purpose Room

Chair: Gaafar Al khateib Y.

Sponsor:



- 09:00 Christian Ayisi Larbi**, Elliot Haruna Alhassan, Abubakar Abdul Mutalib  
EFFECTS OF PROBIOTICS *Bacillus subtilis* 200 ON GROWTH, FEED UTILIZATION AND PROXIMATE COMPOSITION OF AFRICAN CATFISH *Clarias gariepinus*
- 09:20 Alkhateib Y. Gaafar**, Yasmeeen Elbarbary, Abdelgayed Younes, Asmaa Galal-Khallaf, Khaled Mohammed-Geba  
*Bacillus clausii*: A NEW EFFICACIOUS IMMUNE-STIMULANT, GROWTH PROMOTANT, AND ANTIOXIDATIVE PROBIOTIC FOR THE WHITE-LEG SHRIMP *Litopenaeus vannamei* CULTURE
- 09:40 Amany Abbass**, Mohamed Abdel Gayed, Hiam Elabd, Mohamed Tageldin  
DIETARY INCORPORATION OF ZADO® *Ruminococcus flavefaciens* PROBIOTIC ENHANCES HEMATOLOGY, IMMUNE, SERUM PROTEINS, AND GROWTH RESPONSES OF NILE TILAPIA *Oreochromis niloticus*
- 10:00 Radi Mohamed**, Mahmoud Eltholth, Foad Farrag, Marwa Abd El-Kader, Ahmad Hamza, Fatma Abouelenien  
EFFECTIVENESS AND COST-BENEFIT OF IN WATER PROBIOTICS IN TILAPIA FARMING: ON FARM TRIAL
- 10:40 Ajangale Nelly Isyagi**, Irene Naigaga, Mugimba Kizito, David Kahwa, Sophia Nagadya, Susan Nakayiza  
INTERVENTIONS TO REDUCE DRIVERS OF BACTERIAL FISH DISEASES IN AQUACULTURE PRODUCTION SYSTEMS THROUGH MULTI-STAKEHOLDER COLLABORATION
- 11:00 Rodolfo E. del Rio-Rodriguez**, Amelia I. Paredes-Trujillo, Jaime Navarro-Flores, Monica I. Gomez-Solano, Mariana de J. Huchin-Cortes  
PATHOGENS AND DISEASE EXPERIENCES IN THE AQUACULTURE OF THE YUCATAN PENINSULA, MEXICO

## CATFISH FEEDING

Tuesday, December 14 10:40 - 12:00 Lecture Hall

Chair:  
Sponsor:



- 10:40 Hanno Slawski**  
FIT FOR GROWTH: FEED FOR INTENSIVE FARMING OF AFRICAN CATFISH *Clarias gariepinus*
- 11:00 Oluyemi Gbadamosi**, Precious Amarachi Jacobson, Bernadine Wunmi Obe  
EFFECTS OF DIETARY SELENIUM NANO PARTICLES ON THE GROWTH PERFORMANCE OF AFRICAN CATFISH *Clarias gariepinus*
- 11:20 Ayodeji Adeoye**, Femi Fawole, Yemi Akegbejo-Samsons, Yunus Raheem  
DIETARY EFFECTS OF EXOGENOUS PHYTASE ON AFRICAN CATFISH *Clarias gariepinus* FED FISHMEAL-FREE DIET
- 11:40 Johnpaul C. Ikwemesi**, Emmanuel K. Ajani, Benjamin O. Emikpe, Anthony A. Nlewadim  
SURVIVAL AND SOME PRO AND ANTIOXIDANTS ACTIVITIES OF *Clarias gariepinus* FRY FED STRAINS OF *Lactobacillus fermentum* SUPPLEMENTED DIET CHALLENGED WITH *Aeromonas hydrophila*
- 12:00 Ayokanmi A. Dada**, Israel O. Oke, Abiola Adebayo  
EVALUATION OF LEMON GRASS *Cymbopogon citratus* AS PHYTO-ADDITIVE IN THE DIET OF AFRICAN CATFISH *Clarias gariepinus* FINGERLINGS

## AQUACULTURE DEVELOPMENT - CONTINUED

Tuesday, December 14 10:40 - 12:00 Small Theatre

Chair: Salah Mesalhy Aly

- 10:40 Daroomalingum Mauree**, Pierre Phillippe Blanc  
REVIEW OF AQUACULTURE, GOVERNANCE AND DEVELOPMENT OF SMALL-SCALE AQUACULTURE IN THE IORA REGION
- 11:00 Mosunmola Lydia Adeleke**, Precious Sam-Aluko  
SOCIO-ECONOMIC STRUCTURES OF FISH FARMERS AND GEOSPATIAL MAPPING OF SOME SELECTED FISH FARMS IN AKURE NORTH LOCAL GOVERNMENT AREA, ONDO STATE, NIGERIA
- 11:20 Edith Gondwe**, Abigail Bennett, Emma Rice, Park Muhonda  
SETTING SMALL SCALE FISHERIES IN FOOD AND NUTRITION SECURITY THEMES: ASSESSING CURRENT TRENDS IN SUB SAHARAN AFRICA
- 11:40 Christopher Mulanda Aura**  
A GIS-BASED APPROACH TO DELINEATING THE AREAS OF A LAKE THAT ARE SUITABLE FOR CAGE FISH CULTURE
- 12:00 James Njiru**, Jonathan Munguti, Christopher Aura, Kelvin Obiero, Gladys Mwaka, Paul Orina, David Mirera  
COULD AQUACULTURE BE THE SILVER BULLET FOR KENYA FISHERIES GROWTH?

## ECOLOGY

Tuesday, December 14 10:40 - 12:00 Delegate's Hall

Chair: Lionel Dabbadie

- 10:40 Hlulani A. Hlungwani**, Joseph Sara, Sean Marr, Olaf Weyl  
THE ECOLOGY AND BIOLOGY OF *Oreochromis mossambicus* TO INFORM INLAND FISHERIES DEVELOPMENT IN LAKE FLAG BOSHELO, SOUTH AFRICA
- 11:00 Fertin Lucas**, Slembrouck Jacques, Avarre Jean-Christophe  
AGROECOLOGY FOR SUSTAINABLE AQUACULTURE IN A CONTEXT OF GLOBAL CHANGES - ASACHA GDRI SUD (2021 - 2025)
- 11:20 Delphine Lethimonnier**, Barbara Bentz, Joël Niamien, Thimoté Niamien, Cécé Moïse Théa, Daouda Bambara, Mohamed Bob Diaby, Sidiki Keita, Olivier Mikolasek, Marc Oswald  
INTEGRATED AQUACULTURE IN WEST AFRICA: AN ECOLOGICAL INTENSIFICATION LED BY FAMILY FARMERS IN A MARKET-ORIENTED STRATEGY
- 11:40 Jean-Michel Mortillaro**, Lionel Dabbadie, Andoniaina E. Raminoharisoa, Anaïs Paradis, Philippe Martel, Rija Andriamarolaza, Modestine Raliniaina, Olivier Mikolasek, Joel Aubin  
TROPIC FUNCTIONING OF INTEGRATED RICE-FISH FARMING IN MADAGASCAR: INSIGHTS FROM STABLE ISOTOPES (d13C & d15N)
- 12:00 Nasser Kasozi**, Horst Kaiser, Brendan Wilhelmi  
EFFECT OF *Bacillus* SPECIES ON LETTUCE GROWTH AND ROOT ASSOCIATED BACTERIAL COMMUNITY IN A SMALL-SCALE AQUAPONIC SYSTEM

## FAO EGYPTIAN BIOSECURITY SPECIAL SESSION

Tuesday, December 14 13:40 - 15:40 Multiple Purpose Room

Chair: Ahmed Almazrouai, Mortada Hussein

- **Biosecurity on the Farm level**  
Dr. Souad Sabry Abd El-Hamid Salama  
Senior Researcher, Quality Inspector, Quality Manger & Internal Auditor  
Fish Diseases Research Department
- **The usage of veterinary drugs in Aquaculture in Egypt: Practice and Legal issues**  
Dr. Abdel-Fattah Mohammed Aly  
Head of pharmacology Dept. Veterinary college  
Suez Canal University
- **Contribution towards biosecurity establishment of Egyptian marine aquaculture: I. Zone surveillance of marine streptococcosis in Dabah triangle, Damietta Governorate, Lower Egypt**  
Ahmed M. A. Osman  
Assistant Researcher, Animal Health Research Institute (AHRI) & Manager of Port Said Marine Fish Hatchery
- **Biosecurity application, follow-up and control in aquaculture projects - Saudi Arabia Case**  
Hesham Abdulla Baabbad  
Technical Director, Saudi Aquaculture Society

# NOTES

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