
**CODE OF GOOD AGRICULTURAL PRACTICES (GAP) FOR
FRESH FRUITS AND VEGETABLE FARMING**

GENERAL INFORMATION

1. The Good Agricultural Practice for Fruits and Vegetable Farming (GAP-VF) is a set of consolidated safety and quality standards formulated by the Department of Agriculture (DA) for on-farm fruit and vegetable production. These code of practices are based on concept of Hazard Analysis of Critical Control Points (HACCP) and quality management principles with emphasis in the following six key areas:
 - Farm location
 - Farm structure
 - Farm environment (soil/nutrients)
 - Farm maintenance (hygiene and cleanliness)
 - Farming practices/methods/techniques (pesticide and fertilizer application, pest and disease management, postharvest handling)
 - Farm management (farm records, traceability, staff training)
2. The basis of the Good Agricultural Practices (GAP) Program is to provide safe food product for the consumers. The focus is to reduce risk of microbial and pesticide contamination. Additional benefits of the program are worker safety and protection of the environment. It is a known fact that current technologies cannot absolutely eliminate food safety hazards associated with fresh produce that will be eaten raw.
3. The GAP program covers the production, harvesting and post harvest handling of fresh fruits and vegetables on farm and post harvest handling in locations where produce is packed for sale. Products that present a high risk to food safety, such as sprouts and fresh cut products are not covered in the scope. This Code may be used for all types of production systems but it is not a standard for certification of organic products or GMO free products.

SECTION I – FARM LOCATION

4. The land must be evaluated to be suitable for agricultural land use.
5. Obtaining a history of the prior use of land is important because it helps in identifying potential hazards.
6. An environment impact assessment conducted and preventive or improvement measures introduced by farmers or technical expert will be useful.

SECTION II – FARM STRUCTURE

7. Cultivation, storage and packing areas must be kept clean and tidy. Litter, waste and weeds must be removed from immediate vicinity of crop production area. Effective measures must be taken to dispose of rubbish heaps on the farm.
8. Irrigation system should be maintained to provide effective delivery, prevent blockage and back siphonage.
9. All equipment associated with cultivation, harvesting and storage of vegetables should be well maintained in optimal operating conditions.

10. Vegetable growing plots must be clearly demarcated and labeled.

SECTION III – FARM ENVIRONMENT

Soil

11. The soil must not be contaminated with heavy metals. The heavy metals must be analyzed every 3 years and the contents must not exceed the safety limits.
12. Upon renewal of soil for cultivation, soil samples must be re-analyzed for heavy metal contamination.
13. Records of heavy metals testing from accredited laboratory must be kept and produced during audit.
14. The agricultural land must not have been used for activities other than agriculture since it can be contaminated with pathogenic organisms or toxic chemical substances.

Water

15. Primary and secondary sources of water must be identified.
16. If capable, the topography of the landscape must be identified and its effect on water flow and rainfall pattern must be studied.
17. Pond water used for agricultural purposes (i.e. irrigation of plants or used in pesticide applications) must be of good quality following the guidelines below.
 - Pond must not contain litter or weeds
 - Animals, except fish, must be kept away from the pond
 - Direct runoff from cultivation areas and sewage water should not get into the pond

SECTION IV – FARM MAINTENANCE

18. Animals should not be allowed into or kept in all cultivated areas, growing houses, storage rooms and packaging rooms. Animal proof and adequate pest control measures should also be implemented.
19. Packaging area/shed must be cleaned with appropriate cleaning schedules and procedures.
20. Toilets must be provided for the farm workers and must be properly maintained. These should not be close to water sources or in places where rain can wash out contaminants or cause spills. Maintenance and servicing of toilets and disposal of hand washing rinse should be performed away from the field in case leaks or spills occur.

SECTION V – FARMING PRACTICES

Use of Planting Material

21. Planting materials used should be free of disease.
22. It is also a good practice that sources of planting materials are properly recorded.

Use of Pesticides

23. Pesticide usage during vegetable production must comply with the regulations set by the Fertilizer and Pesticide Authority.
 - Only certified pesticide operators are allowed to carry out and supervise pesticide operation in the farm.
 - Only registered pesticides are to be used
 - Dosage of pesticides, time and frequency of pesticide application must follow according to the recommendations on the manufacturers label or as directed according to a plant health specialist
 - Pesticide operators must be familiar with all aspects on the safe use and application of pesticides.
 - Pesticide must always be clearly labeled and stored in original container and under lock and key. Warning sign must be displayed at the storage area. Storage area must be isolated from packing areas to prevent contamination from leaching, runoff or wind drift. Good pesticide storage practice should be adhered to, including ensuring that the store has facilities to clean up spills and putting out flames.
 - Disposal of pesticides and pesticides containers and residues must be done according to instructions included on the manufacturers label or in accordance to Fertilizer and Pesticide Authority (FPA) regulation. No recycling of empty pesticide container for other usage.
 - Records of purchase, application and disposal (log records, procedures, or instruction manual) of the pesticides must be kept and produced during farm audit.
 - Spraying equipment must be well maintained to ensure that the equipment operates at the optimum condition so that right application rates are delivered and unnecessary leakage avoided.
 - Re-entry interval after pesticides are sprayed should be observed.
 - Operators must be trained on proper pesticide usage. They should be continually trained to operate and maintain equipment for effective spraying.
 - Pesticides should not be stored for more than a year before using.
 - Good quality water should be used for mixing and applying pesticides to minimize the risk of microbial contamination of produce.
 - Withholding periods or pre-harvest intervals must be strictly observed.
 - Cocktails of pesticides must be avoided unless advised by manufacturers recommendation or are inherent in a formulation.

Use of Fertilizers

24. Raw manure or human waste must not be used for vegetable cultivation.
25. Manure should be confined for treatment and equipment that comes in contact with untreated manure should be cleaned with high-pressure water or vapor before it is allowed in the production areas.
26. Natural fertilizers such as poultry manure or other organic materials must be fully composted at a stable temperature with no foul smell. Heavy metal analyses should be conducted.
27. Direct contact between natural fertilizers and vegetables must be minimized, especially during the last 2 weeks of the crop cycles i.e. about 14 days before harvesting.

28. A complete set of records of fertilizer preparation must be kept. Information includes source of materials, details of the composting procedures, results of microbial tests on the composted material, and dates, amounts and methods of applying the fertilizer as well as the person responsible for the application.
29. Fertilizers must be stored separately from pesticides in a clean and dry area (preferably slightly elevated above ground on pallets).
30. Storage area must be isolated from packing areas to prevent contamination from leaching, runoff or wind drift.
31. For hydroponic system, nutrient stock from new purchase/supplier must be of Laboratory grade and must not be contaminated with heavy metals as tested.
32. Laboratory analysis records must be filed for farm audit, if any.

Use of Other Agrochemicals

33. Agrochemicals such as detergents/disinfectants, sanitizers, plant growth regulators, adjuvants and other additives must be carefully applied as recommended on the manufacturers label.
34. These agrochemicals must be kept in their original packing/bottles or clearly labeled and locked separately from fertilizers and pesticides.

Pesticide and Disease Management

35. A pest and disease management programme must be put in place taking into account historical data, trends and current conditions.
36. The pest and disease monitoring system should be able to anticipate pest problems so that preventive measures can be taken. Any disease or pest detected should be closely monitored for progress. Control measures or IPM strategy should be implemented once the threshold for the specific problem is breached.

Harvesting

37. Harvesting must be rapid and must minimize damage and contamination of vegetables with soil, compost, microbial pathogens, fertilizers or pesticides.
38. Harvested vegetables should be pre-cooled quickly (immediately within the shortest time brought to the shade out of direct sunlight).
39. Vegetables such as lettuces, which are commonly eaten raw, should undergo a washing process to thoroughly remove any surface contaminants.
40. Washing facilities must be self-contained and under shelter from the weather elements.
41. Water used for washing of vegetables prior to packing must be free from pathogenic microbial contamination following the recommended measures.
 - Use only potable water for washing the vegetables
 - Frequent changed of washing water and/or
 - Disinfectants used, if needed, is based on the recommended dosage according the manufacturers label

42. If chlorine is used to sanitize processing water, it is important to maintain the free (unreacted) chlorine concentration at all times during use. Samples should be taken at least on an hourly basis to monitor chlorine concentration. All re-circulated water should be changed on a daily basis, or more frequently if the water becomes extremely dirty to build up of organic matter, which can reduce the effectiveness of the chlorine treatment.
43. Vegetables surfaces should be dry before packing.

Packaging

44. Packers must wash their hands with detergents before and after handling vegetables.
45. Packers must not smoke, drink or eat when packing the vegetables as they may introduce microbes from their mouths. They should wear rubber gloves and apron during packing operation.
46. Packing line and machines must be washed and disinfected regularly before and after packing according to instruction manual/procedures.
47. Packing containers/crates containing harvested vegetable must be raised on pallet to avoid contamination and kept in separate area away from contaminating agents such as pesticides or fertilizers.
48. Packing room must be separated from toilet facilities and must be kept clean, tidy well ventilated and free of foul smells at all times.
49. Packed vegetables should be free from soil, trimmed to ensure that only clean vegetables are packed and dispatched.
50. All vegetables if retail packed, must be packed in clean, new single-use plastic bags. Packing materials such as plastic bag must be kept away from rodents, birds, farm animals and physical and chemical hazards.
51. Vegetables should be retail-packed (or bulk packed) and sealed on the farm. Each pack must be clearly labeled with the farms name according to the labeling regulation and the certification Mark. Farm can pack vegetables produced from GAP-FV certified farms only but must have proper documentation to ensure traceability.

Cold Storage

52. Storage facility must be sanitized and free from decaying plant waste and foul smell.
53. Vegetables should be stored in the cold room immediately after packing. Refrigeration equipment should be in good working condition with regular temperature check and records. Storage in cool room is recommended at the temperature of 5-10°C with 95-99% relative humidity
54. When using an air-based cooling system, the air system must be properly maintained so that the air is clean and free of pathogens.
55. Water used for cooling system and to make cooling ice must be free of pathogenic contamination. Use of chlorinated water is recommended and samples should be taken at least on an hourly basis to monitor chlorine contamination.
56. Cooling equipment must be cleaned and inspected frequently. Maintenance of equipment and use of appropriate sanitary procedures is critical to assuring the safety of the produce.

SECTION VI – FARM MANAGEMENT

Farm records

57. The farm must identify a coordinator to deal with matters associated with GAP-FV certification.
58. All farm records required under the GAP-FV certification must be updated.
59. Updated records must be kept for up to two years. New farm applying for certification must have 3 months of farm records.
60. Copies of laboratory analysis and certificates that verify compliance with Department of Agriculture regulations must be filed.

Traceability

61. Each package/bulk packed produce leaving the farm must be traceable (i.e tag with GAP-FV Certification Number or farms name, date of harvest) to farm/sources
62. Records of a lot number must be maintained for all produce leaving the farm.

Staff Training

63. Staff training records must be maintained

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