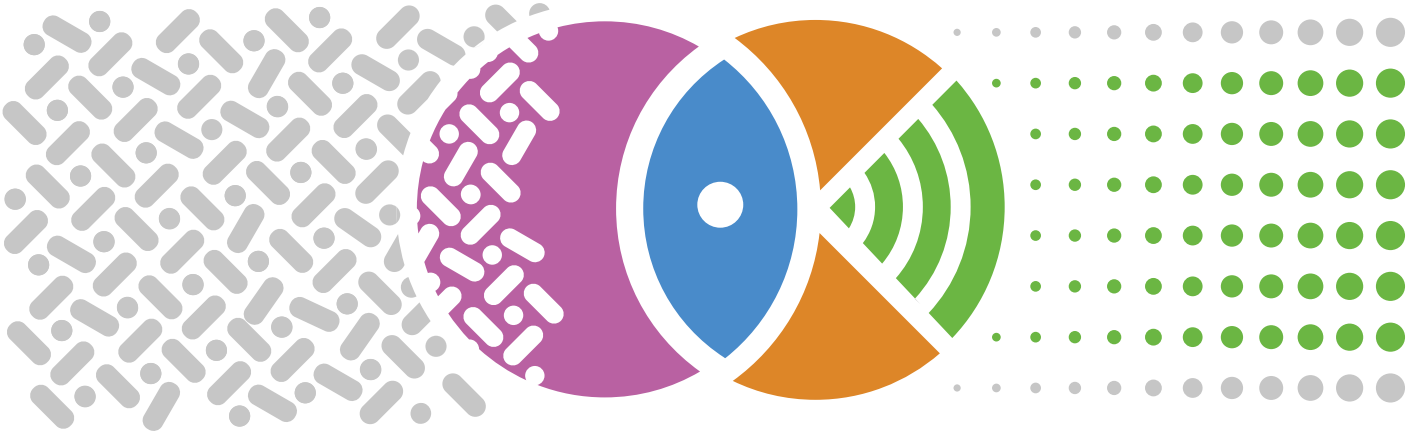
Food and Agriculture Organization of the United Nations

The International FAO Antimicrobial Resistance Monitoring (InFARM) System and IT platform



One of the key elements for strengthening country capacities for surveillance and monitoring of antimicrobial resistance (AMR) and use (AMU) in food and agriculture is to provide a standardized approach to collecting, analyzing, interpreting, and sharing data. Over the past few years, different initiatives worldwide have focused on and supported the generation of AMR surveillance data from the food and agriculture sectors. However, data are often not analyzed or used to inform decisions. The main reasons are the lack of adequate data management systems, clear definition of roles and responsibilities in data reporting, or trained experts able to perform analysis and interpretation.

The Food and Agriculture Organization of the United Nations (FAO) has long-standing experience in developing and providing hosting data platforms to Members for safe data storage and tools for data analysis and interpretation. FAO's role as a neutral, impartial, independent and specialized agency of the United Nations places the Organization in the best position to establish a hosting data platform to support Members in storing, analyzing, and using their own AMR data generated at a national level from the food and agriculture sectors.

After the approval of the FAO Action Plan on AMR 2021-2025 by the 166th session of the FAO Council, the Organization committed to developing the building blocks that will catalyze national efforts to regularly generate and analyze reliable and comparable AMR data in food and agriculture and AMU (Antimicrobial Use) data in plants and crops. With this purpose in mind, FAO started to develop a prototype for the International FAO Antimicrobial Resistance Monitoring (InFARM) IT platform in early 2022. FAO will work with an initial set of countries to participate in developing and testing this data platform prototype in 2022. Countries will be involved in activities for pilot testing using their own data.

The development of the InFARM system and IT platform

The development of InFARM will follow a progressive approach. The initial scope of the prototype of the InFARM IT platform will be to host AMR data in priority bacterial species of interest for public health, animal health and indicator bacteria from animals and food, according to international standards and recommendations of the Codex Alimentarius guidelines for integrated monitoring and surveillance of foodborne AMR and animal health codes of the World Organization for Animal Health (WOAH, founded as OIE). Global rollout of the InFARM IT platform and expansion to additional functionalities and surveillance priorities under FAO's remit, such as data on the use of antimicrobial pesticides in plants, are planned upon completing the pilot phase.

The InFARM IT platform will build momentum for enabling national surveillance, facilitating the process of data analysis and national reporting, and sustaining the monitoring of the country progress in actions against AMR in food and agriculture. This momentum is

envisioned to further support the expansion of the InFARM platform as a wider system to support national surveillance activities such as:

- Formalization and establishment of national surveillance networks;
- Capacity building of national focal points and experts on data generation and sharing;
- Adaptation of data management solutions and the interoperability with Laboratory Information Management Systems.

Objectives

The objectives of the InFARM system and IT platform are:

- **To support countries in collecting, analyzing, and using their AMR data from animals and food for national purposes.** InFARM will support capacity building for global harmonization of AMR data generated through laboratory-based surveillance and serve as a one-stop source of relevant contextual information on AMR and AMU surveillance programmes and linked activities (e.g. national surveillance plans, reports on the use of FAO assessment tools).
- **To support countries willing to publicly share AMR data from food and agriculture sectors for global surveillance as a public common good for international advocacy and action to tackle AMR.** InFARM will include support for sharing data (with the possibility to protect country identity through aggregation at regional and subregional levels) into the global Tripartite Integrated System for Surveillance of AMR/AMU (TISSA). Public information on AMR prevalence from InFARM will be the data source for outcome indicators included in the Monitoring & Evaluation (M&E) framework of the Global Action Plan on AMR (i.e. prevalence of resistant E. coli in animals) to measure the impact of actions to minimize and contain AMR in food and agriculture sectors at global level.

Enrollment and participation in the pilot phase of the InFARM IT platform

Some countries may already have comprehensive national AMR surveillance systems for food and agriculture, producing and disseminating data routinely. In contrast, others may have just begun planning a national AMR surveillance system and are generating AMR data through point prevalence surveys or research studies. Understanding that surveillance systems in food and agriculture are at various stages of development, interested countries will also be able to enroll in InFARM even if they are at the initial stages of surveillance implementation and their data collection is limited. From its inception, InFARM will accept national, officially-validated data from both systematic and pilot surveillance activities according to predefined data models and templates.

Data privacy will be guaranteed by providing users with two separate private and public interfaces with three levels of confidentiality for data sharing. Members enrolled in InFARM may decide to share data ranging from complete privacy only accessible to nominated country users in the private interface (level 1) or make data publicly available to the international community by aggregation at regional/subregional levels (level 2) or publicly display the identity of the country (level 3).

The InFARM IT platform will offer participating countries

- A safe place to store data with restricted access and the possibility to share data at various levels of confidentiality
- Easy tools to analyze and interpret data, including i) interactive dashboard for data visualizations to produce tables, maps, and figures, and ii) easy exporting of data, tables, maps, and figures for further use in national dissemination activities (e.g. reports, presentations, publications and many more)
- A one-stop-shop with a repository of documents/information to contextualize country AMR data (e.g. national surveillance plans, protocols, reports from the application of FAO assessment tools, etc.)
- Expert support and advanced tools for data modelling (e.g. identification of AMR hotspots)
- Improved national monitoring and reporting of AMR data from food and agriculture sectors, including improved coordination of data collection, analysis, and harmonization in data generation
- A mechanism to contribute to global One Health AMR surveillance efforts, which includes the migration of relevant data from the InFARM public interface to TISSA.
- By participating in InFARM, countries will contribute to building or strengthening their national AMR surveillance systems in food and agriculture. Their participation will generate quality AMR surveillance data that meet national and international needs to create evidence and support actions to tackle AMR.

Resource partners: Germany, the Netherlands, the Republic of Korea, Sweden, the United Kingdom of Great Britain and Northern Ireland and the United States of America

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