Food and Agriculture Organization of the United Nations

FAO Reference Centre - Annual report for the FAO Reference Centre for Bivalve Mollusc Sanitation 2025-26

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List of acronyms

Acronym	Meaning
APHA	American Public Health Association
APHW	APHW - Animal and Plant Health and Welfare
API	Analytical profile index
ASP	Amnesic Shellfish Poisoning
BAM	Bacteriological Analytical Manual
BM	bivalve molluscs
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CEN	European Committee for Standardisation
Defra	Department of Environment, Food and Rural Affairs
DNA	Deoxyribonucleic acid
DoF	Department of Fisheries
EQA	External Quality Assessment
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FRNA	F-specific RNA bacteriophages
FSA	Food Standards Agency
FSS	Food Standards Scotland
GEF	Global Environmental Facility
GI	Genogroup I
GII	Genogroup II
GIS	Geographic Information System
GOV	Government
HAB	harmful algal blooms
HAV	Hepatitis A virus
IAC	International Advisory Committee
ICMSS	International Conference on Molluscan Shellfish Safety
IEC	International Electrotechnical Commission
ISO	International Standards Organisation
MOU	Memorandum of Understanding
MPN	Most Probable Number
NoV	Norovirus
OCPP	OCPP - Ocean Country Partnership Programme
OLs	Official Laboratories
PCR	Polymerase chain reaction
PSP	Paralytic Shellfish Poisoning
PT	Proficiency Testing
QC	Quality control
RC	Reference Centre

SD_T	Standard deviation (theoretical)
SPS	Sanitary and Phytosanitary
TEF	Toxic equivalency factors
UK	United Kingdom
US FDA	United States Food and Drug Administration
WHO	World Health Organisation

1. Introduction

The Centre for Environment, Fisheries and Aquaculture Science (Cefas) is designated as the Food and Agriculture Organization of the United Nations (FAO) Reference Centre (RC) for Bivalve Mollusc Sanitation. The Reference Centre's mandate is to contribute to the implementation of FAO's scientific, technical, and economic programme priorities and to provide specific, independent technical/scientific advice aimed at strengthening capacities in countries and regions. This designation is made under an agreement between FAO and the United Kingdom's (UK) Department of Environment, Food and Rural Affairs (Defra). This sixth annual report describes the technical and scientific activities delivered via the FAO RC to support the FAO Department of Fisheries and Aquaculture, and the associated costs for the period April 2025 – March 2026. Financial support for baseline operation of the FAO RC was provided by Defra under the Animal and Plant Health and Welfare (APHW) Memorandum of Understanding (MOU) with additional targeted activities in eligible countries supported via the Ocean Country Partnership Programme (OCPP), part of the UK's Blue Planet Fund.

2. Areas of collaboration

The work programme of the FAO RC for Bivalve Mollusc Sanitation for the period covered in this report was submitted in March 2025 [https://www.cefas.co.uk/faobivalves/]. The main areas of collaboration for 2025/26 were:

- To provide support for the development and maintenance of FAO resources on bivalve mollusc sanitation.
- To provide scientific advice, and technical training for FAO member countries.
- To provide scientific and technical advice to FAO fisheries and aquaculture division
- To provide scientific and technical advice to UK government (GOV) funding partners on matters relating to bivalve mollusc sanitation
- To plan, organise, and distribute proficiency testing (PT) schemes for FAO member country official laboratories (OLs).
- To contribute to the planning and organisation of the international conference on molluscan shellfish safety (ICMSS).
- To undertake additional activities, within scope, supporting FAO mandate in member countries.

3. Dissemination of information and technical guidance to FAO member countries

3.1. Website

The FAO RC continues to maintain its website as the primary repository of relevant information. In addition to online tools (for vibrio risk and phylogeny and to assist with classification programmes) and laboratory protocols as detailed below, the website includes relevant international guidance and legislation, links to elearning resources, and archives of

work programmes, annual reports, PT scheme reports and reports and other materials linked to its regional training workshops.

The website is checked regularly to identify improvements; this year this has included addition of a What's New page detailing major additions to the website in a single location What's New - Cefas.

3.2. Online tools

3.2.1. Vibrio online tools

As part of ongoing enhancements to the vibrio online tools hosted on the FAO RC website Globa_Phylogeny_1329_tdh/trh, the RC initiated a major new, collaborative sequencing effort focused on the historic *Vibrio parahaemolyticus* strain collection donated to Cefas by the late Professor Nishibuchi of the University of Kyoto, Japan. This unique collection - comprising nearly 800 isolates spanning 1978 to 2010 and representing a wide geographic range across Asia, the Americas, and Europe - provides an unparalleled opportunity to understand the early evolution, diversification and global emergence of pathogenic vibrio lineages. Working collaboratively with international research partners from the University of Barcelona, Cefas teams successfully revived, cultured and extracted DNA from hundreds of these long-term archived strains, many frozen for decades. These genomes will now be incorporated into the global phylogeny and risk-assessment tools, significantly strengthening global capacity to characterise historical evolutionary trajectories and understand the origins of pandemic clones. This work supports open access, future international surveillance efforts for the important, frequently bivalve-mediated gastroenteric illness caused by certain strains of *V. parahaemolyticus*.

3.2.2. Classification programme tools

The FAO RC website now contains a carefully curated collection of open-source software and associated training to aid the establishing and running of classification programmes. This includes Geographic Information System (GIS) and relational database management software that can be connected allowing GIS software to be integrated with monitoring data. This will likely lower the initial financial barrier to entry associated with licenses for propriety software for states looking to develop their classification programmes. Furthermore, the use of open-source software by its very nature has dedicated communities that span multiple languages and use cases, ensuring support is readily available. In addition to English language resources, where available links to French, Spanish and Portuguese language resources are also included.

3.3. Protocols, guidance and demonstrations online

The FAO RC website provides a repository of advice, guidance, demonstrations and protocols to support the development and implementation of bivalve mollusc sanitation programmes FAO RC for Bivalve Mollusc Sanitation – website. Protocols for test methods and associated

guidance (Table 1) are reviewed on an annual basis and updated as required, all protocols can be downloaded via the protocols and technical guidance portal of the website Protocols, Technical Guidance and videos. These protocols are based upon internationally recognised standard methods such as those published by the International Standards Organisation (ISO), the European Committee for Standardization (CEN) or the American Public Health Association (APHA).

Table 1. Protocols, guidance and demonstrations for bivalve molluscs (BM)

Title	Type	Accreditation [1]
Enumeration of *Escherichia coli* in BM using the most probable number technique (MPN) (based on ISO 16649-3) [2]	Protocol [3]	Yes
Determination of faecal coliform bacteria in seawater using most probable number technique (based on the US FDA BAM chapter 4)		No
Detection of *Salmonella* spp. in BM (based on ISO 6579-1)		Yes
Detection of potentially pathogenic *Vibrio* spp. in BM		No
Quantitative detection of norovirus and hepatitis A virus in BM (based on ISO 15216-1)		Yes
Enumeration of FRNA phage in BM (based on ISO 10705-1)		No
Shellfish MPN calculator - clean version	Guidance [4]	N/A
Shellfish MPN calculator - 3 dilutions		N/A
Shellfish MPN calculator - 4 dilutions		N/A
Guidance for the determination of limits of detection and quantification for determination of viruses in BM		N/A
Example data set for determination of limits of detection and quantification for determination of viruses in bivalve molluscan shellfish		N/A
Calculation spreadsheet for quantification of viruses in bivalve shellfish using ISO 15216-1		N/A
Guidance for best practice for norovirus testing in BM		N/A
Enumeration of *Escherichia coli* in BM using the most probable number technique (based on ISO 16649-3)	Video [5]	N/A

[1] Accreditation status of the method at the FAO RC
[2] Also available in Portuguese language version
[3] Protocol derived from international standard or set of standards
[4] Additional informative guidance or calculation spreadsheets for protocol application
[5] Demonstration video to support implementation of generic protocols

4. Provision of scientific advice, and technical training for FAO member countries

4.1. Provide technical and scientific advice on issues related to bivalve mollusc sanitation

In brief, during 2025/26 the FAO RC has:

- Provided advice to the National Institute for Fisheries Research in Morocco on methods for detecting viruses in shellfish, in particular around methods for inhibitor removal in sand burrowing bivalve species.
- Provided advice to the Singapore Food Agency on methods for detecting viruses in shellfish, in particular around preparation of different types of quantification standards.
- Provided advice to a testing laboratory in Peru on methods for detecting viruses in shellfish, in particular availability of reference materials.

In addition, the FAO RC has provided advice and technical guidance to the FAO led FISH4ACP programme which aims to maximise the potential of fisheries and aquaculture across FAO regions. In The Gambia the focus of this programme is the development of safe and sustainable BM for raw sale.

During 2025/26, support has been provided in the form of guidance on suitable techniques for the analysis of faecal indicator bacteria and *Vibrio* spp. in shellfish along with assessment of growing area surveys, assessment of likely microbiological and chemical hazards and advice on survey design.

4.2. Provide technical and scientific advice, within the areas of Cefas competence, with respect to broader bivalve mollusc food safety

In addition to support to the FISH4ACP programme for The Gambia with bivalve sanitation described in 4.1, FAO RC staff have worked with colleagues in The Gambia to raise awareness of the potential risks from algal biotoxins produced by some species of harmful algae. During 2025/2026, three small batches of oysters, originating from two local sampling areas, were received at Cefas for analysis. The oysters, harvested between March and September 2025, were homogenised and tested for Amnesic Shellfish Poisoning (ASP), Paralytic Shellfish Poisoning (PSP) and Lipophilic Toxins, following official control testing protocols. Further testing with a greater number and frequency of samples will more accurately determine the risks to seafood consumers in the region.

4.3. Regional training event for African countries

In July 2025, the FAO RC jointly hosted a three-day technical training workshop on the development of safe BM production with the FAO Fisheries and Aquaculture division. The workshop was held at the Argyle Grand Hotel, Nairobi, Kenya, and was attended by responsible authority professionals from thirteen FAO member countries in Africa (Angola,

Cabo Verde, Cameroon, Djibouti, the Gambia, Ghana, Kenya, Madagascar, Mauritius, Morocco, Mozambique, Senegal and Sudan).

The introductory session of the workshop included a presentation from FAO staff on the opportunities for BM production and the challenges therein, and presentations from the invited national delegates on the current state of BM production and trade, regulatory oversight and laboratory capacity in their own countries.

The main body of the training workshop was then led by FAO RC staff and consisted of a series of presentations on relevant topics, interspersed with interactive exercises on topics including hazard and risk identification, shoreline survey planning, and decision making in outbreak scenarios, that gave the national representatives an opportunity to apply their new knowledge to realistic scenarios (Figure 1).

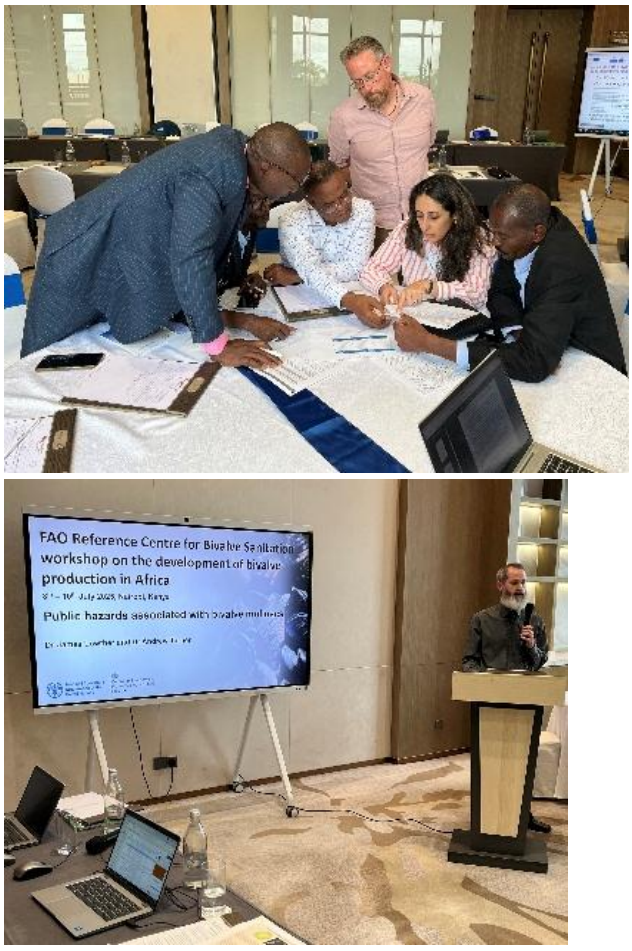


Figure 1: Delegates carrying out training exercises at the FAO RC workshop.

In the final part of the workshop, discussions were held between the national delegates, FAO and FAO RC staff (Figure 2) in order to identify needs and priorities for further support in this field.

A detailed workshop report and copies of the presentations are available on the FAO RC website Training workshop on the development of bivalve production in Africa, July 2025.

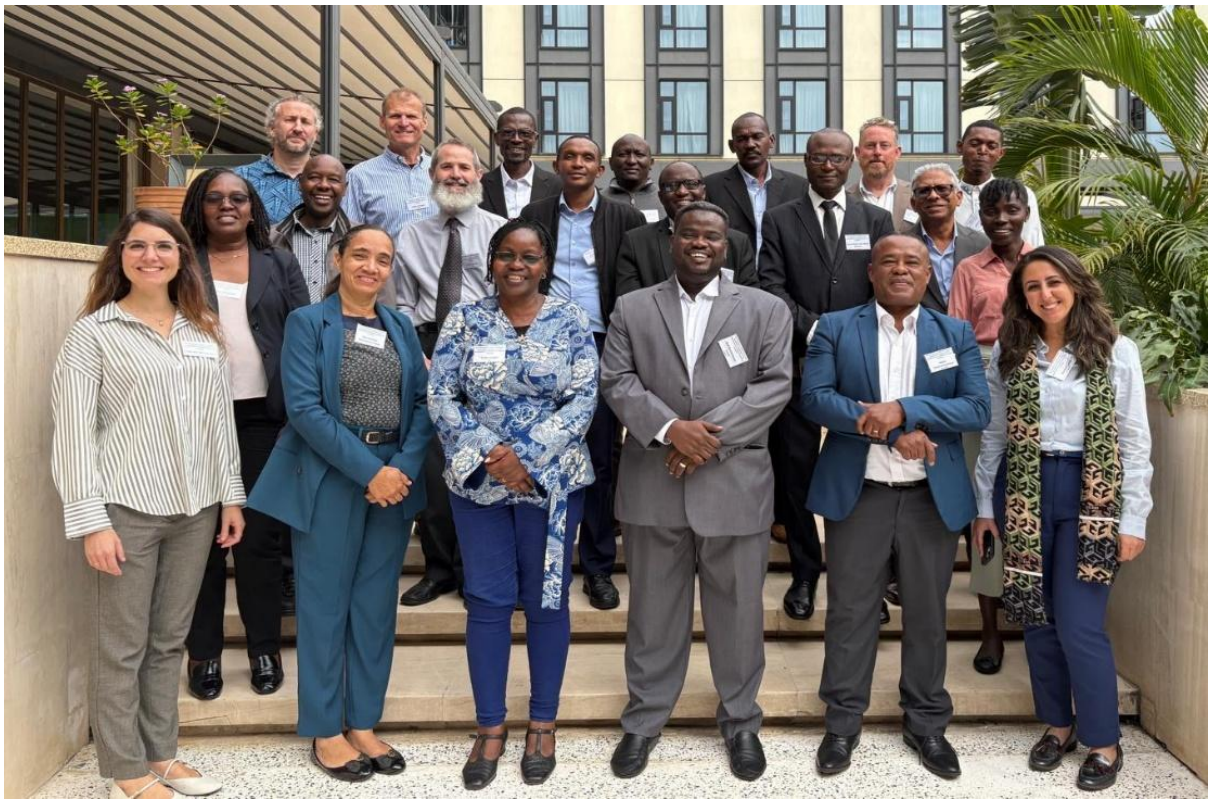


Figure 2: Delegates attending FAO African workshop

4.4. Contributions to further capacity and capability building requirements

4.4.1. Identification of key challenges for African countries

Information presented at the FAO RC regional training event in Kenya (4.3) identified that the key challenges impacting countries across Africa were the limited shellfish-specific surveillance and monitoring systems, insufficient laboratory capacity, especially for biotoxins, weak outbreak detection and reporting and regulatory gaps affecting market access and consumer protection (Figure 3).

Figure 3: Number of African countries identifying challenges within their country.

4.4.2. Questionnaire on support priorities for international laboratories

In 2025 the FAO RC distributed a questionnaire to laboratories in the PT network to identify areas for support and development of their microbiological capabilities. Twenty-three laboratories from 15 countries responded (6 in Africa, 5 in Asia and the Pacific and 4 in Latin America and the Caribbean) with numerous laboratories expressing a need for assistance in achieving accreditation to ISO/IEC 17025, as well as training, capacity building, and procurement of media and reference materials for BM testing (Figure 4). Requests for matrix

material have been recorded for upcoming PT distributions; however, challenges encountered during customs clearance may affect the condition and reliability of the samples.

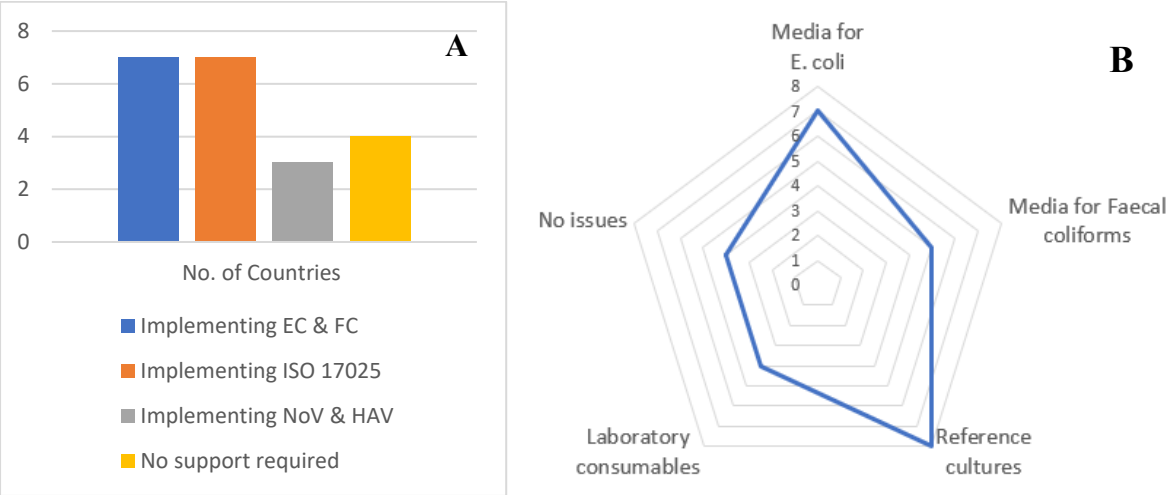


Figure 4: Number of countries requiring support to implement methods and accreditation (A) and requiring support obtaining method supplies (B)

4.4.3. Global Environmental Facility concept note preparation

FAO RC colleagues collaborated with FAO to prepare an initial concept note for the Global Environmental Facility (GEF) GEF9 call with the aim of strengthening the resilience, sustainability, and governance of aquatic food systems for BM in Africa. Within the context of enhancing water quality, reducing pollution, and supporting nature-positive blue-economy development, the project aims to create an enabling food-safety environment for BM production in African countries, addressing major barriers to safe domestic consumption and market access.

Drawing on FAO / Cefas normative work, global guidance, and extensive training resources, the project would provide coordinated capacity development in sanitation, harmful algal bloom and toxin monitoring, post-harvest practices, regulatory strengthening, and equipment provision. By embedding FAO / WHO and Codex-aligned systems within national institutions, the project would, if selected for funding, directly advance FAO RC outputs by expanding the uptake of risk-based approaches, strengthening laboratory and regulatory capacity, and supporting safer, climate-resilient aquatic value chains across the region.

5. Provision of scientific and technical advice to FAO fisheries and aquaculture division

5.1. elearning

The elearning and information on certification can be accessed here:

- Course: Bivalve mollusc sanitation: Growing area risk profile | FAO elearning Academy

- Course: Bivalve mollusc sanitation: Growing area assessment and review | FAO elearning Academy
- Course: Bivalve mollusc sanitation: Growing area monitoring | FAO elearning Academy
- Course: Bivalve mollusc sanitation: Growing area classification and management | FAO elearning Academy

5.2. Provision of advice to FAO fisheries and aquaculture division on microbiological contaminants

Experts from the FAO RC provided advice to FAO on proposed text in the FAO / WHO Microbiological risk assessment of viruses in foods. This advice included detailed analysis of published data on the effectiveness of relaying and depuration for the removal of viruses from BM.

5.3. Provision of advice to FAO fisheries and aquaculture division on harmful algal blooms and marine biotoxins

The FAO RC was part of an international expert group contributing to the development of the *Joint FAO–IOC–IAEA Guidance on Monitoring Algal Toxins in BM.* This guidance, which once published will be a companion document to the *Technical Guidance for the Development of the Growing Area Aspects of Bivalve Molluscs Sanitation Programmes,* (Technical guidance for the development of the growing area aspects of Bivalve Mollusc Sanitation Programmes), provides an international framework for the monitoring, analysis, and management of harmful algal blooms (HABs) and marine biotoxins in BM production. It is intended to help national and regional authorities, competent laboratories, and food-business operators establish or improve monitoring programmes that protect public health while supporting safe and sustainable BM trade.

The guidance, currently in draft, responds to global increases in BM production and trade, and the rising frequency, geographic spread and severity of HABs - trends potentially linked to climate change, eutrophication, and other anthropogenic pressures. Because these events can develop quickly and have far-reaching impacts on domestic and export markets, the document stresses the need for robust, science-based monitoring systems.

Recommendations include procedures for pre-harvest monitoring of microalgae and toxins, alongside post-harvest batch testing, based upon on Codex Alimentarius standards. It outlines the principles of risk profiling for production areas, including historical data review, hydrographic assessment, sentinel species selection, and long-term baseline studies. Clear criteria for opening and closing harvesting zones are indicated, together with requirements for sampling frequency, spatial coverage, and analysis methods.

In addition, laboratory methodologies are covered, with recommended chemical, biochemical, functional and regulatory reference methods for key toxin groups, emphasising method validation, toxic equivalency factors (TEFs), use of certified reference materials, and quality-assurance systems such as ISO 17025 accreditation and proficiency testing schemes.

The guidance also covers operational challenges including matrix effects, variability in toxin profiles, limitations in rapid test kits, and issues arising from post-harvest processing, with suggested mitigations. Using a similar approach to the companion sanitation technical guidance (referenced above), a structured checklist for establishing official monitoring laboratories is included. The expert group also discussed key research gaps including the need for improved toxicological data and research requirements for understanding novel and emerging toxins.

6. Provision of scientific and technical advice to UK government funding partners on matters relating to bivalve mollusc sanitation

6.1. Scientific and technical advice to UK government funding partners on matters relating to bivalve mollusc sanitation

6.1.1. EU exports and trade facilitation: Live bivalve molluscs audit (12–28 June 2025)

Cefas, including colleagues within the FAO RC, provided extensive scientific and technical support to Defra during the EU Sante F audit of the UK control system for live BM. Targeted post-audit technical support was provided to the Food Standards Agency (FSA) and Food Standards Scotland (FSS) supporting national audit response, system assurance, and strengthening of official control processes.

6.1.2. Advice to sanitary and phytosanitary committees with non-EU trading partners

The FAO RC supported Defra's APHW teams during the Sanitary and Phytosanitary (SPS) Subcommittee with Andean countries (Peru, Ecuador, and Colombia) on 14–15 July 2025.

Advice focused on:

- Capacity building in sanitary classification of BM production areas.
- Strengthening sanitary measures for aquaculture products exported to the UK.
- Application of relevant Defra regulations, with emphasis on public health and sanitary inspection requirements.

In addition, FAO RC experts advised the Defra Policy Adviser for UN and International Fisheries Negotiations on the FAO paper *Food Safety and Quality for Aquatic Products* ahead of the FAO Committee on Fisheries Sub-Committee on Fish Trade.

6.1.3. Contribution to parliamentary engagement

The FAO RC contributed example data visualisation materials to the All-Party Parliamentary Group for the Ocean to support understanding of marine and aquatic food-safety issues within parliamentary fora.

6.1.4. International standardisation and technical representation

Experts from the FAO RC continued to represent the UK across a broad range of international food-safety standardisation activities. Technical inputs were provided to multiple ISO working groups, covering:

- Preparation of fish and fishery products for microbiological analysis.
- Enumeration of *Vibrio* spp. in seafood.
- Detection of hepatitis E virus in foods.
- Requirements for Polymerase chain reaction (PCR) and other molecular methods in food microbiology.
- Validation of alternative methods for detecting viruses and parasites in foods.
- Detection and quantification of viruses in wastewater.

6.1.5. Support to crown dependencies

In October 2025, FAO RC experts delivered technical advice to the Government of Jersey on the classification and monitoring of BM production areas, supporting their ongoing regulatory compliance and system development.

6.1.6. Input to cross-his majesty's government international strategy

The FAO RC contributed to the development of cross-his majesty's government FAO strategic priorities for 2026, including One Health-aligned engagement plans. This work supports the UK's preparation for its G20 Presidency in 2027, ensuring food-safety considerations for aquatic products are represented in international policy positioning

6.2. Maintain national capability in analyses (including maintenance of staff competence) for microbiological testing of bivalve molluscs

To maintain competency in the statutory and non-statutory determinands, the FAO RC participated in a variety of PT exercises over the reporting period (April 2025 – March 2026) including both shellfish matrix and laboratory constructed samples.

For the examination of *E. coli* and *Salmonella* spp., satisfactory scores were obtained over three External Quality Assessment (EQA) distributions and one shellfish matrix scheme. Two EQA distributions were also examined for *Vibrio* spp. with satisfactory scores being obtained for the detection of *V. parahaemolyticus* and *V. cholerae.* Issues with false negative results were experienced when detecting *V. vulnificus* in 2 of the 4 samples examined. Such issues are not uncommon when using the ISO 21872-1 method, and the FAO RC is therefore examining alternative methods for *Vibrio* spp. detection.

Competency was also maintained for the detection of norovirus (NoV GI and GII) and hepatitis A virus (HAV), with satisfactory scores obtained when examining two EQA distributions and two shellfish matrix schemes.

In addition, the FAO RC maintained ISO 17025 accreditation for analysis of BM for *E. coli*, *Salmonella* spp., norovirus and hepatitis A virus.

7. Proficiency testing

7.1. Participation in FAO RC proficiency testing schemes

Participation in the FAO RC PT schemes organised in 2025 are tabulated in Table 2. In most cases, PT distributions were open to all countries on a cost recovery basis. Samples for PT 103 were provided free of charge to countries wishing to develop capability of methods that determine levels of faecal coliforms (including *E. coli*) in growing waters where BM are produced.

7.2. Fourth distribution for faecal indicators

The fourth distribution (PT 103) of the laboratory constructed Lenticule™ PT scheme for quantitation of faecal indicators (*E. coli*) and faecal coliforms, aimed at countries developing sanitary testing capacity, took place in June 2025 with results and evaluations being completed by October 2025. Seventeen laboratories in Bangladesh, Chile, Ghana, Indonesia, Kenya, Madagascar, Malaysia, Mozambique, Panama, Sri Lanka, Turkey and Uruguay received test material. Fourteen and eleven laboratories returned results for *E. coli* and faecal coliforms, respectively. The majority of laboratories (50%) examining samples for *E. coli* used the ISO 16649-3 MPN method (as defined in the FAO RC generic protocol). Five laboratories utilised the FAO RC generic protocol for determination of faecal coliform bacteria in seawater using the MPN technique, with others using membrane filtration or proprietary tests.

When assessing laboratory performance, 57% of laboratories reported duplicate *E. coli* MPN/100 g results for both samples within the satisfactory range (±2.68 SD_T of the participants' median) for *E. coli* in shellfish samples. For faecal coliforms in water samples only 27% of laboratories reported a single *E. coli* MPN/100 ml result within the satisfactory range (±2.68 SD_T of the participants' median) for both samples. Full performance reports can be accessed via Proficiency Testing and Quality Assurance

Overall, the results reported indicate some difficulties amongst laboratories when implementing the methods required for microbiological analyses supporting the monitoring and classification of BM growing areas (faecal indicators).

7.3. Proficiency testing for norovirus GI, norovirus GII, hepatitis A virus in oyster matrix

A PT distribution (PT 104) designed to test a laboratory's ability to detect and quantify the two main enteric viruses NoV and HAV that can be transmitted by BM was organised in July 2025. Test material comprised whole Pacific oysters (*Magallana gigas*) and blended oyster digestive glands, and control materials for quantification were also provided. Major issues were experienced during the initial distribution causing half of the boxes to be returned to the FAO RC. The remaining boxes were shipped during October 2025.

Nineteen laboratories from 12 countries (Belgium, Canada, France, Germany, Ireland, the Netherlands, Peru, Slovenia, Spain, Sweden, UK and New Zealand) received samples. Almost all participating laboratories used method elements described in the informative annexes of ISO 15216-1 and provided in the FAO RC generic protocol for quantitative detection of norovirus and hepatitis A virus in BM.

Overall performance of laboratories was good with 87% of laboratories reporting all NoV (GI & GII) results as intended in terms of detection (presence / absence) and 100% of laboratories reporting intended detection results for HAV. Thirteen laboratories reported quantification data, of these 46% gave satisfactory quantities for all viral targets.

Determination of NoV and HAV in BM is technically challenging; this PT scheme can help to support countries in the application of Codex Alimentarius Commission - Guideline - 2012 guidelines on viruses in food.

Full performance reports can be accessed via Proficiency Testing and Quality Assurance

7.4. Proficiency testing for *E. coli* and *Salmonella* spp. in bivalve mollusc matrix

A PT distribution (PT 105) was organised in November 2025. This scheme is intended for laboratories undertaking the examination of BM for bacteriological determinands. Test material comprised two samples of whole Pacific oysters (*M. gigas*). Twenty-four laboratories in 10 countries (Chile, Denmark, France, Germany, Ireland, the Netherlands, Spain, Sweden, Turkey and UK) received samples. For a small number of laboratories issues occurred during sample material transport causing extended storage time at customs resulting in the material not being suitable for testing.

Overall performance of laboratories was mixed with 63% of laboratories reporting duplicate *E. coli* MPN/100 g results within the satisfactory range (±2.68 SD_T of the participants' median) for both samples and 100% of laboratories reporting the presence of *Salmonella* spp. in Sample 1. A high number of false positive *Salmonella* spp. results were reported by participants for Sample 2. Following reference testing of this sample, *Salmonella*-like colonies were observed on xylose lysine deoxycholate (XLD) agar and identified as *Citrobacter* spp. using the API miniaturised biochemical gallery method. The presence of this bacterium could possibly have led to the increase in positive results reported by participants depending on the confirmation method used by the participant lab. Those laboratories reporting positive results for sample 2 were asked to consider whether their methods are suitable for discrimination between *Salmonella* and *Citrobacter* spp..

Table 2 - Summary of participation in FAO RC proficiency testing exercises for calendar year 2025

Continents			Europe										Oceania	Africa				Asia					America				
																							North		South		
Proficiency testing reference number	Distribution date	Proficiency testing description	Belgium	Denmark	France	Germany	Ireland	Netherland	Spain	Slovenia	Sweden	United Kingdom	New Zealand	Ghana	Kenya	Madagascar	Mozambique	Bangladesh	Indonesia	Malaysia	Sri Lanka	Turkey	Canada	Panama	Chile	Peru	Uruguay
PT 103	Mar-25	*E. coli* in shellfish [6]												1	1	1	1	1	3	1	1	4		1	1		1
		Faecal coliforms in water [7]												1	1	1	1	1	3	1	1	3		1	1		1
PT 104	Jul-25	Norovirus and Hepatitis A virus in shellfish [8]	2		2	3	1	2	2	1	1	1	1										1			2	
PT 105	Nov-25	*E. coli* and *Salmonella* spp. in shellfish [9]		1	1	1	1	1	1		1	13										1			1		

[6] Two participants did not return results. One participant box arrived without any material inside due to being tampered during transit.
[7] Three participants did not return results.
[8] Two participants did not return results due to issues at customs and one participant experienced problems during the testing of the material.
[9] One participant did not return results due to issues at customs and one participant box was not collected on arrival so was returned to courier.

8. International conference on molluscan shellfish safety (ICMSS)

The FAO RC continued to develop the programme, content, governance and timelines for the next ICMSS in September 2026 (Figure 5). This conference aims to be the premier global forum for advancing BM safety, bringing together scientists, regulators, and industry to exchange cutting-edge research, assess emerging hazards, and promote innovative technologies that enhance the safety of molluscan shellfish supply chains. Sharing this knowledge base is considered essential for enabling the expansion of sustainable aquaculture alongside the application of robust food-safety controls – a priority within the FAO's Blue Transformation agenda.

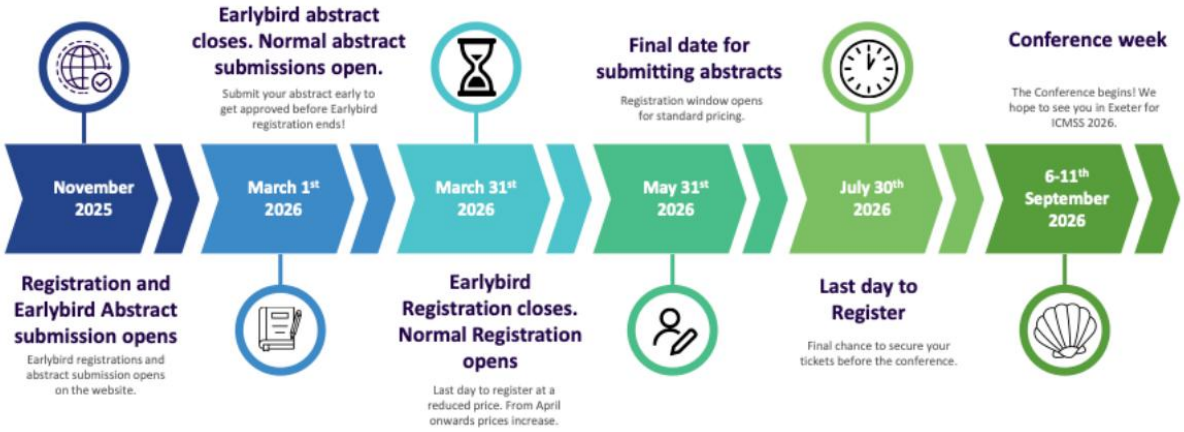


Figure 5. Timeline and key milestones for ICMSS 2026

The conference's emphasis on evolving regulations, best-practice methodologies, and the "One Health" approach aligns with FAO's focus on integrated, risk-based management systems that safeguard both ecosystems and consumer health. By facilitating international collaboration and supporting the translation of research into operational practice, ICMSS 2026 aims to contribute to stronger surveillance frameworks, improved preparedness for environmental and biological threats, and more resilient aquatic food-safety systems globally. Through this role, the FAO RC is assisting in advances the scientific and technical capacity that underpins the FAO mandate to ensure safe, nutritious, and sustainably produced aquatic foods.

The ICMSS website can be accessed via this link International Conference on Molluscan Shellfish Safety (ICMSS)

9. Additional activities, within scope, supporting FAO mandate in member countries

9.1. FAO RC collaboration with department of fisheries – Bangladesh

The FAO RC continues to collaborate with the Department of Fisheries (DoF), Ministry of Fisheries and Livestock, to explore BM production in Bangladesh, supported through the OCPP **Ocean Country Partnership Programme (OCPP) - GOV.UK**. The primary objective

is to undertake a growing area risk profile for at least one area identified for the production of BM, along with targeted capacity and capability building in the OLs quality control (QC) to help set up methods of analysis necessary for the implementation of SPS controls.

During the 2025/26 reporting period, the FAO RC continued to provide advice and training to competent authority officials. A training module from the FAO elearning Academy was complemented by a series of meetings designed to guide DoF and QC laboratory staff through the completion of a growing area risk profile, covering topics such as industry overview, legal framework, hazard identification, and capacity assessment. The process of risk profiling, together with microbiological analysis, equips the DoF to make well-informed decisions regarding the suitability of selected sites for BM production.

9.2. FAO RC collaboration with the ministry of fisheries, atomic energy commission and university of cape coast – Ghana

During 2025/26, the FAO RC has continued to provide technical assistance supporting the development of capabilities in BM food safety and health in Ghana. This support, funded by the OCPP, included a collaboration with the Atomic Energy Commission to provide equipment and advice on methods for the testing of marine biotoxins, along with provision of technical advice and the mentoring of two MPhil student projects (through the Association of Commonwealth Universities) with the University of Cape Coast and the Ghanaian ministry of fisheries.

The first MPhil project focused on a baseline sanitary survey of BM growing areas, with the aim of assessing food safety risks and supporting coastal livelihoods. Support centred on sanitary survey design, site selection, sampling strategy, and interpretation, and consideration of *E. coli*, *Vibrio* spp., HAV and antimicrobial resistance where appropriate, and was delivered through multiple online meetings with the student, university supervisors and relevant in-country stakeholders. Despite limited existing information on pollution sources, a site was selected and the development of a community questionnaire and supporting documentation became a key part of the work to help characterise potential contamination pathways. The second project focused on microalgal communities and potential HABs at two locations and included three months of field sampling and subsequent analysis of samples at Cefas.

9.3. Production of technical training videos and documentation in support of training workshops

Between 2023 and 2025, a series of training workshops were delivered to delegates from six FAO member countries: Bangladesh, Ghana, Mozambique, Senegal, Sri Lanka, and Kenya. These workshops covered methods for determining faecal indicator organisms in BM and were partially funded by the OCPP. Following these, a video was produced to accompany the generic protocol for enumerating *E. coli* in BM using the MPN technique, based on ISO 16649-3. The video is available on the FAO RC website.

In response to feedback and identified language barriers, the generic protocol and accompanying video were translated into European Portuguese with support from OCPP

funding. These resources have been shared with our government partners in Mozambique and are accessible via the OCPP website and the Cefas YouTube channel.

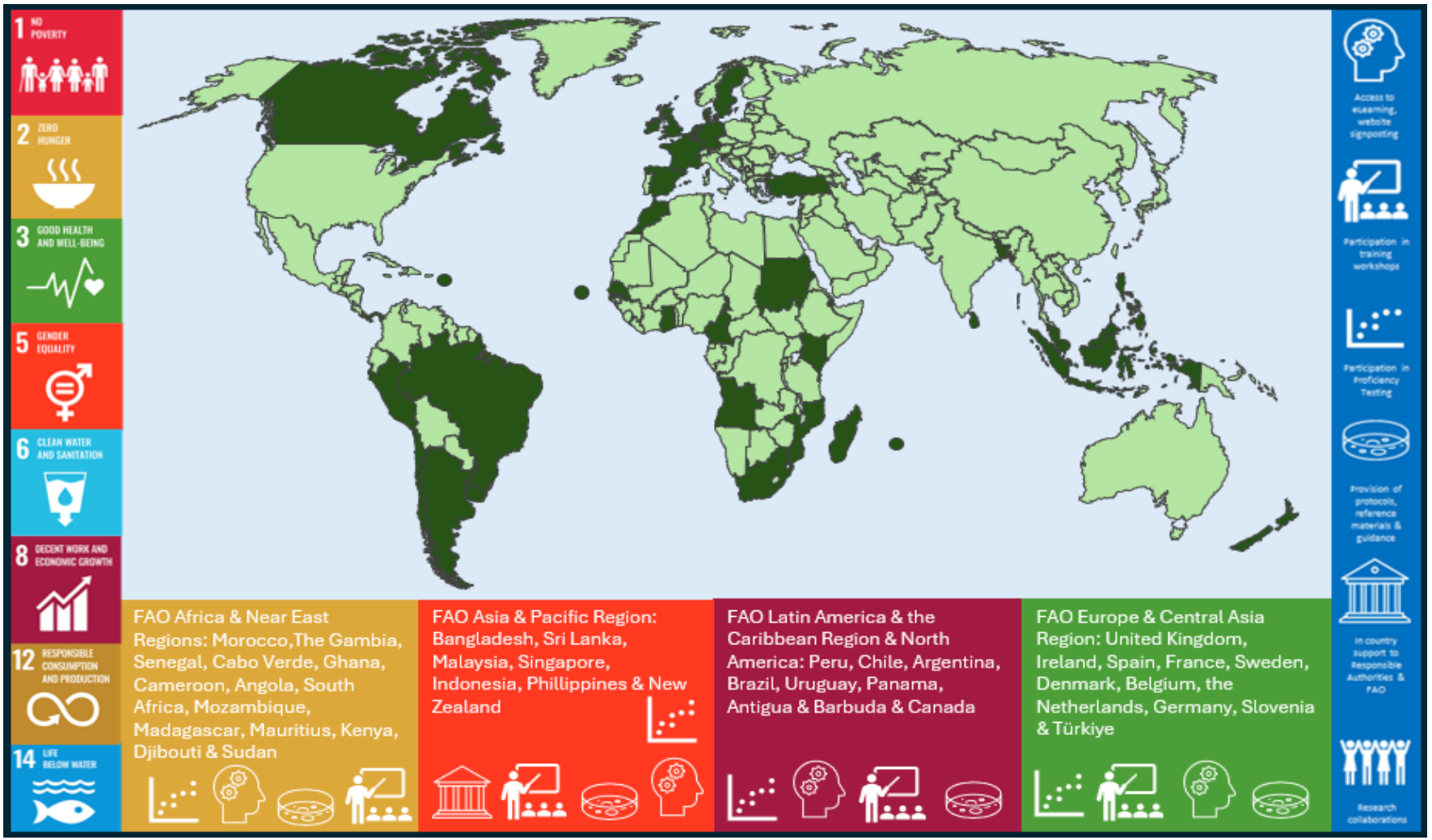
10. Outreach, dissemination and collaboration activities

10.1. Outreach, dissemination and collaboration activities at a glance

The FAO RC website continues as the main repository of information and portal for the dissemination of information and guidance FAO RC for Bivalve Mollusc Sanitation.

The FAO RC provided support to institutes in 40 countries worldwide in 2025/26 (Figure 6). Activities ranged from provision of elearning, delivery of a training workshop, PT schemes, distribution of protocols and technical guidance, support to FAO member country competent / responsible authorities, and research collaborations.

Figure 6: Outreach, Collaboration and Research & Development activities of the FAO RC for Bivalve Mollusc Sanitation



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