

Guidelines on contract farming (entry & intermediate level GAP) –horticulture–



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

**Guidelines on contract farming (entry & intermediate level GAP)
–horticulture–**

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Directorate Marketing
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DEFINITION OF TERMS

Aflatoxins:	Toxic metabolites produced by certain fungi in/on foods and feeds. They are probably the best known and most intensively researched mycotoxins in the world. Aflatoxins have been associated with various diseases, such as aflatoxicosis in livestock, domestic animals and humans throughout the world. The occurrence of aflatoxins is influenced by certain environmental factors; hence the extent of contamination will vary with geographic location, agricultural and agronomic practices, and the susceptibility of commodities to fungal invasion during preharvest, storage, and/or processing periods. Aflatoxins have received greater attention than any other mycotoxins because of their demonstrated potent carcinogenic effect in susceptible laboratory animals and their acute toxicological effects in humans. As it is realised that absolute safety is never achieved, many countries have attempted to limit exposure to aflatoxins by imposing regulatory limits on commodities intended for use as food and feed.
Biocide:	A biocide can be a pesticide, which includes fungicides, herbicides, insecticides, algicides, molluscicides, miticides and rodenticides; or it can be an antimicrobial, which includes germicides, antibiotics, antibacterials, antivirals, antifungals, antiprotozoans and antiparasites.
Fertigation:	The application of fertilisers, soil amendments, or other water-soluble products through an irrigation system.
Food safety:	The assurance that food will not cause harm to the consumer when it is prepared and consumed according to its intended use.
Fumigant:	Volatile liquid or gas to kill insects, nematodes, fungi, bacteria, seeds, roots, rhizomes, or entire plants.
GFSI:	It was founded in 2000 with the main goal being the improvement of the food safety systems by benchmarking existing food standards against guidelines established by retailers, food manufacturers, consumers, and food safety experts. The worldwide harmonisation of food safety standards would increase the transparency and efficiency in the supply chain, reduce costs and provide assurance of safe food for consumers.
Harvesting containers:	Containers used for harvesting and transporting produce during and after harvest.
Harvesting tools:	Gloves, scissors, knives, clippers, etc.
Hazard:	A biological, chemical, physical or any other property that may cause a product to be unsafe for consumption.
Inorganic fertiliser:	A fertiliser in which the declared nutrients are in the form of minerals obtained by extraction or by physical and/or chemical industrial processes.
Organic fertiliser:	Organic fertilisers mean materials of animal origin used to maintain or improve plant nutrition and the physical and chemical properties and biological activity of soils, either separately or together, they may include manure, compost and digestion residue.
Packhouse:	Any facility set up for handling harvested produce. Only those packhouses that do not pack the GLOBALGAP registered produce in the final package and/or do not process the produce by changing its shape or appearance are included in the GLOBALGAP certificate scope for Integrated Farm Assurance.
Plant protection product:	Any substance or mixture of substances intended for controlling insects, weeds, fungi, and other forms of plant or animal life considered to be pests.
Post-harvest chemicals:	Includes post-harvest plant protection products, including wax, detergents, and lubricants where applicable.
Potable water:	Water which meets the quality standards of drinking water such as those described in the WHO published Guidelines for the Safe Use of Wastewater and Excreta in Agriculture and Aquaculture.

Processed product:	When the structure of the product is altered in appearance or form
Produce:	The harvested product of the crop after it has been harvested, before it is sold.
Producer:	A person (individual) or business (individual or producer group) representing the production of the products, relevant to the scope (Crops, Livestock or Aquaculture), who has the legal responsibility for the products sold by that farming business.
Producer group:	Group of producers applying for certification with an internal procedure and internal control of 100% of members registered to the GLOBALGAP requirements. A producer group may have members who are not GLOBALGAP, providing there is a system in place for segregation of these non-GLOBALGAP producers according GR Part III, 1.9). It must have legal structure, contracts with each producer, stating entry and exit requirements, stipulated suspensions, and agreement to comply with GLOBALGAP requirements for registered members. A list of all members of the producer group with registration status must be available. The producer group must have a management representative with ultimate responsibility. A producer group is not a multisite operation where an individual or one organisation owns several production locations or "farms", which in themselves are not separate legal entities. This type of operation falls under Option 1 and every production location, farm or site must be inspected and covered under the scope of the certificate. Only if such an operation has a Quality Management System including internal annual inspections, and the QMS is included in the GLOBALGAP (EUREPGAP) certification, can it be certified under Option 2 with a random sample of sites (minimum square root) selected, based on the criteria as described in GR Part II, Appendix II.3
Punnets:	A basket used for displaying and collecting fruit or flowers.
Record:	A record is a document that contains objective evidence, which shows how well activities are being performed or what kind of results are being achieved.
Registration:	The process by which an individual producer or producer group starts the application process for certification with an approved GLOBALGAP Certification Body.
SANS 10049:	This standard plays an integral part in the food chain, from primary production to the final consumer, by setting out the necessary good practices for the handling of food in such a way that the safety of the consumer is ensured. All food handled is expected to meet minimum safety requirements as required by customers and regulatory authorities. It is therefore essential that levels of undesirable substances are sufficiently low and that their concentration in the food meant for human consumption is consistently below the level of concern. Undesirable substances are normally referred to as food safety hazards, which can be biological (pathogenic microorganisms, insects, pests, etc.), chemical (allergens, lubricants, cleaning chemicals, pesticide residue, antibiotics, etc.) and physical (glass, wood splinters, metal pieces, etc.) substances that could harm the consumer immediately at consumption, as an injury, or over a longer period of time leading to long-term illness or even death. These hazards can be introduced into food during inappropriate and uncontrolled food handling practices.
SANS 10156:	This standard contains recommendations for the hygienic manufacture, storage and transportation of chilled and frozen foods, also the hygienic handling in retail and catering establishments.
SANS 15161:	This standard gives guidance to organisations in applying the requirements of ISO 9001 during the development and implementation of a quality management system in the food and drink industry.
SANS 241:	This standard prescribes how to achieve the numerical limits specified in SANS 241-1 and is applicable to all water services institutions and water services intermediaries. Assessment of the fitness for use of drinking water against the determinants and numerical limits specified in SANS 241-1 provides the minimum assurance necessary that the water is regarded as presenting an acceptable health risk for lifetime consumption. Furthermore, it addresses the evaluation of water quality risks, monitoring and verifica-

tion of water quality to enable the management of the identified water quality risks. It is not intended to provide a comprehensive water management plan, which is required for the implementation of a water safety plan that addresses related issues such as water quantity, finance and maintenance.

- Sewage:** The waste and wastewater produced by residential and commercial sources and discharged into sewers.
- Sewage water:** Water mixed with waste matter.
- Subcontractor:** Specific farm operations performed under contract between the producer and the contractor. The contractor furnishes labour, equipment and materials to perform the operation. Custom harvesting of grain, spraying and picking of fruit are examples of custom work. Within the GLOBALGAP context, subcontractors are those organisations/ individuals contracted by the producer/producer group to carry out specific tasks that are covered in the GLOBALGAP Control Points and Compliance Criteria.
- Substrate:** Any growing medium used for holding plants in place of soil, and that has been imported to the site, and can be removed after use.
- Technically responsible person:** Person responsible for taking technical decisions regarding the certified product. This can be for a specific area of responsibility or overall, and may either be the producer or an adviser.
- Toilet:** Facility where the persons may defecate and urinate in a hygienic manner (including waste disposal) and poses no food safety contamination risk to surrounding field area while ensuring the privacy of the person.
- Traceability:** The ability to retrace the history, use or location of a product (that is the origin of materials and parts, the history of processes applied to the product, or the distribution and placement of the product after delivery) by means of recorded identification.
- Worker:** Any person on the farm who has been contracted to carry out a task. This includes farm owners and managers.

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ACRONYMS

CFA	Chilled Foods Association
DAFF	Department of Agriculture, Forestry and Fisheries
DoH	Department of Health
GAP	good agricultural practices
GMO	genetically modified organism
GMP	good manufacturing practices
FBO	Food Business Operators
GFSI	Global Food Safety Initiative
MRL	Maximum Residue Limits
NGO	non-government organisation
PMO	product marketing organisation
PPP	plant protection products
R	Regulation
SABS	South African Bureau of Standards
SANS	South African National Standard
ULV	ultra low volume
WHO	World Health Organization

Disclaimer

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1. WHY THIS GUIDE?

In essence, this guide is a compilation of the wide array of information concerning market access to the formal agri-food markets (agro-processors, retailers and exporters) by smallholder producers. The emphasis of the guide is to provide information on procurement requirements set by formal agri-food markets with particular emphasis on quality requirements.

The fresh produce industry has to continuously deal with increasingly demanding quality requirements. All the role players in the fresh produce supply chain, also known as Food Business Operators (FBOs), have to meet these requirements to ensure that they remain competitive in both the domestic and foreign markets. FBOs include farms, packhouses, processing facilities, container depots, cold stores, transporters and terminals. Quality is the key to remain competitive in the formal agri-food markets.

It is also important to note that local and international laws, regulations and protocols require all FBOs to follow Good Agricultural Practices (GAP) on farms, Good Manufacturing Practices (GMP) in packhouse and processing plants and specific post-harvest fresh produce handling protocols as the fresh produce makes its journey to the formal agri-food markets. These and other controls help to provide guarantees to the agri-food markets that the products that they are purchasing have met proper quality, health and safety standards.

After having read this guide, the reader should be able to understand the process followed by the formal agri-food markets in developing intermediate level production guidelines for their producers.

2. GOOD AGRICULTURAL PRACTICES

GAP are practices that address environmental, economic and social sustainability for on-farm processes, and result in safe and quality food and non-food agricultural products. Local and international laws, regulations and protocols require all farms handling fresh produce to follow certain basic practices in the form of GAP. GAP's standards comprise three categories of compliance. These are the major musts (100% compliance required), minor musts (95% compliance) and shoulds (recommendation level). The major and minor musts constitute most of the food safety related aspects at the production sites with strong emphasis on the regulation of GAP in the application of chemicals.

2.1 What are the GAP codes, standards and regulations?

GAP codes, standards and regulations are guidelines which have been developed in recent years by the food industry, producers' organisations, governments and NGOs, aiming to codify agricultural practices at farm level for a range of commodities.

2.2 Why do GAP codes, standards and regulations exist?

These GAP codes, programmes or standards exist because of growing concerns about food quality and safety worldwide. Their purpose varies from fulfilment of trade and government regulatory requirements, in particular with regard to food safety and quality, to more specific requirements of specialty or niche markets. Their objectives range from ensuring safety and quality of produce in the food chain; capturing new market advantages by modifying supply chain governance; improving natural resource use, workers' health and working conditions to creating new market opportunities for farmers and exporters in developing countries.

2.3 The main benefits and challenges

The benefits of GAP codes, standards and regulations are numerous, including food quality and safety improvement; facilitation of market access and reduction in non-compliance risks regarding permitted pesticides, MRLs and other contamination hazards.

The main challenges relating to GAP implementation include an increase in production costs, especially record keeping, residue testing and certification, and inadequate access to information and support services.

3. THE MINIMUM REQUIREMENTS FOR CONTRACTUAL ARRANGEMENTS WITH FORMAL AGRI-FOOD MARKETS (ENTRY LEVEL GAP STANDARDS)

3.1 Pesticides

One can take care of the environment by controlling pests, diseases and weeds using methods that do not harm the environment. Farmers should only use as few chemicals as possible and only when it is absolutely necessary. The following guidelines should be followed when chemicals are used:

- The documented records for all pesticide application made to the crops produced on-farm during the previous 12 month period must be available. According to GAP risk rating assessment, this is a major must.
- All pesticide application records must specify the common name of the treated crops on-farm. According to GAP risk rating assessment, this is a minor must.
- All pesticide application records must specify the full commercial trade name. The common name of the pest(s) and disease(s) treated should be documented in all pesticide application records. According to GAP risk rating assessment, this is a major must.
- Pesticide application records must indicate the date of application to the crop and label pre-harvest interval to be observed. According to GAP risk rating assessment, this is a major must.
- All the applied pesticides must be officially registered by the official government agency, or a product risk evaluation process must be followed. According to the GAP risk rating assessment, this is a major must.
- The pesticide store should be kept secure under lock and key to prevent access by non-authorized persons and children. According to the GAP risk rating assessment, this is a minor must.
- The pesticide store and/or the pesticide filling/mixing area, if it is different, must have measuring equipment that is clean and in a good state of repair and of which the graduation for containers and verification of the weigh-scales, has been verified annually by a responsible person. According to GAP risk rating assessment, this is a minor must.
- The pesticide application machinery must be verified for correct operation within the last 12 months. Furthermore, the pesticide application machinery operations must be documented and carried out by a person who can demonstrate their competence. According to GAP risk rating assessment, this is a minor must.
- The empty pesticide containers should be rinsed three times, and perforated to ensure that they are not used again for any purpose. Empty containers should be stored securely prior to their disposal by an official recollection scheme. According to GAP risk rating assessment, this is a minor must.

- The producer can demonstrate that all pre-harvest intervals have been observed for pesticides applied to the registered fruit and vegetables, through the use of clear documented records and systems. According to GAP risk rating assessment, this is a major must.

3.2 Training

The following guidelines should be followed under training:

- The pesticide recommendations must be made by a person who is a qualified adviser with demonstrated technical competence via official qualifications or specific training course certificate. According to GAP risk rating assessment, this is a major must.
- All personnel who physically handle or apply pesticide products must demonstrate their competence and knowledge via official qualifications or specific training course attendance certificates. According to GAP risk rating assessment, this is a major must.
- Hygiene training or instructions should be given to all staff working on-farm, especially to those who are handling products. This can be via external training with available course attendance certificates or internal instructions which must be documented. According to GAP risk rating assessment, this is a major must.

3.3 Risk to product

The following guidelines should be followed when dealing with risk management:

- No human sewage sludge should be used on the crops being produced on-farm. According to GAP risk rating assessment, this is critical.
- Untreated sewage water should not be used for irrigation or fertigation on any crops on-farm. According to GAP risk rating assessment, this is critical.
- The microbiological analysis from a laboratory or official source dated within the last 12 months which confirms that the microbiological levels for all watersources used for crop irrigations or product washing processes, are suitable and does not pose a food safety risk must be available. According to GAP risk rating assessment, this is critical.
- Fertilisers should not be stored next to harvested fresh fruit and vegetables. A minimum space of 5 m should be maintained to ensure that there is no contamination from dust or materials which could affect the quality of the harvested products. According to GAP risk rating assessment, this is a minor must.
- The training or instructions should be complied with at all times, especially regarding hand washing after going to the toilet, wearing jewellery, etc. According to GAP risk rating assessment, this is a major must.
- Product harvest containers must be clean and only be used to contain fresh fruit and vegetables (i.e. no evidence of agricultural chemicals, lubricants, oil, cleaning chemicals, organic material or other debris, etc.). According to GAP risk rating assessment, this is a major must.

3.4 Health and safety

The following guidelines should be followed when dealing with health and safety:

- Pesticide operators must be equipped with adequate protective clothing in accordance with pesticide label instructions and relevant National legislation. According to GAP risk rating assessment, this is a minor must.
- There must be clean toilets with soap and running water in the vicinity of the workers on farm. Toilet facilities must be within 500 m of where the workers are working and in a good state of hygiene. For lone workers, provided there is transport, the 500 m requirement does not apply. According to GAP risk rating assessment, this is a major must.

3.5 Traceability

Traceability means being able to trace fresh produce back to the original place where it was grown or produced. The primary objective of traceability is to identify the source of a food safety problem if such a problem arises. This is important for a number of reasons: the problem can be linked to one specific producer rather than the entire group of producers, it is a fast and accurate way to get to the source of the problem, which limits the risk, unnecessary costs and public concerns and fears as well. The following guidelines should be followed when dealing with traceability:

- There must be an evidence of a traceability system present to identify the origin of harvested produce when it leaves the farm. This can be a paper system with labels or some other visual process. According to GAP risk rating assessment, this is a major must.

3.6 Records

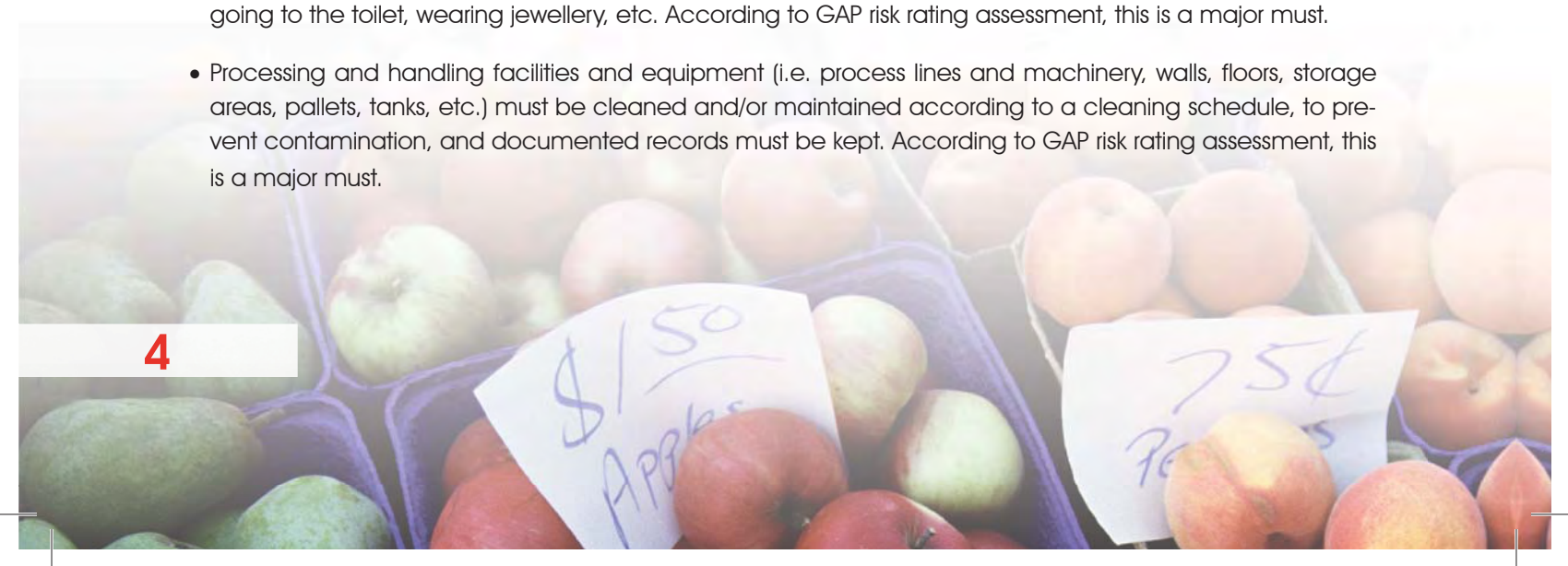
The following guideline(s) should be followed when dealing with records:

- Records should be maintained for a minimum of two years in case they are needed by the client. Prior to the date of the first audit, retrospective records have to be available for at least three months. According to GAP risk rating assessment, this is a major must.

3.7 On-farm packing (only applicable if produce is handled on the farm)

The following guideline(s) should be followed when dealing with on-farm packing:

- Toilets must be in a good state of hygiene with hand-washing facilities, containing soap and water. Toilets should be accessible and be close by. Furthermore, toilets should not open directly into the fresh fruit and vegetable handling area. According to GAP risk rating assessment, this is a major must.
- The training or instructions should be complied with at all times, especially regarding hand washing after going to the toilet, wearing jewellery, etc. According to GAP risk rating assessment, this is a major must.
- Processing and handling facilities and equipment (i.e. process lines and machinery, walls, floors, storage areas, pallets, tanks, etc.) must be cleaned and/or maintained according to a cleaning schedule, to prevent contamination, and documented records must be kept. According to GAP risk rating assessment, this is a major must.



- Fresh produce containers used should be suitable materials authorised by the Product Marketing Organisation (PMO). Prior to use, the containers should be stored in a secure manner to avoid contamination and access by rodent and other risk factors. According to GAP risk rating assessment, this is a major must.
- Documentary evidence (i.e. specific label mention or technical data sheet) authorising the product usage in the Food Industry for those cleaning agents, lubricants, etc. which could come into contact with the harvested fresh fruit and vegetables must be present. According to GAP risk rating assessment, this is a major must.
- Light bulbs and fixtures suspended above produce or material used for produce handling should be of a safety type or protected/shielded so as to prevent contamination of food in case of breakage. According to GAP risk rating assessment, this is a major must.

4. THE MINIMUM REQUIREMENTS FOR CONTRACTUAL ARRANGEMENTS WITH FORMAL AGRI-FOOD MARKETS (INTERMEDIATE LEVEL GAP STANDARDS)

4.1 Traceability

Traceability facilitates the withdrawal of foods and enables customers to be provided with targeted and accurate information concerning implicated products. The following guidelines should be followed when dealing with traceability:

4.1.1 Harvested product must be traceable on the farm

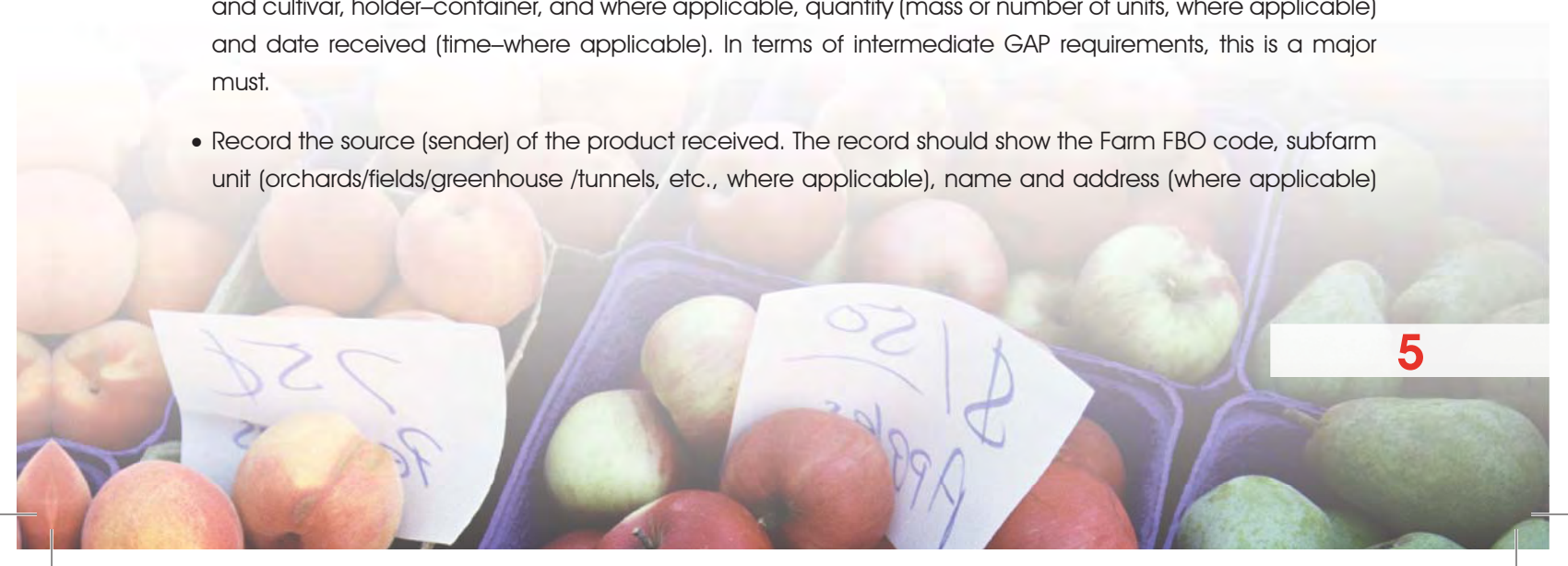
- Record the identity of the product in a way that complies with marking requirements and is meaningful to the next entity in the supply chain (i.e. product type, cultivar, date harvested, holder/container, and where applicable, orchard, field or tunnel). In terms of intermediate GAP requirements, this is a major must.
- Record the farm on which the product was grown (FBO Code, farm name and address). In terms of intermediate GAP requirements, this is a major must.

4.1.2 Harvested product must be trackable forward to the next receiver in the supply chain

- Record the identity of the receiving entity: FBO Code of an on-farm packhouse, FBO Code on an on-farm cold store, FBO Code of an on-farm packhouse or processor, name and address of the receiver (when applicable) as well as transport/transporter details (when applicable). In terms of intermediate GAP requirements, this is a major must.

4.1.3 Product must be traceable at the on-farm packhouse (not applicable if no on-farm packing is done)

- Record the product received from the farm. The record should show product identity e.g. product type and cultivar, holder–container, and where applicable, quantity (mass or number of units, where applicable) and date received (time–where applicable). In terms of intermediate GAP requirements, this is a major must.
- Record the source (sender) of the product received. The record should show the Farm FBO code, subfarm unit (orchards/fields/greenhouse /tunnels, etc., where applicable), name and address (where applicable)



and details of the transport that delivered the product (where applicable). In terms of intermediate GAP requirements, this is a major must.

- Record all movements of products. The record should show what product was produced, from-location/time (as applicable) and to-location/time (as applicable). In terms of intermediate GAP requirements, this is a major must.
- Record each new product and constitution of product that is created at the packhouse (punnets/packed fruit/bags), raw materials/identification (e.g. loose produce, including batch number if applicable), consolidations (e.g. when cartons are palletised and pallets are containerised, sampling - where product is removed from cartons during sampling) and finished product identification (including batch number if applicable). In terms of intermediate GAP requirements, this is a major must.

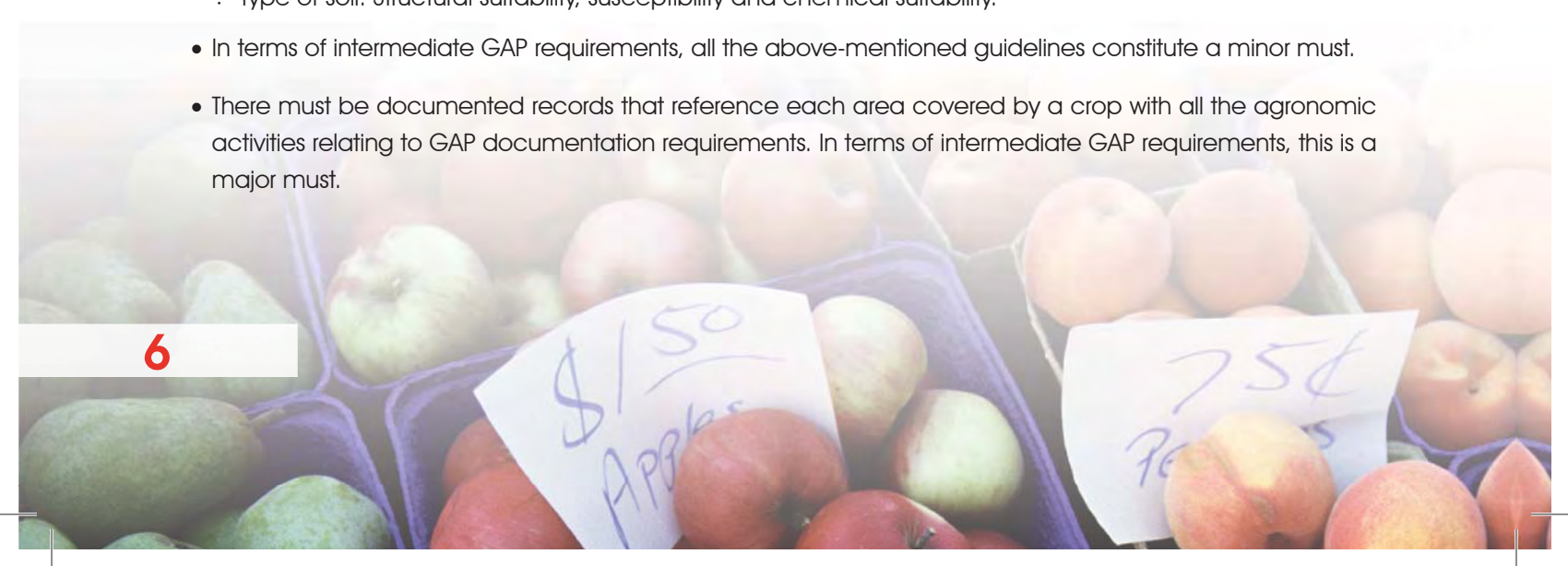
4.1.4 Products that leave the packhouse must be trackable to the next entity (not applicable if no on-farm packing is done)

- Record the packhouse identity (FBO Code) as the sender of the product. In terms of intermediate GAP requirements, this is a major must.
- Product = traceable item. Record the identities of all products that leave the packhouse. Product identity and description should be in accordance with marking requirements. There should be batch identification (where applicable). There should also be a holder-container or constitution (e.g. pallets) and item identities (if applicable) (e.g. pallet numbers and container numbers). In terms of intermediate GAP requirements, this is a major must.
- Record the identity of the next receiving entity—FBO Code of, e.g. off-farm packhouse, cold store, processor, transporter, port terminal, etc. and/or name—and address of receiving entity - Transporter FBO Code and vehicle details. In terms of intermediate GAP requirements, this is a major must.

4.2 Site history and management

Site history and management is a documented food safety risk assessment that takes into account site history, and considers the impact of proposed enterprises on adjacent stock/crops in terms of pollution and heavy metal contaminants. When the assessment identifies a risk that is critical to food safety the site must not be used for agricultural activities. The following are the guiding principles:

- ÷ Definition of new production sites: Land being used for production or planted for the first time after being used for animal production or non-food uses, excluding "soil-improvement" crops.
 - ÷ Determination if risk assessment is needed: Risk assessment must include, but is not limited to: Legislation: Local regulations should first of all be checked to verify legal compliance.
 - ÷ Prior use of land: Previous crops, type of use (industrial or military use), landfill or mining sites, natural vegetation, pests, diseases and weeds.
 - ÷ Type of soil: Structural suitability, susceptibility and chemical suitability.
- In terms of intermediate GAP requirements, all the above-mentioned guidelines constitute a minor must.
 - There must be documented records that reference each area covered by a crop with all the agronomic activities relating to GAP documentation requirements. In terms of intermediate GAP requirements, this is a major must.



- Every field, orchard or greenhouse must be physically identifiable, e.g. using description, map, landmarks and/or e.g. a unique code, name, number or colours used on all records that refer to that area. In terms of intermediate GAP requirements, this is a minor must.

4.3 Propagation material

The choice of propagation material plays an important role in the production process and using the correct varieties can help reduce the number of fertiliser and plant protection product applications. The choice of propagation material is a precondition of good plant growth and product quality.

- The registered farm or group of registered farms must have a copy of the legislation applicable (The Genetically Modified Organisms Act, 1997, Act No. 15 of 1997) and comply accordingly. Unless no GMO varieties are used, a valid permit from the registrar of the GMO Act must be provided. When seed has been bought from a commercial company, the grower has to present a valid grower's agreement from the seed company that holds the permit/patent. In terms of intermediate GAP requirements, this is critical.
- If GMO cultivars and/or products derived from genetic modification are used, documented records of planting (what? where? when?), use or production of GMO cultivars and/or products derived from genetic modification should be available. Unless no GMO varieties are used, this requirement will not be valid. In terms of intermediate GAP requirements, this is a major must.

4.4 Soil/substrate management (not applicable if soil/fumigation/substrates are not used)

4.4.1 Soil fumigation

Documented evidence for the use of soil fumigants, including location, date, active ingredient, dosage, method of application and operator, is needed. This will not be applicable if no fumigation was used. In terms of intermediate GAP requirements, this is a major must.

4.4.2 Substrates

- The following should all be recorded correctly:
 - ÷ The dates of sterilisation (day/month/year);
 - ÷ The name and active ingredient, the machinery (e.g. 1 000ln tank, etc.);
 - ÷ The method (e.g. drenching, fogging); and
 - ÷ The operator's name (the person who actually applied the chemicals and did the sterilisation).
- When the substrate is sterilised on the farm, the name or reference of the location should be recorded, if sterilised off farm, the name and physical address of the company that sterilised should also be recorded. This will not be applicable if no substrates were used. In terms of intermediate GAP requirements, this is a minor must.

4.5 Fertiliser use

The decision-making process involves crop demands, the supply that is in the soil and available nutrients from farm manure and crop residue. Correct application to optimise use and storage procedures to avoid loss and contamination must be followed. The following are the guiding principles:

4.5.1 Fertiliser application records (inorganic and organic)

- Records of all fertiliser applications detailing the date of application, the name or reference of the field, orchard or greenhouse where the crop is located, trade name, type of fertiliser, quantity and concentration, method of application and the name of the operator that applied it should be kept. In terms of intermediate GAP requirements, this is a minor must.

4.5.2 Fertiliser storage (inorganic and organic)

- Fertilisers should not be stored with fresh produce. In terms of intermediate GAP requirements, this is a minor must.
- The minimum requirement is a physical barrier that prevents cross-contamination between fertilisers and crop protection products. If fertilisers applied together with plant protection products (i.e. micro-nutrients or foliar fertilisers) are packed in a sealed container, it can be stored with crop protection products. In terms of intermediate GAP requirements, this is a minor must.
- The area used for storage must be covered. This should be suitable to protect all inorganic fertilisers, i.e. powders, granules or liquids, from atmospheric influences like sunlight, frost and rain. Plastic coverage could be acceptable. Storage cannot be directly on the soil. It is permissible to store lime and gypsum in the field for a day or two before spreading. The area must be free of waste, must not constitute a breeding place for rodents, and where spillage and leakage is cleared away. In terms of intermediate GAP requirements, this is a minor must.

4.5.3 Organic fertiliser (not applicable if not used)

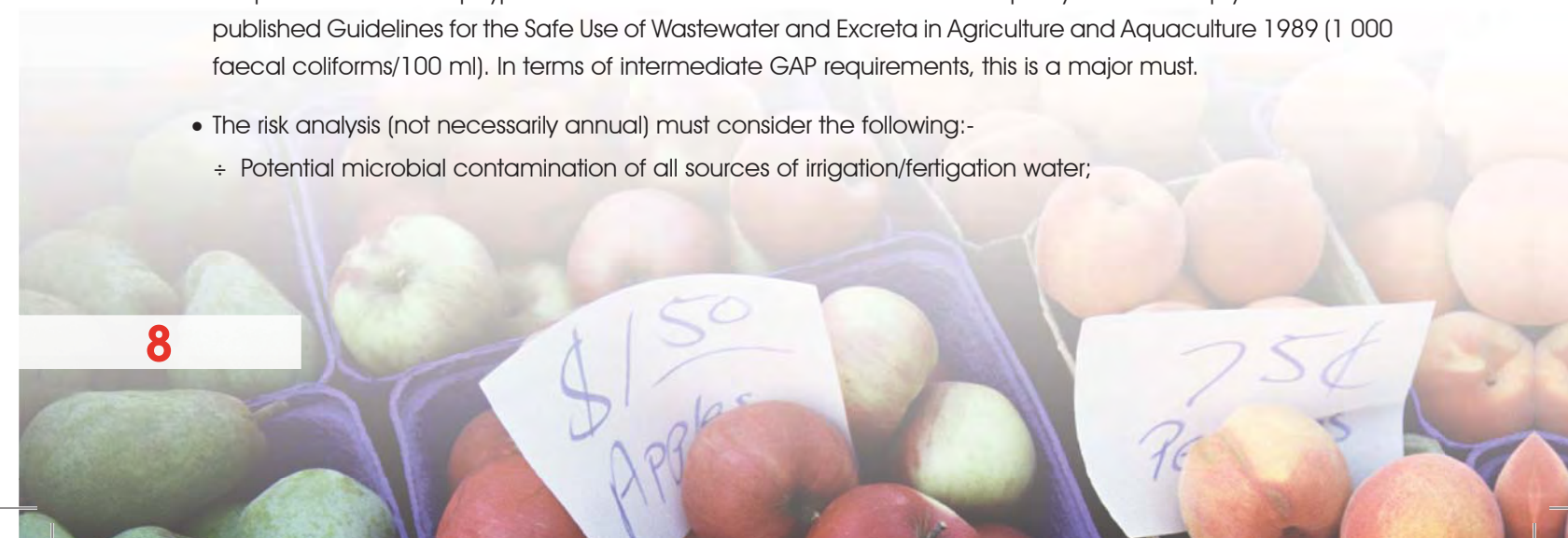
- Human sewage should not be used on crops. In terms of intermediate GAP requirements, this is critical.
- Documentary evidence to demonstrate that the following potential risk areas have been taken into account: i.e. crop type, method of treatment/composting, biological and heavy metal content as well as disease transmission of the organic fertiliser applied should be made available, where applicable. In terms of intermediate GAP requirements, this is a minor must.

4.6 Irrigation

Water is a scarce natural resource and irrigation should be triggered by appropriate forecasting and by technical equipment, allowing for the efficient use of irrigation water.

4.6.1 Untreated sewage water

- Untreated sewage water should not be used for irrigation/fertigation. Where treated sewage water is used, the potential risk of crop type should be taken into consideration. Water quality should comply with the WHO published Guidelines for the Safe Use of Wastewater and Excreta in Agriculture and Aquaculture 1989 (1 000 faecal coliforms/100 ml). In terms of intermediate GAP requirements, this is a major must.
- The risk analysis (not necessarily annual) must consider the following:-
 - ÷ Potential microbial contamination of all sources of irrigation/fertigation water;



- ÷ Irrigation method used;
 - ÷ The crop type irrigated;
 - ÷ Frequency of analysis;
 - ÷ Sources of water used for irrigation;
 - ÷ The effect of post-harvest washing, where applicable, on the microbial load;
 - ÷ How will adverse results be acted upon?
 - ÷ When will the risk analysis be reviewed? Quality (microbial content) limits when the water analysis is conducted.
- The risk analysis, in terms of intermediate GAP requirements, is a minor must.

4.7 Crop protection

In situations where pest attack will adversely affect the economic value of a crop, it may be necessary to intervene with specific pest control methods, including plant protection products (PPPs). The correct use, handling and storage of PPPs are essential.

4.7.1 Choice and use of chemicals

- All chemical products applied to the crop should be registered (Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947, Act No. 36 of 1947) and be appropriate for the pest, disease, weed or target of the crop protection product intervention. Where applicable, this includes chemical products applied to propagation material (particularly leafy vegetable seedlings). In terms of intermediate GAP requirements, this is a major must.
- Where the crop protection product records show that the technically responsible person making the choice of the crop protection products is a technical adviser, technical competence can be demonstrated via official qualifications or specific training course attendance certificates. Where the crop protection product records show that the technically responsible person making the choice of the crop protection products is the producer, experience must be complemented by technical knowledge that can be demonstrated via practical demonstration, technical documentation, i.e. product technical literature, specific training course attendance, etc. In terms of intermediate GAP requirements, this is a major must.
- There should be documented evidence to show that the correct application rate of the crop protection product for the crop to be treated is in accordance with label instructions and has been accurately calculated, prepared and recorded. In terms of intermediate GAP requirements, this is a minor Must.
- Records should indicate that the required instructions or training programme are in place and that there is a copy of the attendance certificates or a signed list of workers who attended the training course. Subcontracted service providers also have to be included in the training programme. In terms of intermediate GAP requirements, this is a minor must.

4.7.2 Pesticide spray records

- All crop protection product application records must specify the exact dates (day/month/year) of the application. In terms of intermediate GAP requirements, this is critical.

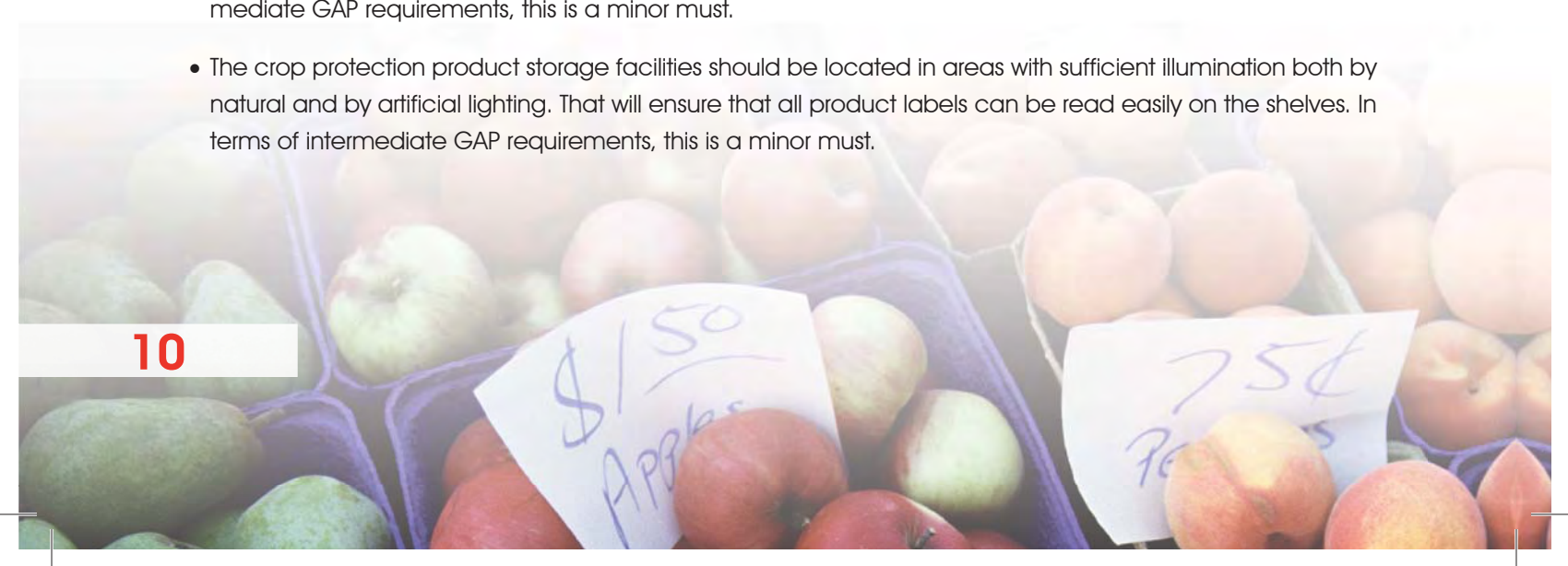
- All crop protection product application records must specify the name, and variety of crop treated. In terms of intermediate GAP requirements, this is critical.
- All crop protection product application records must specify the geographical area, the name or reference of the farm, and the field, orchard or greenhouse where the crop is located. This must include records of surplus mix applications. In terms of intermediate GAP requirements, this is critical.
- All crop protection product application records must specify the trade name and active ingredient(s). In terms of intermediate GAP requirements, this is critical.
- All crop protection product application records must specify the total quantity of the product to be applied in weight or volume, or the total volume of water (or other carrier medium), and dosage in g/l or internationally recognised measures for the crop protection product. In terms of intermediate GAP requirements, this is critical.
- The operator applying crop protection products should be identified in the records. In terms of intermediate GAP requirements, this is a minor must.
- The application machinery type, for all the crop protection products applied (if there are various units, these are identified individually), and the method used (i.e. knapsack, high volume, ULV, via the irrigation system, dusting, fogger, aerial, or another method), should be detailed in all crop protection product application records. In terms of intermediate GAP requirements, this is a minor must.
- The technically responsible person making the crop protection product recommendation should be identified in the records. In terms of intermediate GAP requirements, this is a minor must.
- The farmer can demonstrate that all pre-harvest intervals have been observed for crop protection products applied to the crops, through the use of clear documented procedures such as crop protection product application records and crop harvest dates from treated locations. Specifically in continuous harvesting situations, there are systems in place in the field, orchard or greenhouse, e.g. warnings, signs etc., to ensure safe compliance. In terms of intermediate GAP requirements, this is critical.

4.7.3 Application equipment

- The crop protection product application machinery should be verified for correct operation within the last 12 months. These must be certified or documented either by participation in an official scheme or by having been carried out by a person who can demonstrate their competence. In terms of intermediate GAP requirements, this is critical.

4.7.4 Storage of pesticides

- The crop protection product storage facilities should be kept secure under lock and key. In terms of intermediate GAP requirements, this is a minor must.
- The crop protection product storage facilities should be located in areas with sufficient illumination both by natural and by artificial lighting. That will ensure that all product labels can be read easily on the shelves. In terms of intermediate GAP requirements, this is a minor must.



- Nothing other than the indicated crop protection product(s) may be found in the room. No food/personal belongings or product or packaging material storage may occur. In terms of intermediate GAP requirements, this is a minor must.
- The crop protection product storage facilities or the crop protection product filling/mixing area, if they are different, should have measuring equipment, the graduation (for containers) and calibration verification (for scales) of which have been verified annually by the farmer. In terms of intermediate GAP requirements, this is a minor must.
- The crop protection product storage facilities should be kept locked and physical access is only granted in the presence of persons who can demonstrate formal training in the safe handling and use of crop protection products. In terms of intermediate GAP requirements, this is a minor must.
- A stock inventory, which indicates the content of the store, should be available and be updated at least every 3 months. In terms of intermediate GAP requirements, this is a minor must.
- All the crop protection products that are currently in the store should be kept in the original containers and packs. In the case of breakage only, the new package must contain all the information of the original label. In terms of intermediate GAP requirements, this is a minor must.
- There should be permanent and clear identification signs on or next to the access doors of storage facilities. In terms of intermediate GAP requirements, this is a minor must.
- There should be documented records to indicate that obsolete crop protection products were disposed off by officially authorised channels. When this is not possible, obsolete crop protection products should be securely maintained and be identifiable. In terms of intermediate GAP requirements, this is a minor must.

4.7.5 Empty pesticide containers

- The system used to dispose of empty crop protection containers should ensure that person(s) cannot come into physical contact with the empty containers by having a secure storage point, safe handling system prior to disposal by a responsible method. In terms of intermediate GAP requirements, this is a minor must.

4.8 Harvesting

In order to maintain the quality of fruit, the time at which the produce is harvested and the way in which it is handled during harvesting are very important. The following are the guiding principles:

- Farm vehicles used for the transport of harvested produce, especially those that are also used for any purpose other than transport of harvested produce should be cleaned and maintained. Furthermore, a cleaning schedule to prevent produce contamination should be in place (i.e. soil, dirt, fertiliser, spills). In terms of intermediate GAP requirements, this is a major must.
- Fixed or mobile hand-washing facilities should be accessible to harvest workers and be in a good state of hygiene. In terms of intermediate GAP requirements, this is a major must.
- Complete first aid boxes according to national regulation and recommendations must be available and accessible in the vicinity of the work. Where there is a risk of theft, the supervisor may carry a first aid box with him/her or in his/her means of transport. In terms of intermediate GAP requirements, this is a minor must.

- Fixed or mobile toilet facilities (including long drops) must be constructed of material that is easy to clean. Catch basins (where applicable) designed to prevent contamination in the field should be accessible to harvest workers and be in a good state of hygiene. In terms of intermediate GAP requirements, this is a minor must.
- Reusable harvesting containers, harvesting tools (i.e. scissors, knives, pruning shears, etc.) and harvesting equipment (machinery) should be cleaned and maintained, and a cleaning and disinfection schedule should be in place (as appropriate) to prevent produce contamination. In terms of intermediate GAP requirements, this is a major must.
- Produce containers should only be used to contain produce (i.e. no agricultural chemicals, lubricants, oil, cleaning chemicals, plant or other debris, lunch bags, tools, etc.) (visual confirmation by auditor). If multi-purpose trailers, carts, etc. are used as produce containers, they must be cleaned prior to use (schedule/record). In terms of intermediate GAP requirements, this is a major must.
- A risk-based procedure that covers the harvest handling operation, i.e. in the case of groundnuts, the drying, heap stacking, and control measures must be taken in the field to minimise the aflatoxin risk. In terms of intermediate GAP requirements, this is a major must.

4.9 Post-harvest handling (only applicable where there is an on-farm packhouse)

4.9.1 Location and structure of packhouse

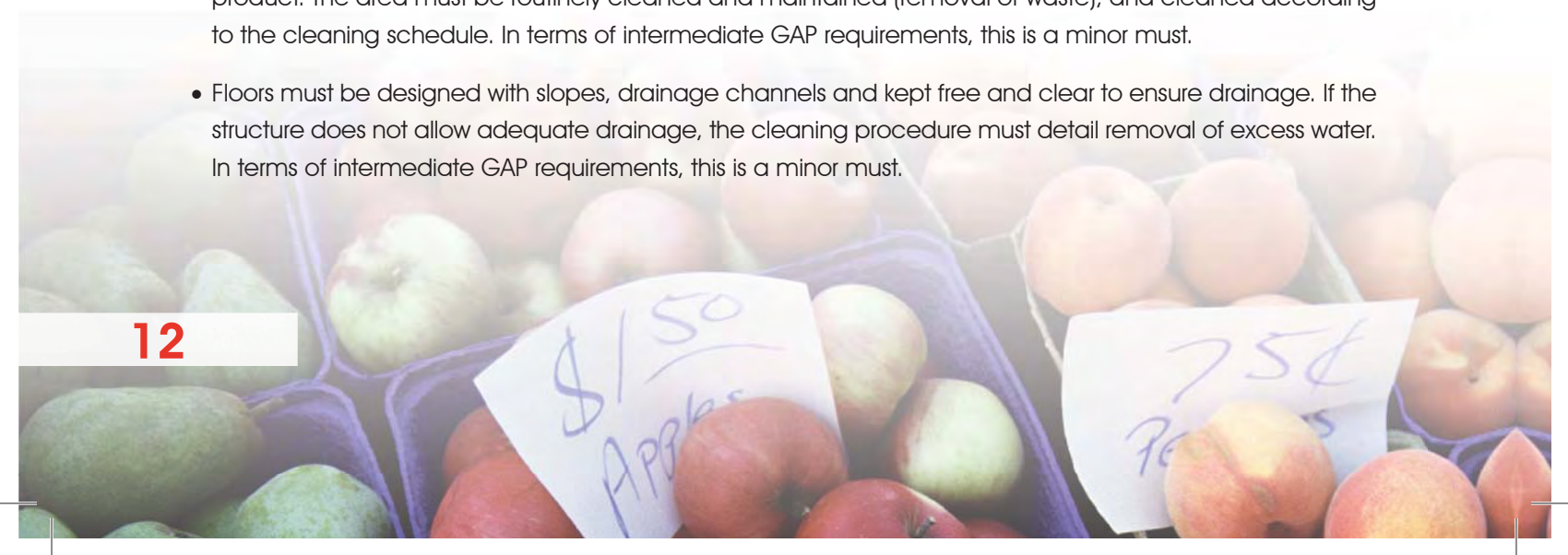
- A packhouse should not be located in areas where contamination of produce may occur by means of environmentally polluted and industrial areas. Such a packhouse will be prone to infestations of pests. In terms of intermediate GAP requirements, this is a minor must.

4.9.2 Water supply

- The water used for sanitation and processing purposes (post-harvest washing, hydro-cooling, ice-cooling) should be potable. Annual testing for microbial limits must not exceed the following parameters: E. coli—not detectable (0). Thermo-tolerant faecal coli forming bacteria – 10/100 ml. In terms of intermediate GAP requirements, this is a major must.
- Where recycled water is used for process purposes, it should be treated and maintained in a condition that will not constitute a risk to fresh produce. Annual testing: microbial limits must not exceed the following parameters: E. coli—not detectable (0). Thermo-tolerant faecal coli forming bacteria – 10/100 ml. In terms of intermediate GAP requirements, this is a major must.

4.9.3 Drainage and waste disposal

- Waste disposal containers/areas must be identified and managed to prevent cross-contamination of the product. The area must be routinely cleaned and maintained (removal of waste), and cleaned according to the cleaning schedule. In terms of intermediate GAP requirements, this is a minor must.
- Floors must be designed with slopes, drainage channels and kept free and clear to ensure drainage. If the structure does not allow adequate drainage, the cleaning procedure must detail removal of excess water. In terms of intermediate GAP requirements, this is a minor must.



- The grounds in the immediate vicinity of the packhouse should be free of litter, waste and improperly stored refuse. Grass on the packhouse premises should be kept short because long grass normally promotes pest activity. In terms of intermediate GAP requirements, this is a minor must.

4.9.4 Personal hygiene

- The hygiene instructions should be visibly displayed. The instructions should be provided by way of clear signs (pictures) or in the predominant language(s) of the workforce. The instructions must at least include the need for hand cleaning, the covering of skin cuts, limitation on smoking, eating and drinking to certain areas, notification of any relevant infections or conditions, wearing of jewellery and the use of suitable protective clothing. This should also be included in a hygiene instruction that staff must report illnesses to management. The hygiene instructions must be applicable to staff, management, visitors and contractors. In terms of intermediate GAP requirements, this is a major must.
- There should be evidence that workers are complying with hygiene instructions (physical observation). In terms of intermediate GAP requirements, this is a major must.
- Evidence of basic hygiene training (content of hygiene instruction) must be available. The training should be repeated at a set interval (e.g. yearly/seasonally) to refresh personnel about the company's hygiene requirements. There should be evidence (i.e.: signed attendance registration, external certificates) that the workers have received verbal and documented, understandable instructions in the relevant aspects of produce handling hygiene, including personal cleanliness, i.e. hand washing, wearing of jewellery and fingernail length and cleaning, etc. clothing cleanliness, personal behaviour, i.e. no smoking, spitting, eating, chewing, perfumes, etc. In terms of intermediate GAP requirements, this is a minor must.
- Complete, maintained first aid kits and recommendations must be available and accessible in the vicinity of the work station. In terms of intermediate GAP requirements, this is a minor must.
- Protective clothing should cover all personal clothing, without external pockets and buttons. Head covering should cover and contain all hair. In terms of intermediate GAP requirements, this is a minor must.
- Approximately 15 persons should use one toilet facility. If the number of people exceeds 10, then separate men's and women's toilets should be provided. Suitable: Minimum requirement – pit latrines/long-drop. Lime should be used to neutralise odours and to break down organic material/sludge. When long drops are used, they should be located at least 50 m away from the packhouse facility. Toilets must not open directly onto the produce handling area unless the door is self-closing (in the case of flush toilets). Running water must be available for washing of hands. Hand-washing facilities must be available at the entrance to or vicinity of the packhouse. In terms of intermediate GAP requirements, this is a major must.
- Toilet paper, liquid disposable soap, and where disposable paper towels are used, a bin for paper waste must be provided. In terms of intermediate GAP requirements, this is a major must.
- There should be visible signboards directing workers to wash hands and instructing them (workers) to wash hands before the product is handled. In terms of intermediate GAP requirements, this is a minor must.



4.9.5 Storage (cleaning chemicals and post-harvest chemicals)

- The storage facility must be secure and access only allowed to trained personnel. The facility must provide adequate ventilation, be well lit, be able to retain spillage, and be of sound construction. In terms of intermediate GAP requirements, this is a minor must.
- All the chemicals kept in the store must be kept in the original containers and packs, in case of breakage only, the new package must contain all the information of the original label. In terms of intermediate GAP requirements, this is a minor must.

4.9.6 Food control and monitoring equipment

- Where applicable, temperatures regarding the equipment (e.g. cold stores) must be controlled and monitored in the interest of preventing product contamination. Records of such monitoring must be available. In terms of intermediate GAP requirements, this is a minor must.

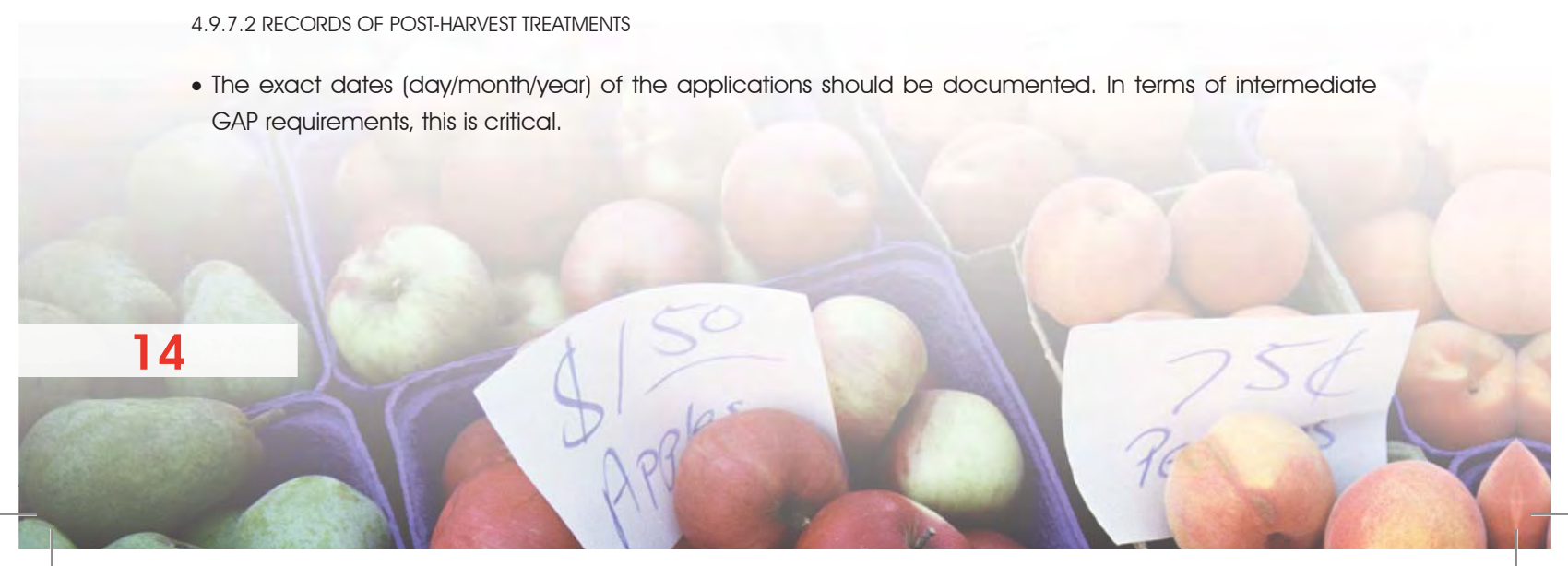
4.9.7 Post-harvest chemical treatments (where applicable)

4.9.7.1 GENERAL

- Registration number for chemical products used as proof that a chemical has been registered. In terms of intermediate GAP requirements, this is a major must.
- Updated, applicable MRLs for relevant destination/country are available on the DAFF website: www.daff.gov.za. In terms of intermediate GAP requirements, this is critical.
- The technically responsible person for the post-harvest biocides, waxes and crop protection product application should demonstrate a sufficient level of technical competence via nationally recognised certificates or formal training. In terms of intermediate GAP requirements, this is a minor must.
- There must be clear procedures and documentation available (i.e. post-harvest biocides, waxes and crop protection products', application records and packaging/delivery dates of treated products). These procedures demonstrate the label instructions for chemicals applied to the produce and should be observed. In terms of intermediate GAP requirements, this is a major must.
- Documented procedures should detail for example top-up procedures, application responsibilities, and maintenance of adequate operation. In terms of intermediate GAP requirements, this is a major must.
- Records should indicate that the required instructions or training programme is in place and that there is a copy of the attendance certificates or a signed list of workers who attended the training course. Records should also include subcontracted service providers. In terms of intermediate GAP requirements, this is a minor must.

4.9.7.2 RECORDS OF POST-HARVEST TREATMENTS

- The exact dates (day/month/year) of the applications should be documented. In terms of intermediate GAP requirements, this is critical.



- The produce treated should be documented in all post-harvest application records. If a process/treatment is specific to a variety, then that variety has to be indicated on the process/application record (e.g. citrus should be recorded as soft citrus or grapefruit). In terms of intermediate GAP requirements, this is critical.
- The geographical area, name or reference of the farm or produce handling site where the treatment was undertaken should be documented in all post-harvest biocides, wax and crop protection product application records. In terms of intermediate GAP requirements, this is critical.
- The lot or batch of produce treated should be documented in all post-harvest application records. In terms of intermediate GAP requirements, this is critical.
- The trade name and active ingredient of the products applied should be documented in all post-harvest application records. In terms of intermediate GAP requirements, this is critical.
- The quantity of product applied in weight or volume per litre of water or other carrier medium should be recorded in all post-harvest application records. In terms of intermediate GAP requirements, this is critical.
- The name of the operator who has applied the crop protection product to the produce should be documented in all application records. In terms of intermediate GAP requirements, this is a minor must.

4.10 Facility maintenance, cleaning and pest control (only applicable where there is an on-farm pack-house)

4.10.1 Maintenance and cleaning

- Flaking paint, equipment chipping, etc. that will constitute a physical hazard to the product. In terms of intermediate GAP requirements, this is a major must.
- Packaging material (including reusable crates) should be stored in a clean and hygienic area, to prevent contamination until used. In terms of intermediate GAP requirements, this is a minor must.
- Documentary evidence authorising (i.e. specific label mention or technical data sheet) use by the food industry of cleaning agents, lubricants, etc. which may come into contact with produce must be produced. In terms of intermediate GAP requirements, this is a major must.
- The cleaning schedule must include sanitary, change rooms and waste disposal areas. In terms of intermediate GAP requirements, this is a minor must.
- Designated equipment for cleaning and production must be identified, and used solely for cleaning. In terms of intermediate GAP requirements, this is a minor must.
- Light bulbs and fixtures suspended above produce or material used for produce handling must be of a safety type or protected/shielded so as to prevent contamination of food in case of breakage. In terms of intermediate GAP requirements, this is a major must.
- Written procedures and checks should exist for handling glass or clear hard plastic breakages in produce handling, preparation and storage areas. Monitoring of all glass to check whether it is still intact, as well as corrective action if a breakage does occur. In terms of intermediate GAP requirements, this is a minor must.



4.10.2 Pest control systems

- Establishments and surrounding areas must be regularly examined for evidence of infestation, and any treatments or activity recorded by external contractor or own trained staff. Frequency of examination should be identified in the procedure. Service records must be available. Monitoring traps must be numbered and indicated on a site map. Pest control traps must be maintained and cleaned on a regular basis. Pest control traps must be secured. The procedure must include precautions taken to not contaminate the product during application. In terms of intermediate GAP requirements, this is a major must.
- Cold store doors must be kept closed at all times. Pest control measures must be put in place (sieves, air curtains, rodent boxes, light traps, etc). In terms of intermediate GAP requirements, this is a minor must.
- Pest control chemicals must be stored in a secure place, of which the access is controlled to by trained personnel. Label instructions on the chemicals must be complied with when the product is stored. In terms of intermediate GAP requirements, this is a minor must.

5. INSTITUTIONS RESPONSIBLE FOR QUALITY CONTROL

The following are the main institutions responsible for setting and controlling quality standards:

Institution	Regulation standards	Legislation	Contact details
SABS	Food Hygiene Management Standard	SANS 100049	Tel: (012) 428-6666 Fax: (012) 428-6928 E-mail: info@sabs.co.za
DoH	Regulations governing general hygiene requirements for food premises and the transport of food.	R918	http://www.doh.gov.za/list.php?type=Regulations&year=1999
DoH	Regulations regarding processed foodstuffs	R723	http://www.doh.gov.za/list.php?type=Regulations&year=2001
SABS	Drinking water	SANS 241	Tel: (012) 428-6666 Fax: (012) 428-6928 E-mail: info@sabs.co.za
SABS	Guidelines on the application of ISO 9000:2001 for the food and drink industry	SANS 15161	Tel: (012) 428-6666 Fax: (012) 428-6928 E-mail: info@sabs.co.za
SABS	Handling of chilled and frozen foods	SANS 10156	Tel: (012) 428-6666 Fax: (012) 428-6928 E-mail: info@sabs.co.za
DoH	Foodstuffs, Cosmetics and Disinfectants Act, covering product labelling, ingredient declaration, the use of additives, etc.	Act No.54 of 1972	http://www.doh.gov.za/docs/legislation/acts/2011/act54a.pdf
DAFF	Agricultural Product Standards Act	Act No. 119 of 1990	http://www.nda.agric.za/doaDev/sideMenu/foodSafety/doc/pears/PearsPart1_2_2011_.pdf
GFSI	GFSI Guidance Document	Belgian Law	http://www.fao.org/prods/gap/database/gap/files/1217_GLOBAL_FOOD_SAFETY_INITIATIVE.PDF
CFA	High Risk Area – Best Practices Guidelines		www.chilledfoods.org

