World Organisation for Animal Health

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WOAH Collaborative Centre Reports Activities 2024

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CENTRE INFORMATION

***Title of WOAH Collaborating Centre**	Fish Health Management in the Middle East Region
***Address of WOAH Collaborating Centre**	Central Laboratory for Aquaculture Research (CLAR)
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***Name Director of Institute (Responsible Official):**	Prof. Dr. Refaat Mohammed Ali El-Gamal
***Name (including Title and Position) of Head of the Collaborating Centre (WOAH Contact Point):**	Prof.Dr. Refaat Mohammed Ali El-Gamal (Prof. of fish health and mangement - Director of CLAR)
***Name of the writer:**	Refaat Mohammmed Ali El-Gamal, Mohamed Shaban Ibrahim

TOR 1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOAH

Category	Title of activity	Scope
		• Mitigate the usage of antibiotics in

Disease control (true)	Comprehensive Aquatic Animal Health Management and Disease Prevention Strategy	aquaculture avoid pandemic impact of AMR • Promote aquatic animals' resistance to diseases by adopting planned vaccination program based on disease map. • Establish, maintain and implement strategy of biosecurity in aquaculture, as well as in other local water bodies to minimize spread of diseases in cultured and wild fish species. • Aquatic animal disease surveillance for pathogens transmitted via migratory wild birds. • Create an emergency response plan for intervention to epizootic diseases and methods of control. • Set a standard guideline for diagnosis of aquatic animal diseases in Compliance with WOAH standards for aquatic animal health services providers.
Training, capacity building (true)	Provision of training in sampling and histological analysis of fish diseases	Training in sampling and histological processing techniques for fish tissues. Training in histopathology to examine tissues for infectious disease agents
Aquatic animal diseases (true)	Managing Zoonotic Diseases and Implementing Control Strategies	• Diagnosis of aquatic animal diseases and applying of control methods. • Risk assessment and management for hatcheries. • Studying zoonosis and AMR as well as climate change impact in aquaculture, with considering to "One Health" concept through human, aquatic animal, environment interface. • Applying of biosecurity measurements and preparedness to emergent aquatic diseases
Fish Diseases (true)	Overview of Common Fish Diseases, Diagnostic Tools and Techniques for Fish Diseases	• Discuss common fish diseases (bacterial, viral, fungal, parasitic) and their symptoms, with case study examples. • Training on how to recognize symptoms, use diagnostic tools, and understand disease diagnostics in fish.
Fish Disease Prevention Strategy (true)	Developing a Disease Prevention Strategy, Stocking Density and Its Impact on Disease	• Creating a comprehensive disease prevention plan for fish farms, including water quality management and hygiene. • Focus on managing stocking densities to reduce stress and disease spread.
		• Understand how rising temperatures

Training, capacity building (true)	Climate Change and Its Impact on Fish Health Adaptation Strategies for Climate Change	and altered ecosystems affect fish and aquaculture operations. • Discuss the practical approaches to mitigate climate effects, such as temperature control and breeding adaptation.
Training, capacity building (true)	Understanding Immunopathies in Fish, Genetic Resistance to Diseases in Aquaculture	• Train stakeholders on the immune system in fish and how immune dysfunctions contribute to disease outbreaks. • Discuss breeding strategies that improve disease resistance and farm productivity.
Training, capacity building (true)	Implementing Biosecurity Protocols, Farm Layout Design to Prevent Disease	• Develop biosecurity plans, including staff training, sanitation practices, and the use of disinfectants. • Learn how to design farms and hatcheries to prevent the spread of disease, including isolation zones and control points.
Training, capacity building (true)	Good Farm Practices for Disease Prevention	• Teach how to keep accurate health logs and monitor water quality regularly to detect diseases early. • Create action plans for disease outbreaks, including quarantining and treatment methods. • Focus on preventive treatments, such as probiotics, vaccines, and maintaining farm hygiene.

TOR 3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main fucus area for which you were designated

Proposal title	Scope/Content	Applicable Area
Harmonization of Fish Health Management Regulations in the Middle East Region	The proposal aims to develop and implement a unified framework for fish health management across the Middle East, focusing on disease surveillance, quarantine protocols, certification standards, and health management practices. The proposal includes: 1. Assessment of existing regulations 2. Collaboration and coordination via a regional body 3. Alignment with global standards (e.g., OIE Code) 4. Disease surveillance and early warning systems 5. Standardization of certification for trade 6. Regional research and capacity building 7. Monitoring and evaluation systems to update	Training and Education Health Management

	protocols	

3. In exercising your activities, have you identified any regulatory research needs* relevant for WOAH?

No

4. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
World Fish	Egypt	África	Development of capacity building and aquatic epidemiology training activities.
The General Authority for Veterinary Services (GAVS)	Egypt	África	Establish a free zone that is free from diseases and pollution.
Veterinary Serum and Vaccine Research Institute (VSVRI)	Egypt	África	Working on producing a vaccine against streptococcus

TOR 4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
World Fish	Egypt	Africa	Establish capacity-building and training programs focused on sustainable aquaculture systems and the utilization of non-traditional feed sources.

TOR 6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOAH?

Yes

Name of expert	Kind of consultancy	Subject
♣ Prof. Dr. Mohamed E. Abou El_Atta ♣ Prof. Dr. Somayah Mohamed Mahmoud Awad ♣ Dr. Nashwa Abdel-Razek Sayed Ahmed ♣ Dr. Sameh Abdel Azeem Metwaly	Advice	A study was conducted on the causes of fish mortality in Lake Manzala and Lake Edko, commissioned by the Lakes Protection and Fish Resources Development Agency
Prof. Dr. Refaat Mohamed Ali Al-Gamal	Advice	Expert in train fish farmers in the field of "Application of Biosecurity Systems in Fish Farms"
Prof. Dr. Mohamed E. Abou El_Atta	Advice	Expert in: ♣ Isolation and identification of bacterial and fungal agents infect fish and crustaceans ♣ Conduct trials for control of bacterial and fungal fish diseases. ♣ Application of probiotics and immune-stimulants as antibiotics alternatives
Prof. Dr. Yasser Mohamed Abdelhadi	Advice	Expert in: ♣ Implement Fish diseases diagnosis ♣ Fish disease prevention using immune-stimulants, vaccination as well as Biosecurity measurements.
Prof. Dr. Azza Mohamed Mohamed Abd El-Rhman	Advice	Expert in: ♣ Diagnosis of fish diseases and methods of control. ♣ Isolation and identification of bacterial pathogen. ♣ Isolation and identification of probiotic bacteria which used as treatment or prevention of some bacterial diseases. ♣ Vaccination trials against fish pathogenic organisms. ♣ Nano-emulsions and Nano-particles as fish immune-stimulant.
Prof. Dr. Somayah Mohamed Mahmoud Awad	Advice	Expert in: ♣ Applying plan of biosecurity in fields and training programs ♣ Diagnosis and treatment of bacterial fish and crustaceans diseases ♣ Improvement of immune system for fish and crustaceans using immune stimulant (probiotic, prebiotic, symbiotic and plant or

		extract)
Prof. Dr. Gehan Ibrahim Abd elbar Shagar	Advice	Expert in Isolation and identification of infectious parasites in fish and crustaceans
Prof. Dr. Doaa Ahmed El-Araby Mohamed	Advice	Expert in: ♣ Diagnosis and treatment of bacterial fish diseases ♣ Improvement of immune system for fish and crustaceans using immune stimulant (prebiotic, symbiotic and plant or extract ♣ Applying plane of biosecurity in fields and training programs
Dr. Samah Attia Ali Abd El-Hameed	Advice	Expert in: ♣ Diagnosis of Fish diseases and management ♣ Fish Toxicology in fish and bioremediation. ♣ Reviewer in Advances in Animal and veterinary Sciences journal
Dr. Hala Fouad Ayoub	Advice	Expert in: ♣ Isolation and identification of bacterial and fungal pathogens infect fish. ♣ Prevention of fish diseases by application of immune-stimulants, ♣ Trial of vaccination. ♣ Biosecurity and biosafety for disease prevention. ♣ Reviewer in Springer Nature journals including Aquaculture International and BMC Microbiology journals.
Dr. Taghrid Mohamed Naguib Abd El-Hakim	Advice	Expert in: ♣ Diagnosis of Fish diseases and management. ♣ Prevention of fish diseases by application of immune-stimulants ♣ Biosecurity and biosafety for disease prevention
Dr. Ahmed Ali Ahmed Ibrahim	Advice	Expert in: ♣ Molecular diagnosis and identification of Fish diseases (bacterial parasitic and viral diseases) ♣ Experiences in bioinformatics and system biology in R. ♣ Experiences Biological Sequences Databases, Working with BLAST, ♣ Working with DNA Sequences and Sequence Alignment.
Dr. Nashwa Abdel-Razek Sayed Ahmed	Advice	Expert in: ♣ Diagnosis and treatment of fish pathogens in fish farms ♣ Application of preventative measures in fish hatcheries and farms by using feed additives, Immunostimulants and trails of vaccination ♣ Implantation of biosecurity measures in aquaculture facilities ♣ Reviewer in many international journals as Aquaculture international Journal, Journal of applied aquaculture, Journal of Biological Macromolecule

Prof. Dr. Walaa Talaat El.Ekiaby	Advice	Expert in Isolation and identification of parasites infect fish and crustaceans
Dr. Sameh Abdel Azeem Metwaly	Advice	Expert in: ♣ Applying molecular technique in diagnosis fish diseases. ♣ Control of fish diseases by application of antibiotic alternatives ♣ Implement trials of fish immunity improving through using probiotics. ♣ Execute and participate in strategies for aquaculture Biosecurity ♣ Laboratory evaluation of fish immune status.
Dr. Aml Fath-Allh Ali Ibrahim Hafez	Advice	Expert in: ♣ Isolation and identification of mycotic diseases of fish and crustaceans ♣ Conduct trials for control and prevention of mycotic infection of fish and crustaceans
Dr. Rania Ahmed Fathi Abd El-Hameed Nasr	Advice	Expert in Microbiology & chemistry (Bacteriology)
Dr. Ahmed Mohamed Abedel-Wahab Gabr	Advice	Expert in Aquatic Health and Management and Viruses Isolation
Dr. Mahmoud Mohammed El-Adawy	Advice	Expert in: ♣ Diagnosis of bacterial fish pathogens using advanced technique ♣ Fish diseases prevention using vaccination and immune stimulant feed additives ♣ Using Nano silver for controlling bacterial fish pathogens ♣ Reviewer in Aquaculture research journal

TOR 7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

No

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOAH, to personnel from WOAH Members?

Yes

a) Technical visit : 0

b) Seminars : 6

c) Hands-on training courses: 2

d) Internships (>1 month) : 0

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Type of technical training provided (a, b, c or d)	Content	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
B	Preventing Strategies for Fish Diseases in Aquaculture	Online, CLAR cooperation with Blue Wealth Association for Aquaculture and Environmental Development	150
B	The Role of Immune Stimulants for Promoting Sustainable Aquaculture	Online, CLAR with AAEF	146
B	Best Practices for Fish Welfare in Aquaculture	Online, CLAR with AAEF	172
B	Bacterial Diseases in Fish and How to Prevent It	Online, CLAR with AAEF	137
B	Qualification of fish farms for export	Online, CLAR with AAEF	125
B	Common Diseases in Shrimp	Online, CLAR with AAEF	168
C	Biosecurity in fish farms	Egypt, CLAR cooperation with Arab Organization for Agricultural Development	33
C	Diagnosis of fish diseases	Egypt, Veterinary students from Germany	12

TOR 8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOAH?

Yes

National/International	Title of event	Co-organiser	Date	Location	No. Participants

Internationally	Fish and shrimp health	CLAR, Blue Wealth Association for Aquaculture and Environmental Development	2024-10-17	Online Global, Africa, Middle East	210
Nationally	Climate change and its impact on fish health	CLAR with Fish health institute	2024-12-25	Egypt	26

TOR 9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOAH that may be useful to Members of WOAH

a) Articles published in peer-reviewed journals:

8

1. Nashwa Abdel-Razek, RiadH.Khalil, AbeerA.M.Afifi, AfrahF.Alkhuriji, DinaM.Metwally. (2024): Nutritional Innovation Using Green Seaweed (Ulva sp.) and Garlic Powder Extracts for White-Leg Shrimp (Litopenaeus vannamei) Challenged by Vibrio harveyi. Veterinary Medicine and Science, vol. 10: e70052. https://doi.org/10.1002/vms3.70052

2. Salah M. Aly, Mohamed E. Abou-El-Atta, Nashwa Abdel-Razek, Ahmed S. Eltahan , Naglaa I. Mohamed , Walaa A. Elshaer , Noha I. ElBanna (2024): Exploring the Relationship Between Water Quality, Parasitic Infestation, and Pathological Alterations in Tilapia Fish. Egyptian Journal of Aquatic Biology & Fisheries Zoology Department, Faculty of Science, Ain Shams University, Cairo, Egypt. ISSN 1110 – 6131 Vol. 28(3): 191 – 209.

3. Mohsen Abdel-Tawwab, Riad H. Khalil, Nashwa Abdel-Razek, Nehal A. Younis, Sherien H. H. Shady, Mohamed N. Monier and Hany M. R. Abdel-Latif (2024): Dietary effects of microalga Tetraselmis suecica on growth, antioxidant-immune activity, inflammation cytokines, and resistance of Nile tilapia fingerlings to Aeromonas sobria infection. Journal of Animal Physiology and Animal Nutrition. Vol. (108): 511–526.

4. Hala F. Ayoub, Ahmed R. khafagy , Aboelkair M. Esawy , Noura Abo El-moaty3 , Khairiah Mubarak Alwutayd , Abdallah Tageldein Mansour, Reham A. Ibrahim , Dalia A. Abdel-moneam and Reham M. El-Tarabili (2024) Phenotypic, molecular detection, and Antibiotic Resistance Profile (MDR and XDR) of Aeromonas hydrophila isolated from Farmed Tilapia zillii and Mugil cephalus BMC Veterinary Research V. 20,) 1(P. 84

5. Mohammed A.E. Naiel1 | Samah A.A. AbdEl-hameed2 | AmanyI.Ahmed3 | Nahla E. M. Ismaiel4 1D 2024: The effect of dietary administration of Saussurea lappa root on performance, blood biochemical indices, redox status, innate immune response, intestinal microbial population and resistance against A. hydrophila infections of Tilapia Fingerlings. journal of animal physiology and animal nutition

6. Doaa Ibrahim a,, Mona Mohammed I. Abdel Rahman b, Amany M. Abd El-Ghany b, Eman A. A. Hassanen b, Omar A. Al-Jabr c, Reham A. Abd El-Wahab d, Shimaa zayed d, Mona Abd El khalek Salem e, Shimaa Nabil El_Tahawy f, Wessam Youssef g, Heba A. Tolba h, Rehab E. Dawod i, Rahma Taha j, Ahmed H. Arisha k,l, Asmaa T.Y. Kishaw (2024): Chlorella vulgaris extract conjugated magnetic iron nanoparticles in nile tilapia (Oreochromis niloticus): Growth promoting, immunostimulant and antioxidant role and combating against the synergistic infection with Ichthyophthirius multifiliis and Aeromonas hydrophila, Fish and Shellfish Immunology 145 , 109352.*

*7. Heba A. Tolba1, Ahmed M. Aldawek2, Refaat A. Eid3, Sherine Aladdin4 and Nahla H. El-Shaer5*2024 Immune response and bacterial resistance of Oreochromis niloticus against bacterial fish pathogen with saffron diet , Open Veterinary , Vol. 14(10): 2572-2586.*

8. Doaa Ibrahim1, Ioan Pet2*, Reham G. A. Anter3,Abdelwahab A. Abdelwarith4,Mona Mohammed I. Abdel Rahman3, Basant M. Shafik5,Elsayed M. Younis4, Asmaa Basiony6,Shimaa A. E. Atwa7, Aya Sh. Metwally8, Heba A. Tolba9, Mirela Ahmadi2 and Asmaa T. Y. Kishawy1 2024: Marine Smenospongia extract mitigated co-infection withTrichodina sp. andFlavobacterium columnare inNile tilapia: insights intopromoting growth performance,immune, antioxidant andautophagy defenses, andsuppression of endoplasmicreticulum stress-related genes, Marino science, 10.3389/fmars.2024.1475150*

b) International conferences:
0

c) National conferences:
0

d) Other (Provide website address or link to appropriate information):
0

11. What have you done in the past year to advance your area of focus, e.g. updated technology?
The agreement with the African Union has been finalized for the procurement of two advanced diagnostic devices:
1. A device designed for the rapid and precise identification of both negative and positive bacterial pathogens, capable of conducting 40 antibiotic sensitivity tests with 100% accuracy.
2. A rapid diagnostic device for viral detection, providing results within 15 minutes, also with 100% accuracy.
These devices will facilitate the swift and accurate creation of an epidemiological disease map.

12. Additional comments regarding your report: