

Supporting Document 1

Information Paper

Proposal P1015

Primary Production & Processing Requirements for Horticulture

1 Introduction

This Information Report (SD1) provides additional detail to the information covered in the 1st Call for Submissions Report. In particular:

- SD1 explains in greater detail the scope of the work to be assessed by Proposal P1015, including the primary production operations and activities that will be covered.
- SD1 provides a summary of the requirements (regulatory as well as relevant guidelines and codes of practice) currently applying to the production of horticulture. Industry schemes have not been included here as they are the focus of Supporting Document 3.

2 Scope of P1015

The horticulture industry in Australia comprises produce such as fruit, vegetables and nuts as well as flowers, turf and nursery. The scope of this work excludes non-edible flowers, turf and nursery but will encompass all other horticultural produce.

The focus of this work will be on primary production activities from on-farm through to sale (wholesale, retail or to processing), taking into account the complexities of the supply chain. Processing activities, including drying, freezing, canning and minimal processing (peeling, cutting, slicing, shredding etc.) are covered by the requirements of Chapter 3 of the *Australia New Zealand Food Standards Code* (the Code) and outside of the scope of Proposal P1015 (Figure 1).

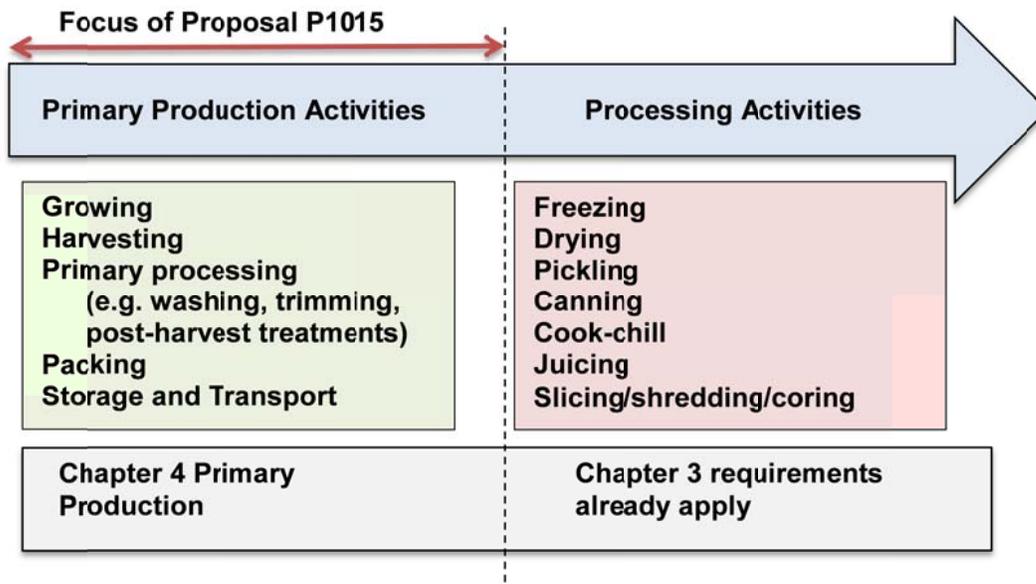


Figure 1: Schematic representation of the scope of Proposal P1015 in relation to requirements in the Code

2.1 Primary production activities

Depending on the commodity grown, a number of production methods are in use in Australia. These include field production, open field or under cover, and greenhouse production, either in soil or hydroponically. Regardless of the production system used, the main risk factors or activities contributing to the contamination of fresh horticultural produce would apply. While production processes will vary between commodities, there are common production activities and inputs (such as agricultural chemical, water and fertilisers). Such activities may include:

- Site selection and planting
- Irrigation
- Application of fertilisers
- Pest/weed management
- Harvest
- Primary processing e.g. trimming, washing
- Post- harvest treatments e.g. waxing, application of fungicides
- Packing
- Storage
- Transport

Flow diagrams of on farm activities that typically occur for fruit and vegetable production, including inputs to those operations, are provided at Attachment 1.

2.2 Primary production operations

The fresh produce industry is primarily comprised of growers, packing houses, transporters and wholesalers. The supply chain also includes processors, retailers (including farmers markets) and consumers and can be complex as outlined in Figure 2. The specific details of this supply chain will vary between different commodity groups.

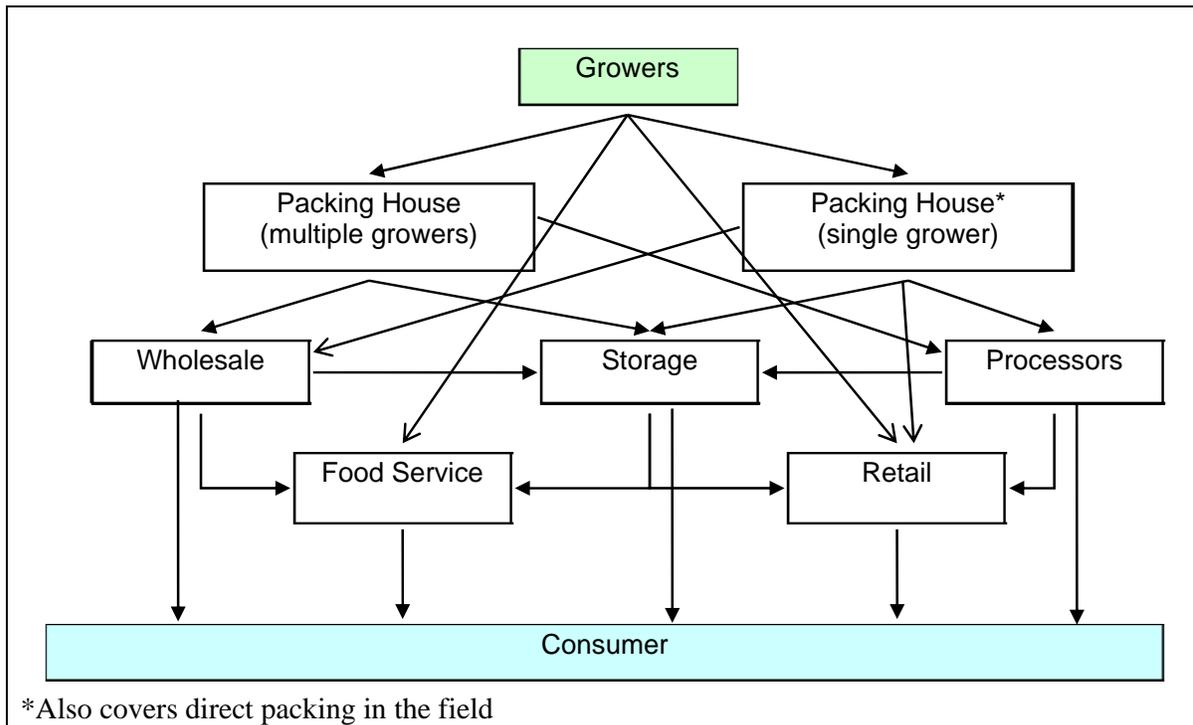


Figure 2: Supply chain of domestic horticultural produce in Australia

Fresh produce can reach the consumer in a variety of ways. Produce can be sold directly to consumers through farmers' markets and farm gate sales. However, the usual channels from farm to consumer are indirect. Most commonly the produce is packed on-farm or transported to a packing house off-farm that is used by multiple growers. After packing, which may involve washing, trimming and post-harvest treatments, the produce can go directly to retailers, wholesalers, food service or processors. Prior to supply and sale commodities may be stored for periods of time depending on the nature of the commodity and its perishability.

This complex supply chain means that potential approaches to food safety in horticultural produce must take into account all stages in the supply chain. It underlies the importance of focusing on processes and activities rather than commodities, as a single commodity may have completely different risk factors depending on its route through to the consumer.

The assessment process will take into account the nature of particular commodities (e.g. how or where it is grown, surface structure, processing steps before consumption) and risks inherent in particular activities to determine whether requirements should be set for particular commodities or activities as well as the general measures that should apply across the sector. The main factors or activities contributing to the contamination of horticultural products are examined in Supporting Document 2 *Review of foodborne illness associated with selected ready-to-eat fresh produce*.

3 Requirements applying to the production of horticultural produce

3.1 *Australia New Zealand Food Standards Code*

The food standards in Chapters 1 and 2 of the Code apply to all food sold or traded at retail and wholesale level in Australia and New Zealand (except Standards 1.6.2, 1.4.2 and 2.4.2 that apply to Australia only). These standards include labelling requirements; the maximum permitted levels for additives, processing aids, contaminants and natural toxicants; maximum residue limits for agricultural and veterinary chemical residues; requirements for articles and materials in contact with food; microbiological limits for food; as well as food product standards (Chapter 2) for certain individual food products.

Chapter 3 Food Safety Standards apply only in Australia and only to food businesses involved in the handling of food intended for sale. Chapter 3 requirements do not apply to primary food production. This is defined in Standard 3.1.1 as follows:

primary food production means the growing, cultivation, picking, harvesting, collection or catching of food, and includes the following –

- (a) the transportation or delivery of food on, from or between the premises on which it was grown, cultivated, picked, harvested, collected or caught;
- (b) the packing, treating (for example, washing) or storing of food on the premises on which it was grown, cultivated, picked, harvested, collected or caught; and
- (c) any other food production activity that is regulated by or under an Act prescribed by the regulations for the purposes of this definition.

However, primary food production does not include –

- (d) any process involving the substantial transformation of food (for example, manufacturing or canning), regardless of whether the process is carried out on the premises in which the food was grown, cultivated, picked, harvested, collected or caught; or
- (e) the sale or service of food directly to the public; or
- (f) any other food production activity prescribed by the regulations under the Act for the purposes of this definition.

Where requirements have been developed for primary production they are included in Chapter 4 of the Code.

Food Safety Standards

[Standard 3.2.2](#) – Food Safety Practices and General Requirements specifies process control requirements to be satisfied at each step of the food handling process. Some requirements relate to the receipt, storage, processing, display, packaging, distribution disposal and recall of food. Other requirements relate to the skills and knowledge of food handlers and their supervisors, the health and hygiene of food handlers, and the cleaning, sanitising, and maintenance of premises and equipment.

[Standard 3.2.3](#) – Food Premises and Equipment sets out requirements for the design of food premises and equipment that, if complied with, will facilitate compliance by food businesses with the food safety requirements of Standard 3.2.2. This standard also includes requirements for storage facilities, toilet facilities and food transport vehicles.

In general, the Food Safety Standards do not apply to primary production activities. However, Chapter 3 provisions could apply to primary processing activities such as washing,

trimming, packing and other post-harvest treatments where these are not undertaken on the premises on which the produce was grown. Requirements under Chapter 3 relating to food transport should also apply to the transport of fresh produce, excluding transport activities on farm.

Maximum residue limits and contaminants

[Standard 1.4.2](#) – Maximum Residue Limits lists the maximum permissible limits for agricultural and veterinary chemical residues present in food. If a maximum residue limit (MRL) for an agricultural or veterinary chemical in a food is not listed in Schedule 1 of Standard 1.4.2 there must be no detectable residues of that agricultural or veterinary chemical in that food. When agricultural chemicals are used under good agricultural practice and in accordance with prescribed use patterns, MRLs should not be exceeded.

[Standard 1.4.1](#) – Contaminants and Natural Toxicants sets out the maximum levels (MLs) of specified metal and non-metal contaminants and natural toxicants in nominated foods. A ML has been established only where it serves an effective risk management function and only for those foods which provide a significant contribution to the total dietary exposure. The levels set are consistent with public health and safety and are reasonably achievable from sound production and natural resource management practices. Maximum levels specified in Standard 1.4.1 include cadmium in leafy vegetables and root and tuber vegetables, and lead in vegetables.

Labelling

[Standard 1.2.1](#) – Application of Labelling and Other Information Requirements, sets out the labelling requirements for food for sale and information that must be provided in conjunction with the sale of certain foods, where labelling is not required. There are exemptions for certain products to bear a label at retail sale, such as whole or cut fresh fruit and vegetables (except sprouting seeds or similar products) in packages that do not obscure the nature or quality of the fruit or vegetables. However, information should be able to be provided upon request.

In general, information requirements include:

- Name of the food
- Lot identification
- Name and address of the supplier of the food

[Standard 1.2.11](#) – Country of Origin Requirements includes requirements specific to fresh whole or cut fruit and vegetables. Where such foods are displayed for retail sale there must be a label on or in connection with the display that identifies the country of origin of the food or provides a statement indicating that the foods are a mix of local or imported foods or both.

Other

[Standard 1.3.1](#) – Food Additives includes a range of additives that are permitted and not permitted to be added to unprocessed fruits and vegetables, untreated fruits and vegetables and surface treated fruits and vegetables. Definition of fruits and vegetables in this standard includes fungi, nuts, seeds and herbs.

[Standard 1.3.3](#) - Processing Aids includes permitted bleaching, washing and peeling agents to be used in the course of fresh produce production. Also lists two permitted antimicrobial agents for fruits and vegetables.

[Standard 1.4.4](#) - Prohibited and Restricted Plants and Fungi lists the species of plants and fungi that either must not be added to food or offered for sale as food. It also lists restricted plants and fungi that are can only be added to or be present in a food if they the requirements of natural toxicants as stated in clause 4 of the standard.

[Standard 2.3.1](#) - Fruit and Vegetables provides definitions for fruit and vegetables, which include nuts, spices, herbs, fungi, legumes and seeds for the purposes of providing specific additive permissions.

3.2 Export requirements

Exporters must meet both the requirements of relevant export legislation and any importing country requirements for the Australian Quarantine and Inspection Service (AQIS) to provide the necessary documentation to enable products to be exported. Horticultural produce for export is regulated by the *Export Control Act 1982*, certain provisions of the *Export Control (Prescribed Goods- General) Orders 2005*, and the [AQIS Export Control \(Plants and Plant Products\) Order 2011](#) (Plant and Plant Products Order).

The *Export Control (Prescribed Goods – General) Order 2005* sets down general requirements for all prescribed goods and includes:

- requirements for registration of establishments
- trade description requirements
- packaging requirements and export permits.

The Plant and Plant products Order applies to the export of the following prescribed goods:

- prescribed grain
- hay and straw
- fresh fruit
- fresh vegetables
- any other plants and plant products for which a phytosanitary certificate or any other official certificate is required by an importing country authority.

It covers structural and operational and hygiene requirements for registered establishments. The requirements for registered establishments in Schedule 3 of the Plant and Plant Products Order include:

- Requirements for plans and specifications
- Records to be maintained (e.g. records for cleaning and pest control)
- Structural requirements for establishments
- Operational and hygiene requirements for establishments

While hygiene requirements are included in the Plant and Plant Products Order, their focus is on the control of pests for quarantine purposes rather than food safety.

3.3 Import requirements

The [Quarantine Act 1908](#) requires that all imports of food comply with the quarantine conditions for their import. Quarantine restrictions apply to many raw foods and certain processed foods. Fresh fruit, vegetables and nuts are restricted items and cannot be imported into Australia unless they meet Australia's quarantine requirements and an import permit has been obtained. Australian quarantine conditions for the importation of plant produce (grains, seeds, nursery stock, fruit and vegetables) are administered by the AQIS Plant Program.

Food that meets quarantine requirements and enters Australia is subject to the [Imported Food Control Act 1992](#), which provides for the inspection and control of imported food using a risk-based border inspection program, the AQIS [Imported Food Inspection Scheme \(IFIS\)](#). FSANZ advises AQIS on the risk categorisation of foods for inspection under the IFIS. Under the Imported Food control Act, importers are responsible for ensuring that all food imported into Australia complies with relevant standards in the Code.

Further information on importing foods into Australia and the Imported food Inspection Scheme can be accessed on the AQIS website¹.

3.4 State legislation

Food safety

To date, only NSW² has developed specific food safety requirements for plant product industries ([Plant Product Food Safety Scheme](#)). These requirements apply to businesses conducting the following activities:

- processing of fruit or vegetables to produce fresh cut ready-to-eat (RTE) products;
- sprouting and processing of seed spouts;
- extraction and/or packaging of juice from fruit or vegetables where the juice is not subsequently pasteurised;
- production of vegetables or fruit in oil;
- refrigerated storage of these plant products, and
- refrigerated distribution and/ or transporting of these plant products.

Food business engaged in the above activities must be licenced, have in place a certified food safety program and be independently audited for food safety. Requirements do not cover primary production activities.

Chemical

The regulation of agricultural and veterinary chemicals involves numerous state based control-of use legislation. The Australian Pesticides and Veterinary Medicines Authority (APVMA) undertakes the assessment and registration of AgVet chemical products nationally while states and territories are responsible for regulating AgVet chemical use after retail sale. There may be a number of State based Acts or regulations relating to chemical use. These cover control of use activities such as:

- training and accreditation of users
- licensing of professional operators
- monitoring
- surveillance and enforcement

3.5 Guidelines

There are some guidelines available to the fresh produce sector produced by Commonwealth and State agencies:

- Department of Agriculture Fisheries and Forestry (DAFF) *Guidelines for on-farm food safety for fresh produce*:
http://www.daff.gov.au/_data/assets/pdf_file/0003/183171/guidelines_onfarm_food_safety_fresh_produce_2004.pdf

¹ <http://www.daff.gov.au/aqis/import/food/inspection-scheme>

² NSW Food Authority

- DAFF *Guidelines for Implementing EUREPGAP for Australian Fresh Fruit and Vegetable Producers, 2004*: <http://www.daff.gov.au/agriculture-food/food/publications/eurepgap>
- The Western Australia Department of Agriculture *Guidelines for the management of microbial food safety in fruit packing houses*:
http://www.agric.wa.gov.au/objtwr/imported_assets/content/hort/fn/pw/bull4567.pdf
- Victorian Department of Natural Resources and Environment *Safe vegetable production, microbial food safety guide*
[http://www.vgavic.org.au/research_and_development/Researchers_PDFs/vg98093_safe_vegetable_production .htm](http://www.vgavic.org.au/research_and_development/Researchers_PDFs/vg98093_safe_vegetable_production.htm)

3.6 Codex Code of Practice

The Codex *Code of Hygienic Practice for Fruits and Vegetables* ([CAC/RCP 53-2003](#)) addresses Good Agricultural Practices (GAPs) and Good Manufacturing Practices (GMPs) that will help control microbial, chemical and physical hazards associated with all stages of the production of fresh fruits and vegetables from primary production to packing. Three Annexes have been developed for the Code of Practice that provide additional recommendations for specific product groups:

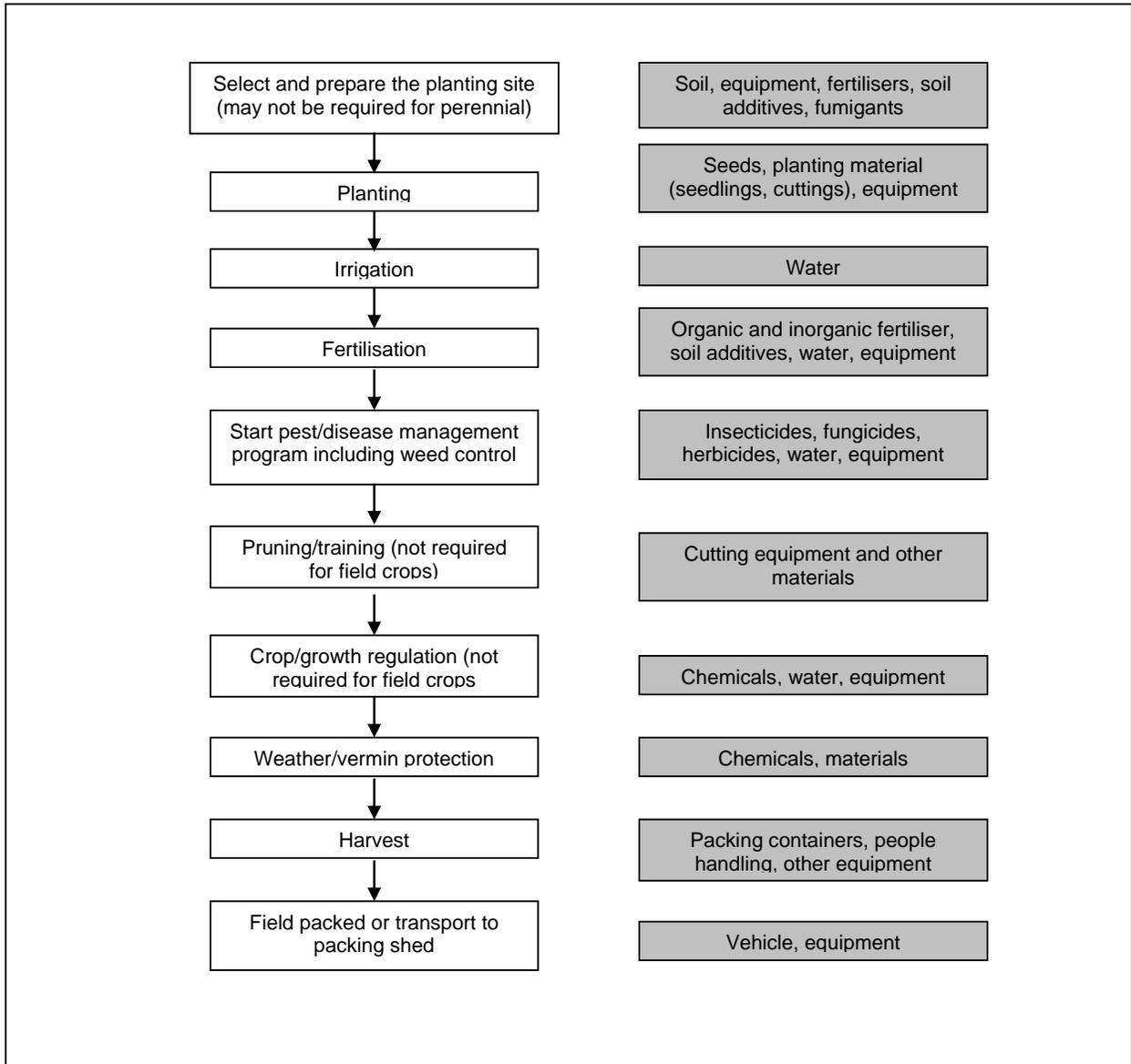
- Annex I – Annex for Ready-to-Eat Fresh Pre-cut Fruits and Vegetables
- Annex II – Annex for Sprout Production
- Annex III – Annex for Fresh Leafy Vegetables

A general overview of the elements contained in the Code of Practice is tabulated below.

Codex Code of Hygienic Practice for Fresh Fruits and Vegetables	
Step in production chain	What control measures should cover/consider
1. Primary production	
Environmental Hygiene	
	<ul style="list-style-type: none"> ○ Potential sources of contamination from the environment should be identified (controls/corrective measures applied)
Hygienic Primary Production of Fresh Fruits and Vegetables	
<ul style="list-style-type: none"> • Agricultural input requirements 	<ul style="list-style-type: none"> ○ Water for primary production (irrigation, harvesting, fertilisers, agricultural chemicals, hydroponic) ○ Manure, biosolids and other natural fertilisers ○ Soil ○ Agricultural chemicals ○ Biological control
<ul style="list-style-type: none"> • Indoor facilities associated with growing and harvesting 	<ul style="list-style-type: none"> ○ Location, design and layout ○ Water supply ○ Drainage and waste disposal
<ul style="list-style-type: none"> • Personal health, hygiene and sanitary facilities 	<ul style="list-style-type: none"> ○ Provision and location of facilities ○ Health status of workers ○ Personal cleanliness ○ Personal behaviour
<ul style="list-style-type: none"> • Equipment associated with growing and harvesting 	<ul style="list-style-type: none"> ○ Fit for purpose (function according to the use they are designed for) ○ Hygiene (cleaning and disinfection as appropriate) ○ Maintenance
Handling storage and transport	
<ul style="list-style-type: none"> • Prevention of cross-contamination 	<ul style="list-style-type: none"> ○ Effective measures should be taken to prevent cross-contamination from agricultural inputs, personnel and equipment
<ul style="list-style-type: none"> • Storage & transport 	<ul style="list-style-type: none"> ○ Storage facilities

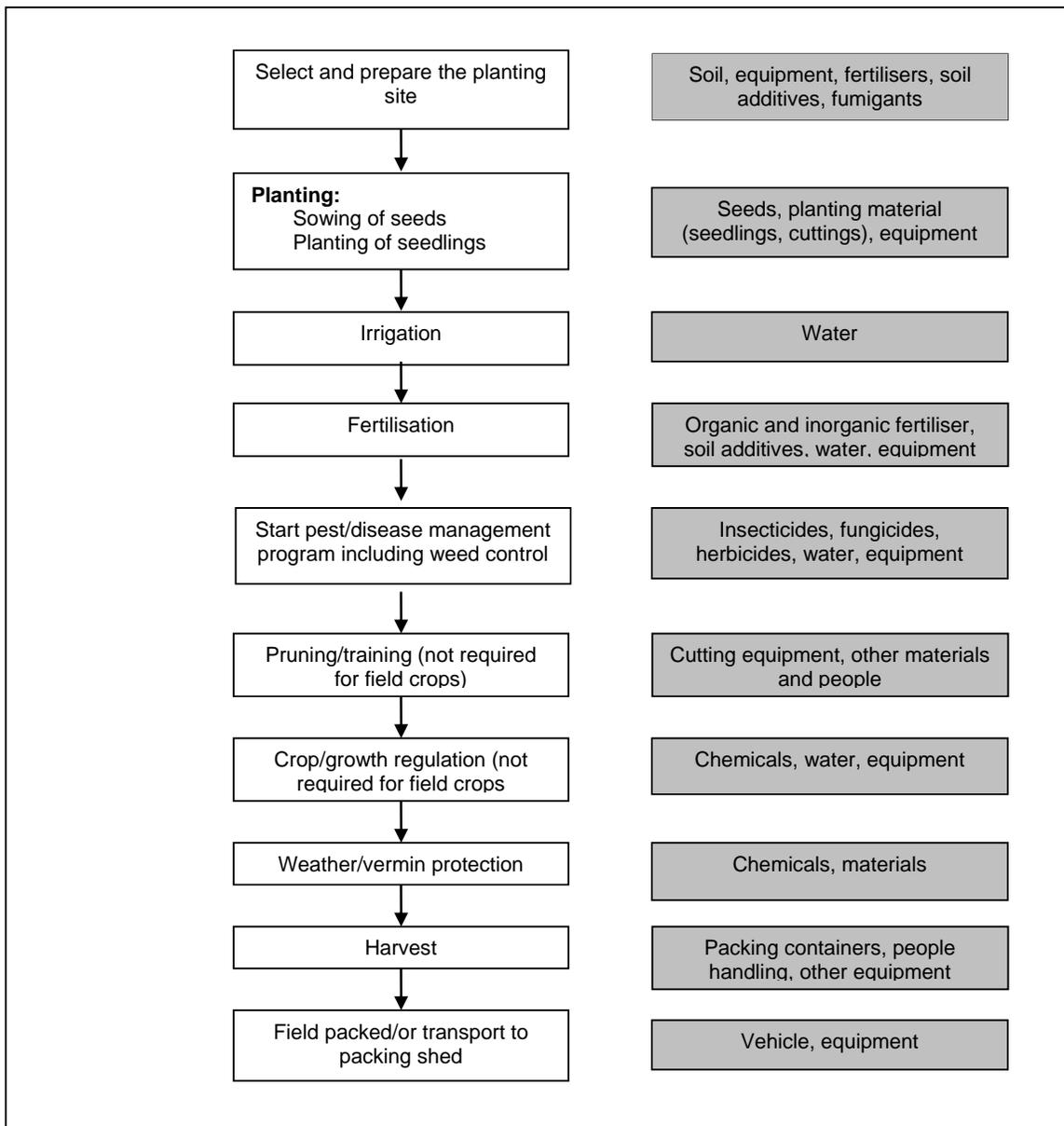
from the field to the packing facility	<ul style="list-style-type: none"> ○ Transport vehicles ○ System for segregation
Cleaning Maintenance and Sanitation	
<ul style="list-style-type: none"> ● Cleaning programs 	<ul style="list-style-type: none"> ○ Harvesting equipment and re-useable containers
<ul style="list-style-type: none"> ● Cleaning procedures and methods 	<ul style="list-style-type: none"> ○ Should include removal of debris from equipment surfaces, application of detergent solution, rinsing with water and (if appropriate) disinfection.
<ul style="list-style-type: none"> ● Pest control systems 	<ul style="list-style-type: none"> ○ According to the <i>General Principles of Food Hygiene</i>
<ul style="list-style-type: none"> ● Waste management 	<ul style="list-style-type: none"> ○ Provision for the storage and removal of waste
2. Packing Establishment: Design and Facilities	
<ul style="list-style-type: none"> ● Refer to <i>General Principles of Food Hygiene</i> 	
3. Control of Operation	
Control of Food Hazards	
<ul style="list-style-type: none"> ● Refer to General Principles of Food Hygiene 	
Key aspects of Hygiene Control Systems	
<ul style="list-style-type: none"> ● Time and temperature control 	<ul style="list-style-type: none"> ○ Refer to <i>General Principles of Food Hygiene</i>
<ul style="list-style-type: none"> ● Specific process steps 	<ul style="list-style-type: none"> ○ Post-harvest water use ○ Chemical treatments ○ Cooling of fresh fruits and vegetables ○ Cold storage
<ul style="list-style-type: none"> ● Microbiological and other specifications 	<ul style="list-style-type: none"> ○ Refer to the General principles of Food Hygiene
<ul style="list-style-type: none"> ● Microbial cross-contamination 	
<ul style="list-style-type: none"> ● Physical and chemical contamination 	
Incoming Material Requirements	
Packing	
Water Used in the Packing Establishment	
Management and Supervision	
<ul style="list-style-type: none"> ● Refer to the general Principles of Food Hygiene 	
Documentation and Records	
<ul style="list-style-type: none"> ● Where appropriate, records of production, processing and distribution should be kept long enough to facilitate a recall and food borne illness investigation, if required. 	
Recall Procedures	
<ul style="list-style-type: none"> ● General principles of Food Hygiene + 	<ul style="list-style-type: none"> ○ Growers and packers should have programmes to ensure effective lot identification ○ Growers information should be linked with packers' information
4. Packing Establishment: Maintenance and Sanitation	
Refer to General Principles of Food Hygiene	
5. Packing Establishment: Personal Hygiene	
Refer to General Principles of Food Hygiene	
6. Transportation	
Refer to General Principles of Food Hygiene	
7. Product Information and Consumer Awareness	
Refer to General Principles of Food Hygiene	
8. Training	
Awareness and Responsibilities	
<ul style="list-style-type: none"> ● Personnel associated with growing, harvesting should be aware of GAPs, good hygienic practices, their role and responsibilities and have necessary skills and knowledge. ● Personnel associated with packing should be aware of GMPs, good hygienic practices, their role as responsibilities and have necessary skills and knowledge. 	
Training Programmes	
<ul style="list-style-type: none"> ● Appropriate to the nature of the produce; techniques and inputs used; associated tasks, and nature and extent of further preparation or processing. 	

1. Flow-diagram of on-farm production activities and inputs for fruit production³



³ Diagram based on Department of Agriculture Fisheries and Forestry (DAFF) *Guidelines for on-farm food safety for fresh produce*

2. Flow-diagram of on-farm production activities and inputs for vegetable production⁴



⁴ Diagram based on Department of Agriculture Fisheries and Forestry (DAFF) *Guidelines for on-farm food safety for fresh produce*