



**Food and Agriculture
Organization of the
United Nations**



**World Health
Organization**

Joint FAO/WHO Expert Meeting on Microbiological Risk Assessment (JEMRA)

CALL FOR EXPERTS AND DATA ON THE PREVENTION AND CONTROL OF MICROBIOLOGICAL HAZARDS IN FRESH FRUITS AND VEGETABLES

FAO and WHO are issuing an open call for experts who can contribute to future work of JEMRA in assessing the prevention and control of microbiological hazards in fresh fruits and vegetables.

In addition, FAO and WHO are requesting governments, the industry, academia, consumer groups, laboratories, and any other interested organizations and individuals to submit any available data and information to support this work.

Background

Fresh fruits and vegetables are an important part of a healthy diet and are protective against many chronic health conditions. Yet, fresh fruits and vegetables are increasingly being implicated in food safety incidents involving microbiological hazards around the globe. Fresh produce contaminated with foodborne pathogens (bacteria, viruses, protozoa, helminths, etc.) have resulted in numerous outbreaks of foodborne disease and trade disruptions.

The Codex Alimentarius Commission (CAC) initially developed the “Code of Hygienic Practice for Fresh Fruits and Vegetables”¹ in 2003 then later revised it in 2010 following a Joint FAO/WHO Meeting on Microbiological Risk Assessment (JEMRA), held in 2008, to address microbiological hazards associated with leafy vegetables and herbs (MRA14)². In addition, several commodity specific annexes were added to the code of practice in 2012, 2013, and 2017.

Subsequently, in 2018, FAO and WHO published the report Shiga toxin-producing *Escherichia coli* (STEC) and food: Attribution, characterization and monitoring report (MRA31)³ wherein fresh fruits and vegetables were identified as important sources of STEC infection. In 2019, following a request from the Codex Committee on Food Hygiene (CCFH), the CAC approved new work at its 42nd Session on the

¹ http://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252Fstandards%252FCXC%2B53-2003%252FCXC_053e.pdf

² <https://www.who.int/publications/i/item/9789241563789>

³ <http://www.fao.org/3/ca0032en/ca0032en.pdf>

development of guidelines for the control of STEC in leafy greens and in sprouts⁴. More recently, in October 2020, a Joint FAO/WHO Expert meeting on Microbiological Risk Assessment (JEMRA) of *Listeria monocytogenes* in Ready-to-Eat (RTE) Foods noted increased reports of listeriosis acquired from fresh and minimally processed fruits and vegetables⁵.

To meet the requests of the CCFH and to update and expand the information available in the FAO/WHO Microbiological hazards in fresh leafy vegetables and herbs Meeting report (MRA14), FAO and WHO have decided to hold a series of expert meetings on preventing and controlling microbiological hazards in fresh fruits and vegetables. The goal of these meetings is to gather recent data, evidence and scientific opinions on the topic.

Scope and Objectives of the Meeting

The purpose of the meeting is to collect, review and discuss relevant measures for controls of microbiological hazards from primary production to consumption in:

- Fresh leafy vegetables;
- Ready-to-eat, fresh, and minimally processed fruits and vegetables; and
- Sprouts.

The scope of the meeting shall include aspects of primary production (in open fields or in protected facilities such as high and low tunnels, greenhouses and net houses and address hydroponic and aquaponics systems and other systems as required) and post-harvest activities, including activities performed prior to packing, including minimal transformation of fresh fruits and vegetables (washing, sorting, culling, grading, cutting and trimming), marketing and the cold chain. Emphasis will be placed on the identification and evaluation of solutions to reduce foodborne illnesses associated with fresh fruits and vegetables, taking into consideration their effectiveness and practicalities.

The objectives of the meeting will include:

- To identify and characterize fresh fruits and vegetables and microbiological hazard combinations of great concern to public health.
- To review publicly available literatures, guidelines from competent authorities and industry associations (e.g. compliance guidelines, code of practices, etc.) to assess the current state of the knowledge in controlling microbiological hazards in fresh fruits and vegetables.
- To review mitigation/intervention measures being used at different points along the food continuum (pre-harvest to marketing and consumer consumption) and assess their effectiveness at reducing microbiological hazards in commercial settings.

⁴ http://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FMeetings%252FCX-712-50%252FReport%252FREP19_FHe.pdf

⁵ https://cdn.who.int/media/docs/default-source/food-safety/jemra/listeria-meeting-summary-and-participantlist-oct-nov-2020.pdf?sfvrsn=eadab9f9_5

CALL FOR EXPERTS

FAO and WHO are looking to identifying experts to participate in future work of FAO and WHO in assessing the prevention and control of microbiological hazards in fresh fruits and vegetables. All applicants should meet the following general criteria:

- Advanced University/College degree in veterinary medicine, microbiology, food technology, food science, agricultural science, epidemiology, public health, or related fields,
- Experience in food safety/risk analysis related to microbiological hazards in foods,
- At least five years of experience in relevant fields,
- Scientific publications in peer-reviewed journals, in particular relevant publications within the most recent 10 years,
- Good knowledge of the English language, both written and oral, and
- Evidence of leadership or invited participation in national or international scientific bodies, committees, and other expert advisory bodies pertinent to the scope of this work.

Selection of experts

Applicants' curricula vitae (CV) will be reviewed based on the criteria listed above by a selection panel consisting of three or more individuals appointed by FAO or WHO. In selecting experts, FAO and WHO will consider, in addition to scientific and technical excellence, diversity and complementarities of scientific backgrounds, and representation from geographic regions, including low- and middle-income countries, as well as gender. A small number of accomplished individuals will be notified and invited to participate in the expert meetings on the prevention and control of microbiological hazards in fresh fruits and vegetables and may be added to the JEMRA roster of experts that is valid for future work until 31 December 2022. Selected experts may be required to assist in the preparation of background papers and report drafts (in English). Selection to participate in one of the meetings does not constitute an invitation to participate in all the meetings in this series. Unsuccessful candidates are not routinely notified.

Appointment of experts

Selected experts will be invited to contribute to the meeting only in their individual scientific capacity. An expert will not represent the government of country of which they are a citizen, or the institution with which he or she is associated. The experts designated will not receive any remuneration, however, where a physical expert meeting is held, travel costs, subsistence allowance and other related expenses will be the exclusive responsibility of FAO and WHO.

Applications

Interested applicants should submit their CV. The CV should include a description of education, relevant work experience, evidence of national or international expertise on the topic, including a list of peer-reviewed publications relevant to the factors indicated above (please do not include reprints in your submission unless specifically requested at a later date). Applicants must have a good working knowledge of English as correspondence and meetings will be in English only.

Before participating in any related activity, all the selected experts will be required to declare any potential interests associated with the topic of the meeting. Experts will be asked to indicate, in writing, all interests (financial and intellectual) on their part or that of their spouse that may affect, or be perceived to affect, their scientific independence as experts, including one or more of the following conditions: employment

(past or present) by any commercial enterprise or private or civil sector association; receipt of research or other study grants from such enterprises or associations; shareholdings in commercial enterprises active in fields related to food safety. Identification of an interest does not necessarily indicate a conflict nor automatically exclude an individual from participation. For example, as an expert, it is expected that many, if not all, will be employed in some capacity related to the subject matter. These declarations must be completed and evaluated before a formal invitation will be issued. Declaration documents will be retained by the Joint Secretariat and a summary of declarations will be included in the report of the work. In addition, a confidentiality undertaking must also be completed prior to appointment to ensure proper handling of dossiers and proprietary information.

Deadline

Please submit nominations and CVs at your earliest convenience. Selection of participants will begin on **31 May 2021** and continue until suitable candidates are identified.

Submissions in response to the call for experts should be sent to:

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CALL FOR DATA

FAO and WHO desire that all relevant information and data on the prevention and control of microbiological hazards in fresh fruits and vegetables are considered in their assessment and are thus issuing this international call to raise awareness about data needs and invite all interested parties to provide any relevant information/data, particularly data that may not be readily available in the public domain.

Objectives

This call is aimed to obtain more globally representative data and information on the prevention and control of microbiological hazards in fresh fruits and vegetables.

The purpose of the meeting is to review and discuss relevant measures for pre- and post- harvest controls of microbiological hazards in fresh, fresh-cut, and minimally processed fruits and vegetables, including sprouts. The data will serve as inputs to the development of scientific advice on this topic.

Request for relevant information

FAO and WHO want to ensure that all available and relevant information/data are collected, and are requesting governments, the food industry, academia, consumer groups, laboratories, health care providers and any other interested organizations and individuals to submit any available data on the specific areas indicated above. These data may be published or unpublished. Reference should be made to related published studies, where applicable. Data should be submitted as soon as possible to allow adequate time for expert review prior to the meeting.

List of data and information requirements

Data and information on the following aspects are requested:

- A. Information on the prevention and control of microbiological contamination in fresh fruits and vegetables** from primary production (in open fields or in protected facilities such as high and low tunnels, greenhouses, net houses, hydroponic and aquaponics systems etc.) through processing (including fresh-cut and other types of minimal processing), packing, storage and retail to consumption:
- The range of prevention and control measures applied for the prevention and control of microbiological contamination.
 - The efficacy and effectiveness of any generic control measures (e.g. GAP, GMP/GHP, HACCP, other regulatory guidelines, etc.) including operational monitoring programme (sampling point/testing plan/step in the food chain).
 - Verification and validation (e.g. control points that might be relevant) and corrective actions (e.g. post-application treatments to mitigate food safety risk if commodities exceed control points).
 - The efficacy and effectiveness of specific interventions (e.g. heat, irradiation, the use of sanitizers, cooling technique etc.)
 - Potential for amplification of foodborne pathogens through the food chain (e.g. impact of prior land use, the recommended minimum distance between the contaminant and the growing area, etc.)

B. Surveillance data and or foodborne outbreak possibly related to fresh fruits and vegetables.

- Surveillance data
 - name of country,
 - presence/absence or counts of specific organisms (bacteria, viruses, parasites),
 - possible origin of contamination, and
 - other information and relevant links (articles, reports, websites, etc.)
- Foodborne outbreak
 - time of year and month in which the outbreak occurred,
 - whether the outbreak/cases were confirmed or suspected regarding the link between the food vehicle and the outbreak of human cases and how this was determined (e.g. laboratory confirmation, epidemiological investigation, etc.),
 - number of cases, hospitalizations, and deaths associated with the outbreaks,
 - age and sex distribution of cases (e.g. range and median),
 - possible origin of contamination,
 - corrective actions, and
 - other information and relevant links (articles, reports, websites, etc.)

C. Other information

- Research on climate, topology, weather (e.g. impact of flooding), hydrology and geographical features, which contribute to an increase of microbial contamination in the fresh fruits and vegetables industries.
- Research on internalization from seed to harvest, etc.

Data provider: Please provide name, title and full contact details of the contact person for follow-up and further details, if needed.

Confidential and/or unpublished data

FAO and WHO recognize that some of the information and relevant data which is now required may be unpublished or of a confidential nature. With regard to unpublished information and data, this remains the property of the author for subsequent publication by the owner as original material. Unpublished confidential studies that are submitted will be safeguarded in so far as it is possible to do so without compromising the work of FAO and WHO. Specific issues relating to confidentiality should be discussed directly between the information and data owners and FAO/WHO. For these and other issues please contact FAO and WHO at the contacts provided.

Deadline

Please submit any relevant information electronically either via e-mail (if not too large) or on a USB stick, in any official United Nations language (English, French, Spanish, Arabic, Chinese, Russian), and with title and short description of the content in English, to the addresses below at your earliest convenience.

[Data submissions in response to the call for data should be sent to:](#)

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