THAI AGRICULTURAL STANDARD

TAS 9035-2010

GOOD MANUFACTURING PRACTICES FOR PACKING HOUSE OF FRESH FRUITS AND VEGETABLES

National Bureau of Agricultural Commodity and Food Standards
Ministry of Agriculture and Cooperatives

THAI AGRICULTURAL STANDARD

TAS 9035-2010

GOOD MANUFACTURING PRACTICES FOR
PACKING HOUSE OF FRESH FRUITS AND VEGETABLES

National Bureau of Agricultural Commodity and Food Standards
Ministry of Agriculture and Cooperatives
50 Phaholyothin Road, Ladyao, Chatuchak, Bangkok 10900
Telephone (662) 561 2277 Fax (662) 561 3357
www.acfs.go.th

Published in the Royal Gazette Vol.127 Section 150D Special,
Dated 28 December B.E.2553 (2010)
Technical Committee on the Elaboration of Thai Agricultural Standard on Good Manufacturing Practices for Packing House of Fresh Fruits and Vegetables

1. Mr. Anan Suwannarat  
   Deputy Director General, Department of Agriculture  
   Chairperson

2. Mrs. Wanthanee Kamlert  
   Department of Medical Sciences, Ministry of Public Health  
   Member

3. Ms. Daranee Mukhajornpun  
   Food and Drug Administration, Ministry of Public Health  
   Member

4. Mr. Pisan Pongsapitch  
   National Bureau of Agricultural Commodity and Food Standards  
   Member

5. Mrs. Prapassara Pimpan  
   Office of Agricultural Production Sciences Research and Development, Department of Agriculture  
   Member

6. Ms. Supreeya Sukhasem  
   Office of Postharvest and Products Processing Research and Development, Department of Agriculture  
   Member

7. Associate Professor Sirichai Kanlayanarat  
   Faculty of School of Bioresources and Technology, King Mongkut's University of Technology Thonburi  
   Member

8. Assistant Professor Chouw Inprasit  
   Research and Development Institute at Kamphaengsaen, Kasetsart University  
   Member

9. Mr. Anawat Suwanagul  
   Thailand Institute of Scientific and Technological Research  
   Member

10. Mr. Amorn Ngammongkolrat  
    National Food Institute  
    Member

11. Mr. Chusak Chuenprayoth  
    Board of Trade of Thailand  
    Member

12. Mrs. Puangpetch Silkkarn  
    Thai Retailers Association  
    Member

13. Mr. Paiboon Wongchotsathit  
    Thai Fresh Fruit Traders and Exporters Association.  
    Member

14. Mr. Pathom Taenkam  
    Thai Fruit & Vegetable Producer Association.  
    Member

15. Ms. Nalinthip Peanee  
    Office of Commodity and System Standards, National Bureau of Agricultural Commodity and Food Standards  
    Member and Secretary
Fresh fruits and vegetables are important agricultural commodity of Thailand for both domestic consumption and export. The effort to develop the standard of fresh fruits and vegetables is vital for the recognition of the Thai agricultural produce and product in terms of quality and safety. Therefore, the Agricultural Standards Committee deems it necessary to establish an agricultural standard on Good Manufacturing Practices for Packing House of Fresh Fruits and Vegetables.

The standard is based on the information of the following documents:


NOTIFICATION OF THE MINISTRY OF AGRICULTURE AND COOPERATIVES
SUBJECT: THAI AGRICULTURAL STANDARD:
GOOD MANUFACTURING PRACTICES FOR PACKING HOUSE OF FRESH FRUITS AND VEGETABLES UNDER THE AGRICULTURAL STANDARDS ACT B.E. 2551 (2008)

Whereas the Agricultural Standards Committee deems it necessary to establish an agricultural standard on Good Manufacturing Practices for Packing House of Fresh Fruits and Vegetables as a voluntary standard in accordance with the Agricultural Standards Act B.E. 2551 (2008) to promote such agricultural commodity to meet its standard on quality and safety.

By virtue of Section 5, Section 15 and Section 16 of the Agricultural Standards Act B.E. 2551(2008), the Minister of Agriculture and Cooperatives hereby issues this Notification on Establishment of Agricultural Standard: Good Manufacturing Practices for Packing House of Fresh Fruits and Vegetables (TAS 9035-2010) as a voluntary standard, details of which are attached herewith.

Notified on 7 October B.E. 2553 (2010)
Mr. Theera Wongsamut
Minister of Agriculture and Cooperatives
THAI AGRICULTURAL STANDARD

GOOD MANUFACTURING PRACTICES FOR
PACKING HOUSE OF FRESH FRUITS AND VEGETABLES

1. SCOPE

1.1 This agricultural standard specifies good manufacturing practices for the packing house of fresh fruits and vegetables including the raw material receiving, preparation, sorting, trimming, packaging, storing and transporting of fresh fruits and vegetables so as to obtain the product which is safe and suitable for distribution.

1.2 This standard does not cover the packing of the ready-to-eat fresh pre-cut fruits and vegetables and the packing of fresh fruits and vegetables in retail and wholesale establishments and restaurants.

2. DEFINITIONS

For the purpose of this standard:

2.1 Packing house means any premises or establishment in which post harvest handleings for fresh fruits and vegetables are practised from raw material receiving through distribution.

2.2 Hazard means a biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect.

2.3 Contaminant means any chemical or biological agent, foreign matter, or other substances not intentionally added to food which may compromise food safety or suitability.

2.4 Contamination means the introduction or occurrence of a contaminant in food or food environment.

2.5 Cross-contamination means the transfer of hazards particularly hazard from pathogenic organisms from one food to another food, contact surfaces or the air, either by direct and/or indirect contact.

2.6 Clean water means water which is not contaminated any hazard in a level that does not compromise food safety for the purpose of its use.

2.7 Potable water means water which meets the quality standard of water prescribed in the Notification of the Ministry of Public Health on Potable Water.

2.8 Produce means fresh fruits and vegetables in the process of the packing house.

2.9 Product means fresh fruits and vegetables which have passed the packing process and ready for distribution.
3. REQUIREMENTS AND INSPECTION METHODS

Requirements and inspection methods are as given in Table 1.

Table 1 Requirements and Inspection Methods
(Section 3)

<table>
<thead>
<tr>
<th>Items</th>
<th>Requirements</th>
<th>Inspection Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Establishment</td>
<td>1.1 Location</td>
<td>1.1.1 The establishment shall be located in the area that has no risk of contamination causing adverse effect to quality and safety of the produce and product.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.2 Preventive measures shall be in place if there is a risk of contamination.</td>
</tr>
<tr>
<td></td>
<td>1.1.1 Check the environment</td>
<td>1.1.2 Check the preventive measures</td>
</tr>
<tr>
<td>1.2 Premises</td>
<td>1.2.1 Design and layout of production line shall facilitate good hygienic practices and prevention of cross contamination.</td>
<td>1.2.1.1 Check the layout of production line</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.1.2 Check the operations and prevention of cross contamination</td>
</tr>
<tr>
<td></td>
<td>1.2.2 Internal structures and fittings shall be strong, easy to maintain and clean or disinfect.</td>
<td>1.2.2 Check the condition of the building</td>
</tr>
<tr>
<td></td>
<td>1.2.3 Measures to prevent contamination shall be in place if temporary premises are used.</td>
<td>1.2.3 Check the measures</td>
</tr>
<tr>
<td>1.3 Tools and equipment</td>
<td>1.3.1 Availability of sufficient tools and equipment and ready to be used.</td>
<td>1.3.1 Check the tools and equipment</td>
</tr>
<tr>
<td></td>
<td>1.3.2 Tools and equipment shall be easy to clean.</td>
<td>1.3.2 Check the tools and equipment</td>
</tr>
<tr>
<td></td>
<td>1.3.3 Tools and equipment shall be easy to maintain.</td>
<td>1.3.3 Check the tools and equipment</td>
</tr>
<tr>
<td></td>
<td>1.3.4 Tools and equipment for production control shall function properly and precisely.</td>
<td>1.3.4 Check the tools and equipment and/or the records</td>
</tr>
<tr>
<td>Items</td>
<td>Requirements</td>
<td>Inspection Methods</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>1.4 Facilities</td>
<td>1.4.1 Availability of adequate supply of clean water and/or potable water for production</td>
<td>1.4.1 Check the cleanliness and supply of water</td>
</tr>
<tr>
<td></td>
<td>1.4.2 Availability of adequate drainage and waste disposal systems in the premises and production area</td>
<td>1.4.2 Check the drainage and waste disposal systems</td>
</tr>
<tr>
<td></td>
<td>1.4.3 Availability of adequate cleaning facilities</td>
<td>1.4.3 Check the cleaning facilities</td>
</tr>
<tr>
<td></td>
<td>1.4.4 Availability of adequate personal hygiene facilities and toilets for the operators</td>
<td>1.4.4 Check the personal hygiene facilities</td>
</tr>
<tr>
<td></td>
<td>1.4.5 Availability of adequate temperature control facilities</td>
<td>1.4.5 Check the temperature control facilities</td>
</tr>
<tr>
<td></td>
<td>1.4.6 Availability of appropriate ventilation in the processing area</td>
<td>1.4.6 Check the air ventilation</td>
</tr>
<tr>
<td></td>
<td>1.4.7 Availability of sufficient lighting for the operation</td>
<td>1.4.7 Check the adequate intensity of lighting</td>
</tr>
<tr>
<td></td>
<td>1.4.8 Availability of appropriate facilities for separate storage of the raw materials, supplies and chemicals</td>
<td>1.4.8 Check the storage</td>
</tr>
<tr>
<td>2. Control of operation</td>
<td>2.1 Raw material</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.1.1 Raw material shall be of quality and safety according to the requirements.</td>
<td>2.1.1 Check the record of raw material received</td>
</tr>
<tr>
<td></td>
<td>2.1.2 Availability of operational control measure towards the raw material contamination</td>
<td>2.1.2 Check the operation</td>
</tr>
<tr>
<td>2.2 Containers</td>
<td>2.2 Containers shall be able to protect the produce from contamination and damage.</td>
<td>2.2 Check the containers</td>
</tr>
<tr>
<td>2.3 Production process</td>
<td>2.3.1 Availability of adequate control of specific steps of production to prevent contamination and cross contamination</td>
<td>2.3.1 Check the operation</td>
</tr>
<tr>
<td></td>
<td>2.3.2 The produce or product shall be randomly sampled to inspect the quality according to the requirements.</td>
<td>2.3.2 Check the record of quality inspection of the produce or product</td>
</tr>
<tr>
<td>Items</td>
<td>Requirements</td>
<td>Inspection Methods</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2.4 Water</td>
<td>2.4.1 Quality of the water in contact with the produce shall be controlled.</td>
<td>2.4.1 Check the record of water quality</td>
</tr>
<tr>
<td></td>
<td>2.4.2 Potable water shall be used in the final rinse in case the water is in contact with any part of the produce to be eaten raw.</td>
<td>2.4.2.1 Check the operation 2.4.2.2 Check the result of potable water analysis</td>
</tr>
<tr>
<td>2.5 Management and supervision</td>
<td>2.5.1 Supervisors shall be competent to perform the work correctly.</td>
<td>2.5.1.1 Check the operation 2.5.1.2 Check the training records and/or interview the operators</td>
</tr>
<tr>
<td></td>
<td>2.5.2 Availability of the work procedures on all steps of operation and monitoring</td>
<td>2.5.2 Check the work procedures</td>
</tr>
<tr>
<td>2.6 Product recall</td>
<td>2.6 Lot identification shall be indicated to enable recall of unsafe product.</td>
<td>2.6 Check lot identification</td>
</tr>
<tr>
<td>2.7 Documentation and record keeping</td>
<td>2.7 Availability of appropriate records of production and distribution. The following records shall be kept and maintained to facilitate an assessment and traceability:</td>
<td>2.7 Check the records</td>
</tr>
<tr>
<td></td>
<td>• raw material receiving</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• production control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• quality inspection of the produce or product</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• quality of water used</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• potable water analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• training record</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• maintenance and sanitation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• personal hygiene control etc.</td>
<td></td>
</tr>
<tr>
<td>3. Maintenance and sanitation</td>
<td>3.1 Availability of maintenance and sanitation programme specifying the method to be used, frequency of the activity and responsible persons</td>
<td>3.1 Check maintenance and sanitation programme</td>
</tr>
<tr>
<td>Items</td>
<td>Requirements</td>
<td>Inspection Methods</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 3.2 Maintenance            | 3.2 Availability of adequate maintenance and repair of the premises and equipment to prevent contamination | 3.2.1 Check maintenance and repair  
3.2.2 Check the record and/or the premises |
| 3.3 Cleaning               | 3.3 Availability of adequate cleaning of the premises, tools and equipment to prevent contamination | 3.3.1 Check the cleaning  
3.3.2 Check the records and/or the premises |
| 3.4 Pest control           | 3.4 Availability of measures to prevent and eradicate disease carrier animal in the production area | 3.4.1 Check the measures of disease carrier animal prevention and eradication  
3.4.2 Check disease carrier animal control record |
| 3.5 Waste management       | 3.5 Availability of appropriate management of the garbage and waste from production | 3.5 Check the waste management |
| 4. Personal hygiene        | 4.1 The operators and visitors shall follow the personal hygiene procedures. | 4.1 Check the operators and visitors and/or personal hygiene procedures |
|                            | 4.2 Operators shall hygienically perform their duty.                          | 4.2 Check the operation  
4.2.2 Check the records of personal hygiene control |
| 5. Transportation          | 5. Availability of measures to protect the products from contamination and deterioration during transport | 5. Check the transportation and/or product conditions |
| 6. Labelling               | 6. Information on the label shall be complied with relevant laws and regulations. | 6. Check the information on the label |
| 7. Training                | 7. Appropriate training on food hygiene shall be organized for operators.      | 7. Check the training records and/or interview the operators |

### 4. GUIDANCE ON GOOD MANUFACTURING PRACTICES FOR PACKING HOUSE OF FRESH FRUITS AND VEGETABLES

The recommendations on good manufacturing practices for packing house of fresh fruits and vegetables are provided as a guideline for safe product suitable for consumption. Details of the recommendations are given in Appendix A.
APPENDIX A
GUIDANCE ON GOOD MANUFACTURING PRACTICES
FOR PACKING HOUSE OF FRESH FRUITS AND VEGETABLES
(Section 4)

A.1 ESTABLISHMENT

A.1.1 Location

A.1.1.1 The packing house should be located in an area where there is no potential source of contamination causing food to be unsafe such as the contaminated areas and other industrial areas that may contaminate the produce, areas subject to flooding, areas prone to infestation of pests and areas where wastes cannot be disposed of.

A.1.1.2 In case where there is a risk of contamination, effective measures to prevent the causes of contamination should be available.

A.1.1.3 The location shall be easy access with sufficient infrastructure.

A.1.2 Premises

A.1.2.1 Design and layout shall facilitate good hygienic practices and prevention from cross contamination as follows:

A.1.2.1.1 The premises or processing area shall have adequate space with separated housing area.

A.1.2.1.2 Processing area shall be separated to avoid contamination and cross contamination.

A.1.2.1.3 Processing area shall be designed according to the production line to facilitate continuous and convenient operations.

A.1.2.2 Internal structures and fittings

A.1.2.2.1 The internal structures and fittings shall be clean and free from the accumulation of dust, debris or garbage which can become harbouring sites for pest, insects and pathogens.

A.1.2.2.2 The drains and gutters shall be of sound construction and free from breakage or leak and water-logging.

A.1.2.2.3 The floor shall be made of durable material with a smooth surface, easy to clean and sufficiently sloped. The processing area may be wet but without standing water. The floor of the other area should be dry, in particular, the areas for storage of containers and produce.

A.1.2.2.4 The walls and ceilings shall be made of durable material with a smooth surface and easy to clean. They shall be kept in good condition and free from the accumulation of dirt and microorganism.
A.1.2.2.5 The windows and doors should be closed tightly and provided with protection from contamination before accessing to the processing area. For the open structures, appropriate measures to prevent contamination from the outside pests should be available.

A.1.2.3 For temporary premises, measures to prevent contamination shall be in place.

A.1.3 Tools and equipment

A.1.3.1 The number of equipment, machinery and tools shall be sufficient for the operation. They shall be ready for use, free from breakage and made of the material which does not interact with produce causing harm to consumers.

A.1.3.2 The equipment, machinery and tools used during processing shall be made of the rust-free, non-toxic and corrosion-proof material with smooth surface. Any angle or corner should be avoided to facilitate thorough cleaning.

A.1.3.3 The equipment, machinery and tools shall be appropriately located to facilitate operation, cleaning and maintenance taking into account the possible contamination. Preventive measure from the risk of using equipment and tools shall be in place.

A.1.3.4 The equipment and tools for production control such as clock and thermometer should be regularly checked for precision.

A.1.4 Facilities

A.1.4.1 Supply of clean water and/or potable water should be adequately and appropriately provided according to the intended use.

A.1.4.2 Good drainage system in the building and the processing area should be provided. There shall be no leftover waste from the processing.

A.1.4.3 Adequate cleaning facilities should be provided and kept separately in an appropriate area.

A.1.4.4 Adequate personal hygiene facilities and toilets should be provided for the operators.

A.1.4.4.1 Personal hygiene facilities such as wash basins, soap, paper towel or hand towel should be provided at the entrance of the processing area so that the operators or visitors can wash their hands before entering the processing area.

A.1.4.4.2 Toilets shall be separately located from the processing area. In addition, toilets shall not have direct entrance to the processing area.

A.1.4.5 Adequate temperature control facilities such as cooling and freezing equipment shall be provided.

A.1.4.6 Suitable ventilation system should be provided. The direction of the blow of the electric fans or air conditioners should be from the clean to the unclean areas.

A.1.4.7 Lighting should be sufficient for the operation and visibility particularly at the inspection point such as the sorting of foreign matters and defects. Lighting should be handled in a hygienic manner. Lighting fixtures, for example, should be kept clean and
protected from breakage at the point where there is a risk of contamination on the produce and products.

A.1.4.8 Adequate facilities for the storage of raw materials, supplies, chemicals and hazardous substances should be in place, clearly labelled and orderly grouped to avoid contamination.

A.2 CONTROL OF OPERATION

A.2.1 Raw materials

A.2.1.1 Raw materials including fruits and vegetables, packaging materials and chemicals associated with the production with quality and safety according to the relevant Thai Agricultural Standards or the requirements of the trading partners shall be accepted.

A.2.1.1.1 Fruits and vegetables from the Good Agricultural Practices (GAP) certified plots or the farms complied with such standard for production sites should be selected.

In case the fruits and vegetables purchased from the non-GAP farms, appropriate analysis of pesticide residues and/or other relevant hazard should be undertaken, depending on the risk of hazard to the consumers.

A.2.1.1.2 In case the fruits and vegetables purchased from a collecting centre where preliminary preparation of the raw materials has been undertaken, the hygienic condition of the collecting centre should be checked.

A.2.1.1.3 The raw materials should be sorted to obtain appropriate quality for processing. Alternatively, raw material should be randomly checked for the required quality.

A.2.1.2 Availability of operational control measure towards the raw material contamination

A.2.1.2.1 Containers of the raw materials during transport should be clean, made of non-toxic materials and have never been used as containers for hazardous substance or toxic substance. Suppliers may be required to clean the containers.

A.2.1.2.2 The raw material receiving area shall be clean, without standing water or garbage. Raw materials shall not be placed directly on the floor.

A.2.1.2.3 In case there is an overflow or delay in processing of raw materials, they should be stored in a cleaned room, no standing water, clean floor, and free from objectionable odour. If the raw materials are kept in cold storage, the temperature should be set appropriately.

A.2.1.2.4 The containers or baskets of the raw materials should be tagged with lot identification.

A.2.1.2.5 The raw materials should be brought from the storage on the first in first out basis to enable effective stock rotation.

A.2.1.2.6 The cold storage of raw materials and product should be separated. In addition, temperature checking and room cleaning should be conducted to avoid the accumulation of filth and microorganisms.

A.2.1.2.7 The moving of raw materials to the storage and processing area should be conducted in a hygienic manner to prevent contamination.
A.2.2 Containers

A.2.2.1 The containers and packaging materials for packing, transport and distribution should be of food grade, clean and durable against deterioration and damage to the produce and product.

A.2.2.2 The containers and packaging materials should be taken care of, and kept in clean area. They may be wrapped to avoid dust and disease carrier animals.

A.2.3 Production process

A.2.3.1 Adequate control of operation in any specific processing steps should be undertaken to prevent contamination and cross-contamination.

A.2.3.1.1 Washing of fruits and vegetables should be conducted in a hygienic manner. Quality of the water used in each washing step should be appropriately controlled taking into account the risk of contamination according to the nature of fruits and vegetables as follows:

(1) Clean water shall be used for general fruits and vegetables such as the produce with inedible peel or the produce that needs to be cooked before consumption.

(2) Potable water shall be used for final rinse of fruits and vegetables in the case where the water is in contact with the edible part of the produce without further cooking or fresh produce with edible peel.

A.2.3.1.2 Trimming of fruits and vegetables should be undertaken with care. The cutting equipment should be clean, non-rusty and appropriate for the intentional use.

A.2.3.1.3 Sorting and packaging of fruits and vegetables should be done in a hygienic manner. The operators should, for example, wear gloves during the operation. Coughing or sneezing over the produce should be avoided.

A.2.3.1.4 For cold storage treatment of fruits and vegetables, care should be taken to prevent condensation from dropping onto the produce as well as regular cleaning of the cooling system to generate uniform cooling flow. In case water or ice used for cooling and in contact with the produce, it should be potable. In case forced air is used, the appropriate design and care should be maintained to avoid contamination to the produce.

A.2.3.1.5 In case the chemicals such as waxes, colour additives or fungicides are used during the process, the type and amount of chemicals should be in accordance with the relevant Notifications of the Ministry of Public Health or the requirements of the trading partner.

A.2.3.1.6 The packaged products should be kept in appropriate place to avoid deterioration. If kept in cold storage, the temperature and storing conditions should be appropriate to the nature of such fruits and vegetables.

A.2.3.2 Random sampling for quality inspection according to the requirements should be undertaken in accordance with the relevant laws and regulations. The result of the inspection should be recorded and kept for verification.

A.2.4 Water

A.2.4.1 Appropriate control of water quality including ice and mist which is in contact with the produce should be undertaken. Water treatment to prevent the growth of pathogens such
as chlorination, ultraviolet radiation or ozonation may be used to obtain suitable water for each production process.

A.2.4.1.1 In case of water reused, such reuse should be appropriately treated before use.

A.2.4.1.2 In case of several water systems used, such systems should be clearly identified to prevent contamination. For example, identification of pipes by colours is needed and specified for the operators.

A.2.4.2 Potable water should be used at the point where there is a risk of contamination such as at the final rinse where water is in contact with edible part of the produce without cooking.

A.2.5 Management and supervision

A.2.5.1 The supervisors shall be competent to perform their work correctly for the safety of product suitable for consumption

A.2.5.2 The work procedures on all steps of operation and monitoring shall be available. The work procedures should give details on, for example, the production control on good practices throughout the process, the internal control system as well as the responsible persons assigned for different tasks.

A.2.6 Product recall

Lot identification should be indicated to enable traceability of the produce or product in each processing steps from the raw material receiving, processing and distribution so that the recall of any adulterated lot from the markets can be done. In case any product has been withdrawn due to immediate health hazard, the other products which are undergone similar production conditions should also be inspected.

A.2.7 Documentation and record keeping

A.2.7.1 Documentation or record forms shall be updated. Production processes should be truly recorded and signed by the responsible person and/or supervisor.

A.2.7.2 The records shall be kept on raw material receiving, production control, quality inspection of the produce or product, quality of water used, maintenance, cleaning, pest control, training record and other additional useful information in tracing the questionable lots.

A.2.7.3 Documentation and records shall be kept in a systematic order to facilitate inspection and use.

A.2.7.4 Records shall be retained for at least 2 years or according to the requirements of trading partner or the criteria and conditions of certification body.
A.3 MAINTENANCE AND SANITATION

A.3.1 Maintenance and sanitation programme

The maintenance and sanitation programmes should be available with the specified methods, frequency of the activities and the responsible persons on the maintenance and repair, cleaning, pest control and waste management.

A.3.2 Maintenance

A.3.2.1 Maintenance of the establishment and equipment associated with production as well as the calibration of equipment essential in the product safety should be carried out at least once a year. In case where calibration cannot be conducted, verification test should be undertaken. The records of the calibration or verification should be kept.

A.3.2.2 Inspection of the establishment and equipment should be carried out according to the maintenance and repair programmes. The record should be kept.

A.3.3 Cleaning

A.3.3.1 Cleaning of the premises including floor, walls, ceiling and fixtures should be carried out regularly.

A.3.3.2 Cleaning of the equipment, machinery and tools should be carried out in accordance with the programme to ensure their effective function.

A.3.3.3 In case the cleaning chemicals are used, they shall be complied with the relevant regulations and the instruction on the labels.

A.3.3.4 Cleaned equipment should be kept separately in an appropriate place.

A.3.3.5 Inspection on cleaning should be conducted and the record should be kept.

A.3.4 Pest control

A.3.4.1 Prevention and eradication measures on disease carrier animal shall be as follows:

A.3.4.1.1 There shall be no leftover produce for disease carrier animal.

A.3.4.1.2 The areas for processing and raw materials receiving should be kept clean. Waste from the production should be removed to eliminate potential breeding sites for disease carrier animal.

A.3.4.1.3 Garbage bins in the premises should be well covered and located in appropriate place, excluding the bins for the culled produce or waste from the production line.

A.3.4.1.4 Regular monitoring and detection for evidence of disease carrier animal

A.3.4.1.5 Disease carrier animal shall be controlled by appropriate method without adverse effect on produce or products. In case the chemicals are used, the application shall be complied with the relevant laws and regulations and the instructions on the labels taking into account the risk of contamination.
A.3.4.1.6 Premises shall be kept in good condition. Doors, windows, vents and drains should be kept sealed or provided with wire mesh screens and/or bars to prevent access of disease carrier animal.

A.3.4.2 Pest control shall be checked and the record shall be kept.

**A.3.5 Waste management**

A.3.5.1 Containers or bags for waste and chemicals should be separated and clearly identified. Reused containers shall be appropriately cleaned.

A.3.5.2 Debris or garbage shall be removed from the production area. Adequate garbage bins should be provided in the premises. Appropriate disposal and removal of garbage should be available.

A.3.5.3 Appropriate waste water management should be available to minimize the environmental problem.

**A.4 Personal hygiene**

A.4.1 The operators should maintain personal hygiene as follows:

A.4.1.1 Operators shall have good health and do not suffer from a disease transmitted to produce or not be carriers of such disease.

A.4.1.2 Operators should inform the illness or injuries to the supervisor for consideration whether there is a need for medical examination or separation of such persons from the work to avoid contamination

A.4.1.3 Operators shall dress and follow the rules accordingly or as appropriate.

A.4.1.4 Operators should strictly maintained their personal hygiene such as wearing apron, hair net, gloves or masks while performing the duty which is in contact with the produce with high risk of food safety such as the product eaten fresh or the edible part of produce being contacted by the operators.

A.4.1.5 The operator should always wash their hands, e.g., before working, after using toilet or after handling raw materials/contaminated materials. Hands and nails should always be kept clean. Gloves, if used, should be clean.

A.4.1.6 Visitors to the production areas shall maintain personal hygiene as in Sections A.4.1.1 and A.4.1.3.

A.4.2 The operators shall perform their duty in a hygienic manner by refraining from the following:

A.4.2.1 Eating, smoking, spitting or chewing gum while on duty

A.4.2.2 Coughing or sneezing over the produce or products
A.4.2.3 Wearing personal effects such as rings, earrings, necklace, pin or other personal effects which may pose a threat to the safety and suitability of the produce in the production area, in particular, the packing operation.

A.4.3 Inspection of personal hygiene shall be conducted and the record shall be kept.

A.5 TRANSPORTATION

A.5.1 Vehicles and shipping containers should be kept clean and in good condition. They should be provided with protection from contamination during the transport.

A.5.2 Shipping containers should be provided with effective protection from contamination and spoilage, including temperature control, where necessary.

A.5.3 Care should be taken in loading products in the shipping containers to prevent damage and contamination taking into account the arrangement pattern, the amount of products, required transportation time and quality of the products at the target destination.

A.6 LABELLING

The product should be labelled or provided with clear, adequate and true product information such as name corresponding to the product, name and address of the packing house, net weight, manufacturing date or expiry date, lot identification and instruction for use or storage so that the consumers or the distributors can understand the methods of distribution, storage and preparation and safe consumption. Labelling shall be complied with the relevant laws and regulations or requirements of trading partner.

A.7 TRAINING

A.7.1 Appropriate training programme on food hygiene shall be provided to the operators, in particular, those who handle hazardous chemicals, instruction or recommendation on the safe handling techniques should be provided.

A.7.2 Educating or on-the-job training on various processing steps should be provided, where appropriate.

A.7.3 Refreshing courses or training programmes on the production process and food hygiene should be provided. Also, the programmes should be regularly reviewed and updated.