



DRAFT TANZANIA STANDARD

Code of hygienic practices for ready-to-eat fresh pre-cut fruits and vegetables

DRAFT FOR STAKEHOLDERS' COMMENTS

0 Foreword

The health benefits associated with fresh fruits and vegetables combined with the on-going consumer interest in the availability of a variety of ready-to-eat foods have contributed to a substantial increase in the popularity of pre-cut fruits and vegetables. The freshness of the produce and increased conveniences and consumption of pre-cut fruits and vegetables in and away from home and the need to ensure safety and quality of pre-cut fruits and vegetables and the need of contributing to sustainable environment necessitated the development of this code.

This Tanzania Standard will guide all involved in the value chain of fresh pre-cut fruits and vegetables in achieving its safety and quality. The code should be used in conjunction with the TZS 109, *Food processing units – Code of hygiene – General* and TZS 1743, *National Standard Good Agricultural Practices and Good Handling Practices for Fresh Fruits and Vegetables*.

In the preparation of this Tanzania Standard assistance was derived from CAC/RCP 53-2003 published by the Codex Alimentarius Commission.

1 Scope

This Tanzania Standard specifically applies to ready-to-eat fresh fruits and vegetables that have been peeled, cut or otherwise physically altered from their original form but remain in the fresh state and particularly those that are intended to be consumed raw. This Tanzania Standard applies irrespective of where the operations take place (e.g. in the field, at the farm, at the retailer, at the wholesaler, at the processing establishment, etc.).

2 Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

TZS 109, *Code of hygiene for food processing units*

TZS 538, *Packaging and labeling of foods*

TZS 1743, *National Standard Good Agricultural Practices and Good Handling Practices for fresh fruits and vegetables*.

3 Terms and definitions

For the purpose of this Tanzania Standard, the following terms and definitions shall also apply:

3.1 antimicrobial agents

any substance of natural, synthetic or semi-synthetic origin which at low concentrations kills or inhibits the growth of micro-organisms but causes little or no host damage

3.2 environment

surroundings or conditions in which a person, animal or plant lives or operates

3.3 farm

any premise or establishment in which fresh fruits and/or vegetables are grown and harvested where the surroundings are under the control of the same management

3.4 fruits

reproductive body of a flowering plant that has an edible more or less sweet pulp, usually being used as dessert or sweet course of a meal.

3.5 grower

person directly responsible for the management of the primary production of fresh fruits and vegetables

3.6 harvester

person directly responsible for the management of the harvesting of fresh fruits and vegetables

3.7 Hazard Analysis Critical Control Point (HACCP)

system which identifies, analyses, and controls hazards which are significant for food safety

3.8 hazard

any biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect

3.9 hazardous material

any compound which, at specific levels, has the potential to cause adverse health effects

3.10 micro-organisms

organisms which are too small to be visible by naked eye. Include yeasts, moulds, bacteria, viruses and microscopic parasites

3.11 packer

person directly responsible for the management of post-harvest processing and packing of fresh fruits and vegetables

3.12 packing

action of putting fresh fruits and vegetables in a package. This may take place in a field or in an establishment

3.13 establishment

any indoor structure in which fresh fruits and vegetables receive post-harvest treatment and are packaged

3.14 primary production

steps involved in the growing and harvesting of fresh fruits and vegetables such as planting, irrigation, application of fertilizers, application of agricultural chemicals, etc.

3.15 vegetables

tender edible shoot, leaf, blossom, fruits, root and tubers of plant that are eaten whole, in part, raw or cooked, as a supplement to starch foods and meats/fish

3.16 pre- cut fresh fruit and vegetable

ready-to-eat fresh fruits and vegetables that have been peeled, cut or otherwise physically altered from their original form but remain in the fresh state.

3.17 processor

person responsible for the management of the activities associated with the production of ready-to-eat fresh pre-cut fruits and vegetables

3.18 potable water

water that is safe and suitable for human consumption

3.19 non-potable water

means water that does not meet the standard or value for drinking water

4 Primary production

Procedures associated with primary production should be conducted as described in TZS 1743.

5 Establishment: design and facilities

Good hygienic design and construction, appropriate location and the provision of adequate facilities, is necessary to enable hazards to be effectively controlled. Depending on the nature of the operations, and the risks associated with them, premises, equipment and facilities should be located, designed and constructed to ensure that:

- a) contamination is minimized;
- b) design and layout permit appropriate maintenance, cleaning and disinfections and minimize air-borne and cross - contamination;
- c) surfaces and materials, in particular those come into contact with food, are non-toxic in intended use and, where necessary, suitably durable, and easy to maintain and clean;
- d) where appropriate, suitable facilities are available for temperature, humidity and other controls; and
- e) there is effective protection against pest access and harbourage.

5.1 Location

5.1.1 Establishments

Potential sources of contamination need to be considered when deciding where to locate food establishments, as well as the effectiveness of any reasonable measures that might be taken to protect food. Establishments should not be located in an area where, after considering such protective measures, it is clear that there will remain a threat to food safety or suitability. In particular, establishments should normally be located away from:

- a) environmentally polluted areas and industrial activities which pose a serious threat of contaminating food;

- b) areas subject to flooding unless sufficient safeguards are provided;
- c) areas prone to infestations of pests;
- d) areas where wastes, either solid or liquid, cannot be removed effectively.

5.1.2 Equipment

Equipment should be located so that it:

- a) permits adequate maintenance and cleaning;
- b) functions in accordance with its intended use; and
- c) facilitates good hygiene practices, including monitoring.

5.2 Premises and rooms

5.2.1 Design and layout

The internal design and layout of food establishments should permit good food hygiene practices, including protection against cross-contamination.

5.2.2 Internal structures and fittings

Structures within food establishments should be soundly built of durable materials and be easy to maintain, clean and where appropriate, able to be disinfected. In particular the following specific conditions should be satisfied where necessary to protect the safety and suitability of food:

- a) the surfaces of walls, partitions and floors should be made of impervious materials with no toxic effect in intended use;
- b) walls and partitions should have a smooth surface and appropriate colour up to a height appropriate to the operation;
- c) floors should be constructed to allow adequate drainage and cleaning;
- d) ceilings and overhead fixtures should be constructed and finished to minimize the buildup of dirt and condensation, and the shedding of particles;
- e) windows should be easy to clean, be constructed to minimize the buildup of dirt and where necessary, be fitted with removable and cleanable insect-proof screens. Where necessary, windows should be fixed;
- f) doors should have smooth, non-absorbent surfaces, and be easy to clean and, where necessary, disinfect;
- g) working surfaces that come into direct contact with food should be in sound condition, durable and easy to clean, maintain and disinfect. They should be made of smooth, non-absorbent materials, and inert to the food, to detergents and disinfectants under normal operating conditions.

5.2.3 Temporary/mobile premises and vending machines

Premises and structures covered here include market stalls, mobile sales and street vending vehicles, temporary premises in which food is handled such as tents and marquees.

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Such premises and structures should be sited, designed and constructed to avoid, as far as reasonably practicable, contaminating food and harbouring pests.

In applying these specific conditions and requirements, any food hygiene hazards associated with such facilities should be adequately controlled to ensure the safety and suitability of food.

5.3 Equipment

5.3.1 General

Equipment and containers (other than once-only use containers and packaging) coming into contact with food, should be designed and constructed to ensure that, where necessary, they can be adequately cleaned, disinfected and maintained to avoid the contamination of food. Equipment and containers should be made of materials with no toxic effect in intended use. Where necessary, equipment should be durable and movable or capable of being disassembled to allow for maintenance, cleaning, disinfection, monitoring and, for example, to facilitate inspection for pests.

5.3.2 Food control and monitoring equipment

In addition to the general requirements in clause 5.3.1, equipment used to heat treat, cool, store or freeze food should be designed to achieve the required food temperatures as rapidly as necessary in the interests of food safety and suitability, and maintain them effectively. Such equipment should also be designed to allow temperatures to be monitored and controlled. Where necessary, such equipment should have effective means of controlling and monitoring humidity, air-flow and any other characteristic likely to have a detrimental effect on the safety or suitability of food. These requirements are intended to ensure that:

- a) harmful or undesirable micro-organisms or their toxins are eliminated or reduced to safe levels or their survival and growth are effectively controlled;
- b) where appropriate, critical limits established in HACCP-based plans can be monitored; and
- c) temperatures and other conditions necessary to food safety and suitability can be rapidly achieved and maintained.

5.3.3 Containers for waste and inedible substances

Containers for waste, by-products and inedible or dangerous substances, should be specifically identifiable, suitably constructed and, where appropriate, made of impervious material. Containers used to hold dangerous substances should be identified and, where appropriate, be lockable to prevent malicious or accidental contamination of food.

5.4 Facilities

5.4.1 Water supply

An adequate supply of potable water with appropriate facilities for its storage, distribution and temperature control, should be available whenever necessary to ensure the safety and suitability of food.

Non-potable water (for use in, for example, fire control, steam production, refrigeration and other similar purposes where it would not contaminate food), shall have a separate system. Non-potable water systems shall be identified and shall not connect with, or allow reflux into potable water systems.

5.4.2 Drainage and waste disposal

Adequate drainage and waste disposal systems and facilities should be provided. They should be designed and constructed so that the risk of contaminating food or the potable water supply is avoided.

5.4.3 Cleaning

Adequate facilities, suitably designated, should be provided for cleaning food, utensils and equipment. Such facilities should have an adequate supply of hot and cold potable water where appropriate.

5.4.4 Personnel hygiene facilities and toilets

Personnel hygiene facilities should be available to ensure that an appropriate degree of personal hygiene can be maintained and to avoid contaminating food. Where appropriate, facilities should include:

- a) adequate means of hygienically washing and drying hands, including wash basins and a supply of hot and cold (or suitably temperature controlled) water;
- b) lavatories of appropriate hygienic design; and
- c) adequate changing facilities for personnel.

Such facilities should be suitably located and designated.

5.4.5 Temperature control

Adequate facilities should be available for heating, cooling, refrigerating and freezing food, for storing refrigerated or frozen foods, monitoring food temperatures, and when necessary, controlling ambient temperatures to ensure the safety and suitability of food.

5.4.6 Air quality and ventilation

Adequate means of natural or mechanical ventilation should be provided, in particular to:

- a) minimize air-borne contamination of food, for example, from aerosols and condensation droplets;
- b) control ambient temperatures;
- c) control odours which might affect the suitability of food; and
- d) control humidity, where necessary, to ensure the safety and suitability of food.

Ventilation systems should be designed and constructed so that air does not flow from contaminated areas to clean areas and, where necessary, they can be adequately maintained and cleaned.

5.4.7 Lighting

Adequate natural or artificial lighting should be provided to enable the undertaking to operate in a hygienic manner. Where necessary, lighting should not be such that the resulting colour is misleading. The intensity should be adequate to the nature of the operation. Lighting fixtures should be protected to ensure that food is not contaminated by breakages.

5.4.8 Storage

Adequate facilities for the storage of food, ingredients and non-food chemicals (e.g. cleaning materials, lubricants, fuels) should be provided.

Food storage facilities should be designed and constructed to:

- a) permit adequate maintenance and cleaning;
- b) avoid pest access and harbourage;

- c) enable food to be effectively protected from contamination during storage; and
- d) provide an environment which minimizes the deterioration of food (e.g. by temperature and humidity control).

The type of storage facilities required will depend on the nature of the food. Where necessary, separate, secure storage facilities for cleaning materials and hazardous substances should be provided.

5.4.9 Drainage and waste disposal

The processing of products covered by this standard generates a large quantity of waste that can serve as food and shelter for pests. It is therefore very important to plan an effective waste disposal system. This system should always be maintained in good condition so that it does not become a source of product contamination.

6 Control of operations

To reduce the risk of unsafe food is imperative to take preventive measures that assure the safety and suitability of food at an appropriate stage in the operation by controlling food hazards.

6.1 Control of food hazards

Processing may reduce the level of contamination initially present on the raw materials but it will not be able to guarantee elimination of such contamination. Consequently, the processor should ensure that steps are taken by their suppliers (growers, harvesters, packers and distributors) to minimize contamination of the raw materials during primary production.

There are certain pathogens such as *Listeria monocytogenes* and *Clostridium botulinum*, which present specific concern in relation to ready to eat fresh pre-cut vegetables packaged in a modified atmosphere. Processors should ensure that they have addressed all relevant safety issues relating to the use of such packaging.

6.2 Key aspects of control systems

6.2.1 Specific process steps

Proper quality control measures should be exercised throughout the various processes as detailed below.

6.2.1.1 Receipt and inspection of raw materials

During unloading of raw materials, cleanliness of the food transportation unit and raw materials should be verified for evidence of contamination and deterioration.

6.2.1.2 Preparation of raw materials before processing

Physical hazards (such as the presence of animal and plant debris, metal, and other foreign materials) should be removed through manual sorting or the use of detectors, such as metal detectors. Raw materials should be trimmed to remove any damaged, rotten or mould materials.

6.2.1.3 Washing and microbiological decontamination

Water used for final rinses should be of potable quality, particularly for these products as they are not likely to be washed before consumption.

6.2.1.4 Pre-cooling and cooling of fresh fruits and vegetables

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- a) condensate and defrost water from evaporator type cooling systems (e.g. vacuum cooling, cold rooms) should not drip onto fresh fruits and vegetables. The inside of the cooling systems should be maintained clean.
- b) potable water should be used in cooling systems where water or ice is in direct contact with fresh fruits and vegetables (e.g. hydro cooling, ice cooling). The water quality in these systems should be controlled and maintained.
- c) forced-air cooling is the use of rapid movement of refrigerated air over fresh fruits and vegetables in cold rooms. Air cooling systems should be appropriately designed and maintained to avoid contaminating fresh produce.

6.2.1.5 *Cutting, slicing, shredding, and similar pre-cut processes*

Procedures should be in place to minimize contamination with physical (e.g. metal) and microbiological contaminants during cutting, slicing, shredding or similar pre-cut processes.

The following should be considered:

- a) maintain sharpness and condition of knives and cutting edges to ensure product quality and safety; and
- b) cutting equipment should be cleaned and sanitized on a regular basis according to written procedures to ensure that the potential for cross contamination is minimized.

6.2.1.6 *Washing after cutting, slicing, shredding, and similar pre-cut processes*

Potable water should be used to wash cut produce to reduce microbiological contamination. In addition, it removes some of the cellular fluids that were released during the cutting process thereby reducing the level of available nutrients for microbiological growth. The following should be considered:

- a) water should be replaced at sufficient frequency to prevent the build-up of organic material and prevent cross-contamination;
- b) antimicrobial agents should be used, where necessary, to minimize cross-contamination during washing and where their use is in line with Good Hygienic Practices. The antimicrobial agents levels should be monitored and controlled to ensure that they are maintained at effective concentrations. Application of antimicrobial agents, followed by a wash as necessary, should be done to ensure that chemical residues do not exceed levels as recommended by the Codex Alimentarius Commission; and
- c) drying or draining to remove water after washing is important to minimize microbiological growth.

6.2.1.7 *Cold storage*

- a) pre-cut fresh fruits and vegetables should be maintained at low temperatures at all stages, from cutting through distribution to minimize microbiological growth.
- b) condensate and defrost water from the cooling system in cold storage areas should not drip on to fresh fruits and vegetables. The inside of the cooling systems should be maintained in a clean and sanitary condition.

6.3 Documentation and records

Written records that accurately reflect product information and operational controls should be available to demonstrate the adequacy of the production activities.

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Maintaining adequate documentation and records of processing operations is important in the event of recall of with fresh pre-cut fruits and vegetables. Records should be kept long enough to facilitate recalls and foodborne illness investigations, if required. This period will likely be much longer than the shelf life of the product. Some examples of records to keep are the following:

- a) fresh fruit and vegetable supplier records;
- b) water quality and supply records;
- c) equipment monitoring and maintenance records;
- d) equipment calibration records;
- e) sanitation records;
- f) product processing records;
- g) pest control records;
- h) distribution records; and
- i) training records.

6.4 Traceability

The traceability should be designed and implemented to enable the withdrawal of the products, where necessary.

Detailed records should be kept that link each supplier of the product with the immediate subsequent recipient of the food throughout the supply chain. The information should include, if available, the packer name, address, and phone, date packed, date released, type of food including brand name and specific variety (e.g. Romaine lettuce rather than just lettuce), lot identification, and number of items, the following are examples of the types of records that should be retained to facilitate traceability;

- a) Shipping documents
 - i Invoices
 - ii Other records maintained by the firm that identifies the supplier and the buyer
 - iii Operators such as growers and producers and, in cases where contract harvesters are used, harvesters should keep current all relevant information on agricultural activities such as information concerning each lot, date harvested, grower contact information, harvest practices, if water used in harvesting, water quality.
- b) In fresh-cut, pre-cut or ready-to-eat salad operations, multiple ingredients from different sources may be combined in a single package. This practice can complicate efforts to trace fresh fruits and vegetables to their source. The processors should consider establishing and maintaining records to identify the source of each ingredient in the product.

6.5 Recall procedures

Supervisors should ensure effective procedures are in place to deal with any food safety hazard and to enable the complete, rapid recall of any implicated lot of the finished food from the market. Where a product has been withdrawn because of an immediate health hazard, other products which are produced under similar conditions, and which may present a similar hazard to public health, should be evaluated for safety and may need to be withdrawn. The need for public warnings should be considered.

Recalled products should be held under supervision until they are destroyed, used for purposes other than human consumption, determined to be safe for human consumption, or reprocessed in a manner to ensure their safety.

7 Establishment: maintenance and sanitation

Maintenance and sanitation facilitate the continuing effective control of food hazards, pests, and other agents likely to contaminate food. The effective system should be established to:

- a) ensure adequate and appropriate maintenance and cleaning;
- b) control pests;
- c) manage waste; and
- d) monitor effectiveness of maintenance and sanitation procedures.

7.1 Maintenance and cleaning

Establishments and equipment should be kept in an appropriate state of repair and condition to:

- a) facilitate all sanitation procedures;
- b) function as intended, particularly at critical steps (see clause 6.1);
- c) prevent contamination of food, e.g. from metal shards, flaking plaster, debris and chemicals.

Cleaning should remove food residues and dirt which may be a source of contamination. The necessary cleaning methods and materials will depend on the nature of the food business. Disinfection may be necessary after cleaning.

Cleaning chemicals should be handled and used carefully and in accordance with manufacturers' instructions and stored, where necessary, separated from food, in clearly identified containers to avoid the risk of contaminating food.

Cleaning can be carried out by the separate or the combined use of physical methods, such as heat, scrubbing, turbulent flow, vacuum cleaning or other methods that avoid the use of water, and chemical methods using detergents, alkalis or acids.

7.2 Cleaning programmes

Cleaning and disinfection programmes should ensure that all parts of the establishment are appropriately clean, and should include the cleaning of cleaning equipment.

Cleaning and disinfection programmes should be continually and effectively monitored for their suitability and effectiveness and where necessary, documented on areas, items of equipment and utensils to be cleaned; responsibility for particular tasks; method and frequency of cleaning; and monitoring arrangements.

Programmes should be drawn up in consultation with relevant specialist.

7.3 Pest control systems

7.3.1 General

Pests pose a major threat to the safety and suitability of food. Pest infestations can occur where there are breeding sites and a supply of food. Good Hygienic Practices should be employed to avoid

creating an environment conducive to pests. Good sanitation, inspection of incoming materials and good monitoring can minimize the likelihood of infestation and thereby limit the need for pesticides.

7.3.2 Preventing access

Buildings should be kept in good repair and condition to prevent pest access and to eliminate potential breeding sites. Holes, drains and other places where pests are likely to gain access should be kept sealed. Wire mesh screens, for example on open windows, doors and ventilators, will reduce the problem of pest entry. Animals should, wherever possible, be excluded from the grounds of factories and food processing plants.

7.3.3 Harbourage and infestation

The availability of food and water encourages pest harbourage and infestation. Potential food sources should be stored in pest-proof containers and/or stacked above the ground and away from walls. Areas both inside and outside food premises should be kept clean. Where appropriate, refuse should be stored in covered, pest-proof containers.

7.3.4 Monitoring and detection

Establishments and surrounding areas should be regularly examined for evidence of infestation.

7.3.5 Eradication

Pest infestations should be dealt with immediately and without adversely affecting food safety or suitability. Treatment with chemical, physical or biological agents should be carried out without posing a threat to the safety or suitability of food. Pest control programmes should be drawn up in consultation with relevant specialist.

7.4 Waste management

Suitable provision must be made for the removal and storage of waste. Waste must not be allowed to accumulate in food handling, food storage, and other working areas and the adjoining environment except so far as is unavoidable for the proper functioning of the business. Waste stores must be kept appropriately clean.

7.5 Monitoring effectiveness

Sanitation systems should be monitored for effectiveness, periodically verified by means such as audit pre-operational inspections or, where appropriate, microbiological sampling of environment and food contact surfaces and regularly reviewed and adapted to reflect changed circumstances.

8 Establishment: personal hygiene

People who do not maintain an appropriate degree of personal cleanliness, who have certain illnesses or conditions or who behave inappropriately, can contaminate food and transmit illness to consumers.

Ensure that those who come directly or indirectly into contact with food are not likely to contaminate food by:

- a) maintaining an appropriate degree of personal cleanliness;
- b) behaving and operating in an appropriate manner.

8.1 Health status

People known, or suspected, to be suffering from, or to be a carrier of a disease or illness likely to be transmitted through food, should not be allowed to enter any food handling area if there is a likelihood of their contaminating food. Any person so affected should immediately report illness or symptoms of illness to the management.

Medical examination of a food handler should be carried out if clinically or epidemiologically indicated.

8.2 Illness and injuries

Conditions which should be reported to management so that any need for medical examination and/or possible exclusion from food handling can be considered, include: jaundice, diarrhea; vomiting, fever, sore throat with fever, visibly infected skin lesions (boils, cuts, etc.), discharges from the ear, eye or nose.

8.3 Personal cleanliness

Food handlers should maintain a high degree of personal cleanliness and, where appropriate, wear suitable protective clothing, head covering, and footwear. Cuts and wounds, where personnel are permitted to continue working, should be covered by suitable waterproof dressings.

Personnel should always wash their hands for example:

- a) at the start of food handling activities;
- b) immediately after using the toilet; and
- c) after handling raw food or any contaminated material, where this could result in contamination of other food items; they should avoid handling ready-to-eat food, where appropriate.

8.4 Personal behaviour

People engaged in food handling activities should refrain from behaviour which could result in contamination of food, for example smoking, spitting, chewing or eating, sneezing or coughing over unprotected food.

Personal effects such as jewellery, watches, pins or other items should not be worn or brought into food handling areas if they pose a threat to the safety and suitability of food.

8.5 Visitors

Visitors to food manufacturing, processing or handling areas should wear protective clothing and adhere to the other personal hygiene provisions in this clause.

9 Transportation

Ready to eat fresh pre-cut fruits and vegetables may become contaminated, or may not reach its destination in a suitable condition for consumption, unless effective control measures are taken during transportation, even where adequate hygiene control measures have been taken earlier in the food chain.

Measures should be taken where necessary to:

- a) protect ready to eat fresh pre-cut fruits and vegetables from potential sources of contamination;
- b) protect ready to eat fresh pre-cut fruits and vegetables from damage likely to render the food unsuitable for consumption; and

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- c) provide an environment which effectively controls the growth of pathogenic or spoilage micro-organisms and the production of toxins in ready to eat fresh pre-cut fruits and vegetables.

The design of the ready to eat fresh pre-cut fruits and vegetables transportation unit should be such as to avoid cross contamination due to simultaneous or consecutive transport. Important aspects are cleanability and appropriate coatings. Construction and design of the food transportation unit should facilitate inspection, cleaning, disinfection and when appropriate enable temperature control.

There should be appropriate facilities conveniently available for cleaning and, where appropriate disinfecting of the ready to eat fresh pre-cut fruits and vegetables transportation unit.

10 Product information and consumer awareness

10.1 Product information

Insufficient product information, and/or inadequate knowledge of general food hygiene, can lead to products being mishandled at later stages in the food chain.

Products should bear appropriate information to ensure that:

- a) adequate and accessible information is available to the next person in the food chain to enable them to handle, store, process, prepare and display the product safely and correctly;
- b) the lot or batch can be easily identified and recalled if necessary.

Consumers should have enough knowledge of food hygiene to enable them to:

- a) understand the importance of product information;
- b) make informed choices appropriate to the individual; and
- c) prevent contamination and growth or survival of food-borne pathogens by storing, preparing and using it correctly.

10.2 Packing, Marking and labelling

10.2.1 Packing

Ready to eat fresh pre-cut fruits and vegetables should be packaged in containers made from food grade packaging material that will safeguard the hygienic, nutritional and organoleptic properties of the product.

10.2.2 Marking and labelling

Prepackaged ready to eat fresh pre-cut fruits and vegetables should be labelled with clear instructions to enable the next person in the food chain to handle, display, store and use the product safely. Each package shall bear the following particulars legibly and indelibly marked. In addition to the labelling requirements specified in TZS 538, packages of ready to eat fresh pre-cut fruits and vegetables should be labelled with the following information:

- a) name and address of the packer and/or dispatcher;
- b) name of the produce by common name; including variety/cultivar;
- c) origin of the produce – Name of the producing country, region and district where grown;
- d) commercial specification, i.e. type, class, size expressed as minimum and maximum diameter;

- e) net weight; and
- f) brand or trade mark, if any.

10.3 Consumer education

Health education programmes should cover general food hygiene. Such programmes should enable consumers to understand the importance of any product information and to follow any instructions accompanying products, and make informed choices. In particular consumers should be informed of the relationship between time/temperature control and foodborne illness.

All stakeholders in the ready to eat fresh pre-cut fruits and vegetables value chain (government, industry, consumer organizations and the media) should work together to communicate clear consistent messages on handling ready to eat fresh pre-cut fruits and vegetables safely to avoid giving contradictory advice and causing confusion.

Consumer information on handling ready to eat fresh pre-cut fruits and vegetables should cover:

- a) avoiding the selection of ready to eat fresh pre-cut fruits and vegetables with damaged or rotten areas;
- b) transportation to home: Increase in product temperature during transportation can be considerable. Time in transit for ready to eat fresh pre-cut fruits and vegetables between retail/market and the home should be kept as short as possible;
- c) storage/ refrigeration of ready to eat fresh pre-cut fruits and vegetables: Ready to eat fresh pre-cut fruits and vegetables should preferably be stored in a cool environment. All prepackaged ready to eat fresh pre-cut fruits and vegetables should be refrigerated as soon as possible;
- d) once removed from the refrigerator, pre-cut fruits and vegetables should be consumed as soon as possible;
- e) correct hand washing methods; and
- f) cross-contamination: Consumers need to handle, prepare, and store ready to eat pre-cut fruits and vegetables safely to avoid cross-contamination with pathogens from various sources (e.g., hands, sinks, cutting boards, utensils, and raw meats).

11 Training

Training is fundamentally important to any food hygiene system.

Inadequate hygiene training, and/or instruction and supervision of all people involved in food related activities pose a potential threat to the safety of food and its suitability for consumption.

Those engaged in food operations who come directly or indirectly into contact with food should be regularly trained, and/or instructed in food hygiene to a level appropriate to the operations they are to perform.

11.1 Awareness and responsibilities

Personnel associated with packing should be aware of Good Manufacturing Practices (GMPs), Good Hygienic Practices (GHPs) and their role and responsibility in protecting fresh fruits and vegetables from contamination or deterioration. Packers should have the necessary knowledge and skills to enable them to perform packing operations and to handle fresh fruits and vegetables in a way that minimizes the potential for microbial, chemical, or physical contamination.

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All personnel who handle cleaning chemicals or other potentially hazardous chemicals should be instructed in safe handling techniques. They should be aware of their role and responsibility in protecting fresh fruit and vegetables from contamination during cleaning and maintenance.

11.2 Training programmes

To evaluate the level of training required of persons responsible for processing of fresh pre-cut fruits and vegetables, the additional following factors should be taken into account:

- a) the packaging systems used for fresh pre-cut fruits and vegetables, including the risks of contamination or microbiological growth involved in this method;
- b) the importance of temperature control and GMP.

11.3 Instruction and supervision

Periodic assessments of the effectiveness of training and instruction programmes should be made, as well as routine supervision and checks to ensure that procedures are being carried out effectively.

Managers and supervisors of food processes should have the necessary knowledge of food hygiene principles and practices to be able to judge potential risks and take the necessary action to remedy deficiencies.

11.4 Refresher training

Training programmes should be routinely reviewed and updated where necessary. Systems should be in place to ensure that food handlers remain aware of all procedures necessary to maintain the safety and suitability of food.