

Improving the Safety and Quality of Fresh Fruits and Vegetables: A Training Manual for Trainers



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Introduction

The health benefits associated with regular consumption of fresh fruits and vegetables have been clearly demonstrated and encouraged by national and international nutrition and health authorities. However, there has been an increase in the number of outbreaks of illness associated with the consumption of fresh produce. Several outbreaks have received broad media coverage, raising concerns about the potential safety of fresh fruits and vegetables. The fact that fresh produce is not processed, a step which reduces or eliminates food safety risks, has led the industry, regulatory authorities and the scientific community to focus research and educational efforts on steps that help prevent the occurrence of contamination that might cause illness.

Background

In 1996, the Joint Institute for Food Safety and Applied Nutrition (JIFSAN) was established by agreement between the University of Maryland and the U.S. Food and Drug Administration (FDA). JIFSAN is a jointly administered, multidisciplinary research, education and outreach program. It has a foundation of public and private partnerships that provide the scientific basis to help ensure a supply of safe, wholesome food as well as to provide the infrastructure for contributions to national food safety programs and international standards. JIFSAN fosters the missions of the University and FDA through its many collaborative relationships. One of its missions is to deliver training programs and supporting materials that focus on the safe production and handling of fresh fruits and vegetables.

In 1998, the FDA issued the document *Guidance for Industry – Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables*, hereafter referred to as the Guide. This document addressed microbial food safety hazards, good agricultural practices (GAP) and good manufacturing practices (GMP) common to the growing, harvesting, cleaning, washing, sorting, packing, and transporting of most fruits and vegetables sold to consumers in an unprocessed or minimally processed (raw) form. This voluntary, science-based guidance was

designed to be used by domestic and foreign fresh fruit and vegetable producers and handlers to help ensure the safety of their produce. The guidance is consistent with U.S. trade rights and obligations and does not impose unnecessary or unequal restrictions or barriers on either domestic or foreign industries.

About This Manual

This manual was developed to serve as the basis for JIFSAN and other training programs for GAP and GMP of fresh fruits and vegetables. It provides uniform, broad-based scientific and practical information in a Train-the-Trainer approach. Although the primary user of this manual is the JIFSAN training team, the intent is that there will be many secondary users that would include managers of production and handling operations, Extension workers, and anyone else who has the responsibility of conducting food safety training for fresh fruits and vegetables. Thus the first objective of the manual is to provide a teaching tool that serves as the foundation for JIFSAN to train trainers in countries that export foods to the U.S and the second objective is to provide a resource that assists these newly trained trainers with developing and conducting their own courses.

The scope of information provided in this manual is international. The principles of safe production and handling presented herein will apply uniformly throughout the world, including areas within the U.S. It addresses microbiological, chemical and physical hazards that exist everywhere and offers the best available information for controlling these hazards.

This training manual focuses on risk reduction, not risk elimination. Current technologies cannot eliminate all potential food safety risks associated with the consumption of raw produce. Instructors and trainees should work together during the course to identify risks and practical management strategies for reducing those risks.

Finally, the material in this manual is guidance, not regulation. It should be applied as appropriate and feasible to individual fruit and vegetable operations. For readers who are interested in specific regulations, refer to the

Additional Resources section to find sources of relevant information.

Structure of the Manual

The basic elements, or principles, of fresh produce safety and related training practices are covered in the first seven sections. Topics included are: the importance of training, GAP, GMP, pesticides, food quality, developing a training program, and food laws and regulations.

In each of these sections, the primary food safety and training concerns are identified. The scientific basis for safety management and training practices is discussed. Information, including cases studies when possible, is provided to assist trainees with developing their own courses. Recommendations for the safe production and handling of fresh fruits and vegetables are provided. Sections are organized with headings and sub-headings that will assist the user with locating information of interest.

The eighth section consists of a series of practical exercises that trainers may use in the classroom or field to reinforce important food safety concepts. Included are experiments, demonstrations, discussion questions, problem solving activities, and a field site visit guide.

The ninth and final section is a list of information resources. The amount of food safety information available today is enormous and it would be impossible to include paper copies of all supporting materials. Since most relevant practical information is available on websites at no cost to the user, a detailed list of websites with descriptions of the content are provided, with the acknowledgement that new information is developed on a regular basis and users should explore the web periodically for updates.

Conducting a Training Course

Training needs vary by country and by location within a country. Teaching resources and presentation styles also may vary depending upon cultural and political circumstances. Identification of needs and delivery methods is a part of course planning.

Typically, a JIFSAN Train-the-Trainer course based on the content of this manual requires five days for presentations on the principles, execution of classroom demonstrations, a field site visit, work on a case study in the classroom, and presentation of case study conclusions by trainees. The manual is structured such that adjustments to scheduling can easily be implemented based on the needs assessment.

- Logistics and budget may influence the amount of time available for teaching. In this case it is important to establish priorities for training needs and focus on the topics that represent the greatest food safety risks for the location.

- JIFSAN instructors have developed a detailed set of PowerPoint presentations that accompany each of the manual sections. These presentations are made available to the audience when the course is delivered. Trainees are encouraged to utilize these presentations, with modifications as needed, to conduct their own training courses.

- Practical, hands-on activities are invaluable to the learning process and instructors are encouraged to incorporate as many of these as possible into the course. The practical exercises included in the manual are by no means comprehensive. Trainees may develop their own exercises specific to challenges in their locations.

- Finally, users of this manual should be alert for new information and technological advances that expand the understanding of factors associated with food safety risks. Awareness of these factors will allow updating the recommendations and information in this manual as appropriate. The JIFSAN team is committed to keeping the training content as current as possible.