FOOD STANDARDS
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Te Mana Kounga Kai – Ahitereiria me Aotearoa

SAFE HORTICULTURE AUSTRALIA

1st Edition, November, 2024

A guide to the Primary Production and Processing Standards for Horticulture

Chapter 4 of the Australian New Zealand Food Standards Code
(applies to Australia only)

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Chapter 4 of the *Australian New Zealand Food Standards Code* (applies to Australia only)

Standard 4.1.1 - Primary production and processing standards – preliminary provisions
Standard 4.2.6 - Production and processing standard for seed sprouts
Standard 4.2.7 - Primary production and processing standard for berries
Standard 4.2.8 - Primary production and processing standard for leafy vegetables
Standard 4.2.9 - Primary production and processing standard for melons

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Status and context of the document

This document relates to five of the hygiene (i.e. primary production/food safety) standards in chapter 4 of the *Australia New Zealand Food Standards Code* (the Code). These standards apply only in Australia. They are:
4.1.1 – Primary production and processing standards – preliminary provisions

4.2.6 – Production and processing standard for seed sprouts

4.2.7 – Primary production and processing standard for berries

4.2.8 – Primary production and processing standard for leafy vegetables

4.2.9 – Primary production and processing standard for melons

The information provided in this document is not legally binding.

This document was prepared by Food Standards Australia New Zealand (FSANZ) to assist government agencies responsible for enforcing the Code in Australia.

State and territory food agencies are primarily responsible for interpretation and enforcement of the Code in Australia. This is because the food standards that comprise the Code are applied in Australia by state and territory food laws. **It is the state and territory food laws that make failure to comply with Code requirements an offence.** At the Commonwealth level, the Australian Government Department of Agriculture, Fisheries and Forestry administers the Imported Food Control Act 1992 (Cth), which applies Chapters 1 and 2 food standards to imported food and the Export Control Act 2020 that applies Chapters 1 and 2 food standards to relevant food exports. These agencies work together through the Implementation Subcommittee for Food Regulation (ISFR) to ensure food laws are implemented and enforced consistently.

FSANZ co-developed this information with the ISFR Horticulture Implementation Working Group. FSANZ is not an enforcement agency and cannot provide definitive advice or guidance on food compliance issues.

This document will be reviewed and amended as necessary. Readers may contact the Food Safety team of FSANZ if they have feedback:
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Contents

Introduction

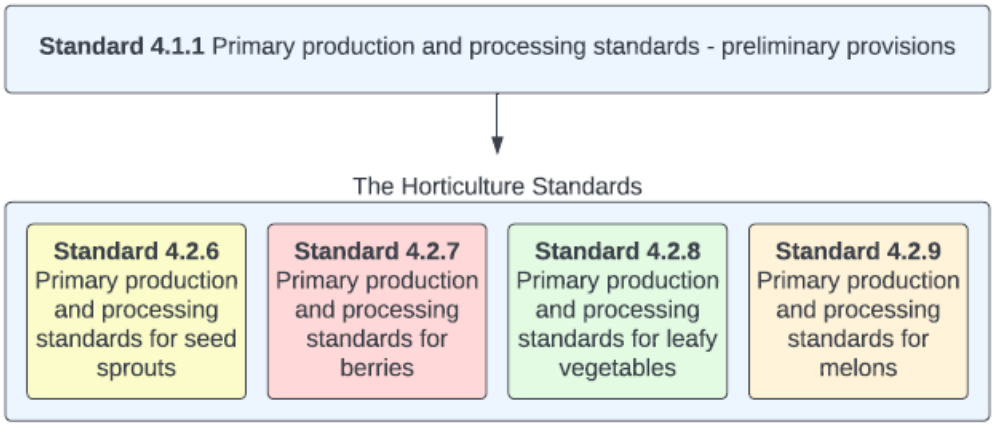
The horticulture standards are part of a broader suite of standards known as the primary production and processing (PPP) standards or ‘chapter 4’ of the Australia New Zealand Food Standards Code (the Code). These standards aim to strengthen food safety and traceability throughout the supply chain in Australia, from paddock to plate.

There are five PPP standards that apply to horticulture in Australia. These include four commodity-specific horticulture standards for the primary production and processing of seed sprouts, berries, leafy vegetables and melons, and the general requirements standard that applies to all chapter 4 standards:

- 4.2.6 - Production and processing standard for seed sprouts
- 4.2.7 - Primary production and processing standard for berries
- 4.2.8 - Primary production and processing standard for leafy vegetables
- 4.2.9 - Primary production and processing standard for melons
- 4.1.1 - Primary production and processing standards – preliminary provisions (applies to all standards in chapter 4).

The standards provide a risk-based, preventative approach to providing safe and suitable food. They are based on the principle that food safety is best ensured by implementing good agricultural practice, hygiene controls at each stage of production and processing, and effective traceability.

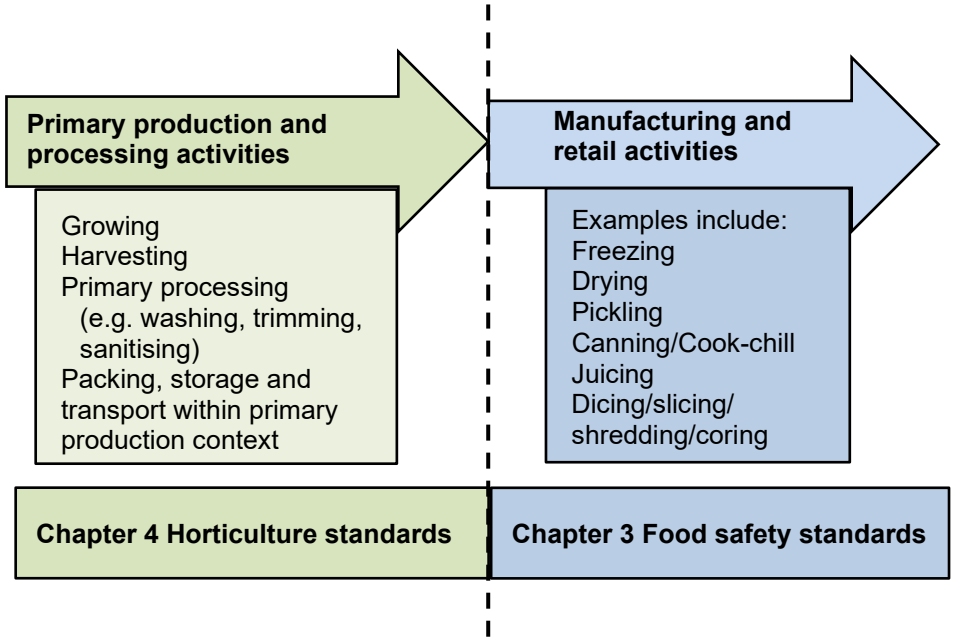
Standard 4.1.1 is an overarching standard for all the PPP standards in chapter 4 of the Code, including the horticulture standards. It includes definitions for key terms used in chapter 4. Standards 4.2.6 through to 4.2.9 contain fundamental food safety requirements for Australian businesses involved in primary production and processing of seed sprouts, berries, leafy vegetables and melons for human consumption.



Businesses that grow, harvest or process these commodities must have measures in place to control identified food safety hazards, and be able to trace their produce. A business is considered to be a ‘processor’ for the purpose of each standard, if it processes these commodities using any of the activities listed within the relevant standard. It is the responsibility of these businesses to comply with the requirements in the PPP standard.

The PPP standards do not cover manufacturing or retail activities – these activities are covered by the chapter 3 food safety standards. The intention is that, together, the standards in chapter 3 and chapter 4 effectively cover food safety through the entire supply chain.

Figure 1: Schematic representation of the scope for the four horticulture primary production and processing standards, shown in green.



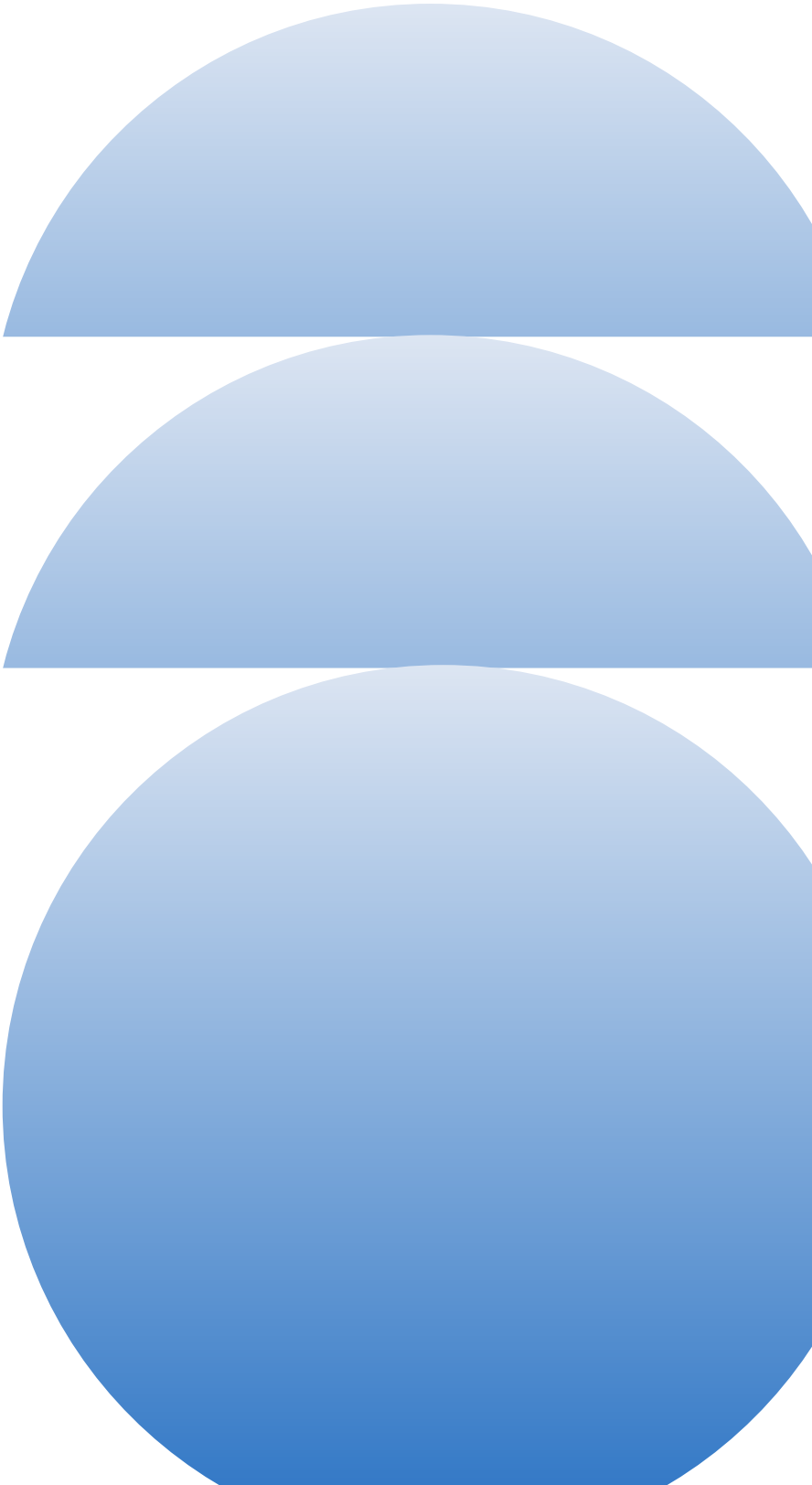
Safe Horticulture Australia provides information to assist with understanding the intent of the horticulture standards' requirements. The information is primarily intended for regulatory authorities but may also be useful for horticulture businesses.

Safe Horticulture Australia includes clarifications, examples and recommendations based on scientific evidence and industry best practice. It is not an interpretation of the Code and is not a legally binding document. The Code is enforced in all Australian jurisdictions through state and territory laws. Businesses needing information on complying with any of the standards should contact their local regulatory agency for advice.

Using this guide

- The text of each standard is included in **bold type** throughout the explanatory sections of the document for convenient reference. The authoritative versions of these standards are on the Australian Government Federal Register of Legislation, accessible from the FSANZ website.
- The intended outcome for each section or sub-section of the standards is set out in the lightly shaded box that precedes the explanation for that clause or section.
- Examples aim to highlight key principles and illustrate the intent of the requirements. However, they are examples only and the options provided are not exhaustive.

Standard 4.1.1 Primary Production and Processing Standards – Preliminary Provisions



Standard 4.1.1 Primary Production and Processing Standards – Preliminary Provisions

This standard is an overarching standard for chapter 4 of the Code. It sets out provisions that apply to all the primary production and processing (PPP) standards, including the horticulture standards 4.2.6, 4.2.7, 4.2.8 and 4.2.9.

Division 1 Preliminary

1 Interpretation

Standard 4.1.1 defines terms that are used in one or more of the PPP standards in chapter 4. The definitions given in the PPP standards apply to the interpretation of these standards, regardless of whether the words are defined in state and territory food legislation.

The definitions in chapter 3 of the Code also apply to the PPP standards, unless standard 4.1.1 advises specific terms have a different meaning when applied to chapter 4 standards.

For the definitions in chapter 3, some within standard 3.1.1 refer to the 'Act'. These references should be read as an 'application Act', which is defined to mean an Act or Ordinance of the Commonwealth, state or territory that applies the requirements of the Code. Examples are state and territory food acts and primary production acts.

Terms that are not defined in this standard or other standards in the Code, or by the food laws that apply standards in the Code, should be given their ordinary meaning. Section 1.1.1—4 of the Code also provides that the Code is to be interpreted in accordance with the *Acts Interpretation Act 1901* (Cth).

Definitions

authority means the State, Territory or Commonwealth agency or agencies having the legal authority to implement and enforce primary production and processing Standards.

This means the relevant agency or agencies in the state or territory that are responsible for regulating the application Act (e.g. a food Act or primary production Act) that gives effect to the chapter 4 standard/s.

This term is used in clause 5 of this standard in relation to food safety management statement requirements, and in standard 4.2.7 section 4 on notification requirements.

control measure means a measure that prevents, eliminates or reduces to an acceptable level, a food safety hazard.

Control measures are actions that manage food safety risks, to ensure safe food is produced. They include actions to prevent contamination of food with a food safety hazard, or eliminate a hazard from the food, or reduce the level of a hazard present in food to a level that means the food is safe. Examples of control measures include washing and sanitising, pest treatments, water monitoring and removal of waste.

This term is used in clause 4 of this standard in relation to general food safety management requirements.

food safety management statement has the meaning given by clause 5 of this Standard.

This term is defined in clause 5 of this standard and is one requirement of the general food safety management requirements in Division 2.

general food safety management requirements means the requirements in Division 2 of this Standard.

This term is defined in Division 2 of this standard and is used in standards 4.2.6, 4.2.8 and 4.2.9.

handling of food includes the producing (including growing, cultivation, picking, harvesting or catching), collecting, extracting, processing, manufacturing, storing, transporting, delivering, preparing, treating, preserving, packing, cooking, thawing, serving or displaying of food.

The definition refers to one or more of the activities listed. Although 'handling of food' is not used in the horticulture standards, some of the same terms within this definition occur in PPP standards. Refer to each standard for the specific activities included for that commodity, such as the application section of each standard which explains the scope of activities.

hazard means a biological, chemical or physical agent in, or condition of, food that has the potential to cause an adverse health effect in humans.

- Biological hazards include pathogenic bacteria, moulds and viruses and poisonous weeds.
- Chemical hazards include cleaning products, herbicides, pesticides and other agricultural or veterinary chemicals.
- Physical hazards include foreign matter such as glass, plastic, wood or metal fragments.

These hazards may cause harm to a person when, or following, eating the food. It is important for a business to identify all the hazards relevant to the activities of the business. Once identified, the business can put in place appropriate control measures to manage those hazards and ensure the food is safe for human consumption. The horticulture standards identify key areas or activities that must be considered.

Although 'hazard' is not specifically used in the horticulture standards, it is used in relation to the overarching food safety management requirements in clause 4 of this standard.

inputs includes any feed, litter, water (including recycled water), chemicals or other substances used in, or in connection with, the primary production or processing activity.

Inputs are things a business uses in primary production or processing activities to produce a product such as berries, sprouted seeds, leafy vegetables or melons. While the above definition provides examples, inputs explicitly identified in individual horticulture standards are water, soil, soil amendments, fertiliser, seeds, seedlings and cleaning and sanitising chemicals.

Identifying the inputs used by a business for each of its operations, is an important step in identifying where hazards may occur or come from.

This term is used in standard 4.2.6 section 7, standard 4.2.7 section 6, standard 4.2.8 section 6 and standard 4.2.9 section 6 in relation to inputs not making produce unacceptable. As 'inputs' is specifically defined in each horticulture standard, it is important to refer to the definition of 'inputs' in these standards to understand the scope of capture rather than rely on the more generic 'inputs' definition in Standard 4.1.1.

supply includes intra company transfer of produce.

The term 'supply' includes its ordinary meaning but also includes where a business may move the food from one part of their business to another.

An example of intra company transfer is where a business harvests melons and then transports them from the growing site to their packing facility, where the melons will be washed, graded and packed.

This term is used in standard 4.2.6 section 8 in relation to decontamination processes prior to sale or supply of seed sprouts. It is also used in standard 4.2.6 section 10, standard 4.2.7 section 10, and section 15 of standards 4.2.8 and 4.2.9 in relation to prohibiting sale or supply.

This term is also used in standard 3.1.1 and state and territory food and primary production Acts, in the definition of the term 'sell'.

verification means the application of methods, procedures, tests and other tools for evaluation to determine compliance with the relevant requirement.

Verification is a key requirement of a food safety management statement. Verification activities provide evidence that a control measure is in place and is effectively managing an identified food safety risk. Verification activities include internal audits, visual inspections, microbiological testing and other activities.

For example, a business's food safety management statement could identify the need to chill fresh produce to keep it safe and suitable for consumption. The business's documented procedure may be to put the produce into a cool room following packing and chill the food to between 1° and 5°C within two hours. Verification may involve taking the temperature of several foods that have been in the cool room for two hours, to ensure they have reached the right temperature. Ongoing monitoring may involve recording the daily temperature of the cool room in a log book, to prove the food is being stored at appropriate temperatures.

The term is used in clause 4 (requirement to 'verify') and clause 5 of standard 4.1.1 in relation to food safety management statements.

2 Application

2(1) Unless the contrary intention appears, this Standard applies to Primary Production and Processing Standards in Chapter 4 of this Code.

The requirements in standard 4.1.1 apply to all of the PPP standards, unless a requirement in one of those standards specifically requires something different.

2(2) Standards in Chapter 4 of this Code do not apply in New Zealand.

The PPP standards apply only to businesses in Australia.

3 When an animal or food is unacceptable

3(1) An animal is unacceptable if –

(a) food derived from that animal would be unsafe;
(b) food derived from that animal would be unsuitable; or
(c) the animal is in a condition which a reasonable person would regard as making food derived from that animal unfit for human consumption.

3(2) A food is unacceptable if –

(a) it is unsafe;
(b) it is unsuitable; or
(c) it is in a condition, or contains a substance or organism, which a reasonable person would regard as making that food unfit for human consumption.

3(3) To avoid doubt, the standards in this Chapter of the Code may include other matters which, for the purposes of particular standards, make food or animals unacceptable.

The definition of 'unacceptable' incorporates 'unsafe' and 'unsuitable' into a single term. It is intended to be consistent with the use of 'unsafe' and 'unsuitable' in state and territory Acts.

In general terms, food is unsafe if it would cause physical harm to a person, provided it was consumed as intended. Suitability of a product includes characteristics that make it unfit to eat (for example heavily bruised or perished produce) even though it may not cause harm. The definition also includes animals or food in a condition a reasonable person would consider inedible.

Sub-clause (3) also allows for individual PPP standards to include other matters that may make a food unacceptable. In these cases, those additions only apply to that particular standard.

'Unacceptable' is used in multiple sections throughout the horticulture standards, often with reference to ensuring produce is not made unacceptable. It is also used in sections on prohibition of sale or supply of unacceptable produce.

Division 2 General food safety management requirements

4 The general food safety management requirements

The intended outcome is that the business has and implements a documented food safety management system that effectively controls identified hazards and results in the business providing safe and suitable food.

4(1) Where a standard in this Chapter of the Code provides that a person or business is required to comply with the general food safety management requirements, that person or business must –

(a) have a food safety management statement; and

(b) operate according to its food safety management statement.

Where a PPP standard requires a business to comply with the general food safety management requirements, the business must have a documented food safety management statement and follow all the procedures contained in that statement. Further details on the statement are provided in subsequent sections.

The term 'general food safety management requirements' is used in standard 4.2.6 section 5 and in section 4 of standards 4.2.8 and 4.2.9.

4(2) A person or business required to comply with the food safety management requirements must also –

(a) systematically examine its operations to identify potential hazards and implement control measures to address those hazards; and

(b) have evidence to show that a systematic examination has been undertaken and that control measures for those identified hazards have been implemented; and

(c) verify the effectiveness of the control measures.

When developing their food safety management statement, the business must have completed three activities:

i. Examine the business operations to consider hazards that could result in contamination of the food and develop and implement actions that will manage (prevent, eliminate or reduce) those hazards to maintain food safety.

ii. Have evidence the business has examined their operations and put relevant actions in place to manage food safety. Examples of evidence could be a diagram showing each step of the production or processing activities, with a corresponding hazard analysis table that identifies the hazards that could make the food unsafe or unsuitable. Evidence of control actions taken to manage those hazards could be in the form of records that actions (e.g. pest treatments, equipment sanitation) were completed.

iii. Verify the control actions that have been implemented are actually managing the hazards and maintaining food safety. Examples of verification could be periodic testing of the product to verify absence of a pathogen or that the product is within the specifications set by the business. Periodic review of records may also verify that staff are following documented procedures correctly. Regular review of activity on adjacent lands (e.g. if livestock have been introduced) will verify the suitability of the business's land use.

5 Food safety management statements

The intended outcome is a business's food safety management statement is approved, verified on an ongoing basis, and includes details on how the business will comply with the requirements in this standard and any other relevant PPP standard.

A food safety management statement is a statement which –

(a) has been approved or recognised by the authority; and

(b) is subject to ongoing verification activities by the business or person; and

(c) if required by the authority, is also subject to ongoing verification activities by the relevant authority; and

(d) sets out how the obligations imposed by this Chapter of the Code are to be, or are being, complied with.

A food safety management statement is a document that:

- summarises the business' activities, identifies food safety risks and how they manage them
- is approved (or recognised) by the relevant regulatory authority
- is checked and updated by the business and their staff
- may be verified by the relevant authority.

'Verification' means the business checks they are actually doing what they say they are doing to keep food safe. It may involve, for example, checking documented cleaning and sanitation methods are being followed correctly, taking water samples to test for harmful microorganisms, or checking cool room temperature records. Verification should be done by the business and/or the relevant authority.

Templates for food safety management statements are often provided by the jurisdictional authority to assist businesses. See the list of contact details on the FSANZ website or the Resources and references chapter at the end of this guide.

Editorial note:
Note that businesses with existing approved food safety arrangements (for example, HACCP-based food safety programs, Standard 3.2.1 of this Code, AQIS [now Department of Agriculture, Fisheries and Forestry] **approved arrangements) should be considered to meet the outcomes of a food safety management statement. However, the relevant authority will need to verify that the existing food safety arrangement meets the requirements of this Division.**

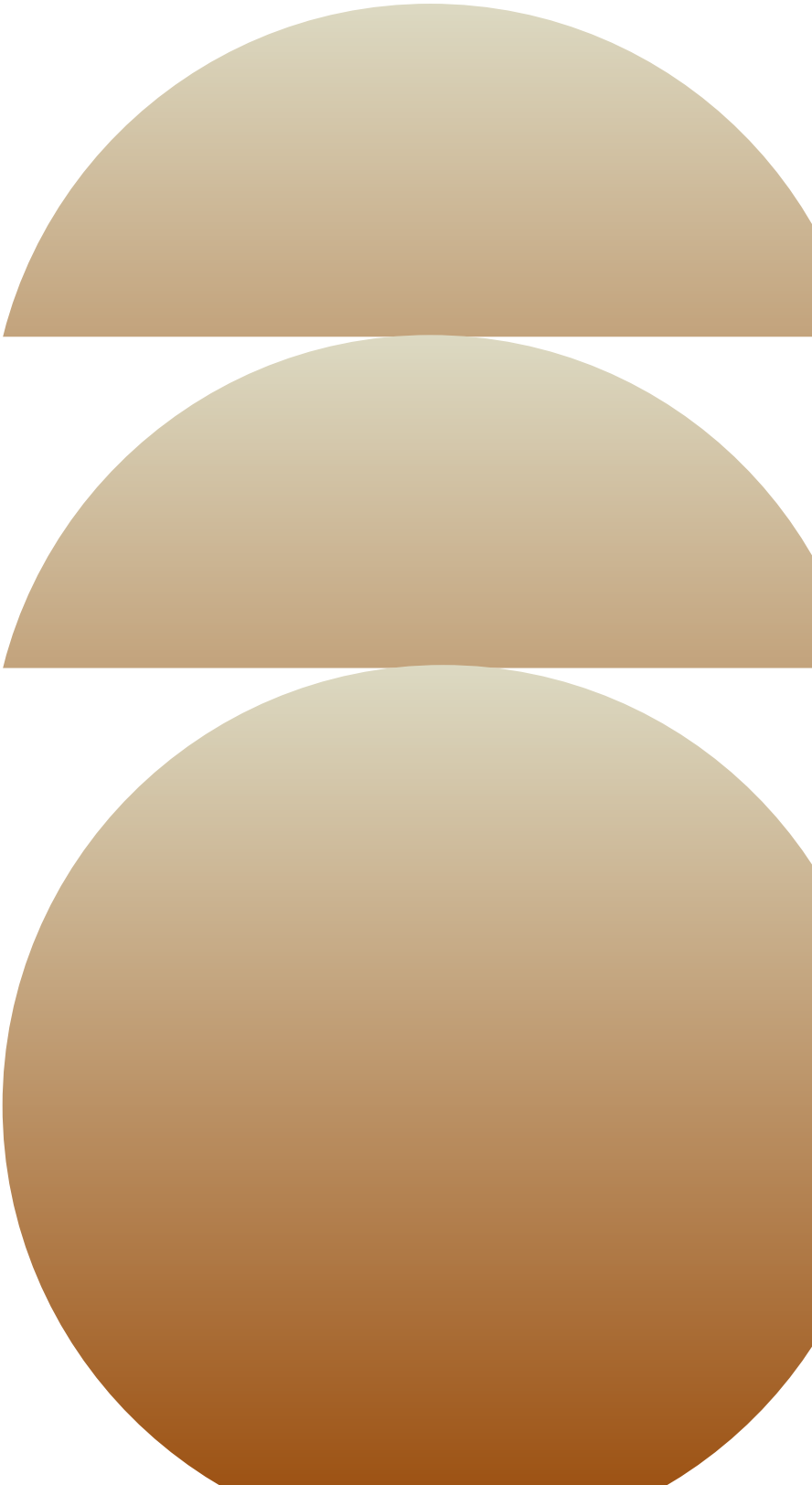
Some of the standards in this Chapter of the Code contain definitions of 'food safety management statement'. Those definitions will be removed when FSANZ reviews those standards.

Editorial notes in the Code are not formal legal requirements, but have been added to assist with understanding the requirements. This note acknowledges some businesses may already have documented food safety schemes or programs, which may fulfil this standard's requirements for a food safety management statement.

If a horticulture business is already on a third party or industry food safety scheme (e.g. a HACCP-based food safety system recognised by the Global Food Safety Initiative), they may not need to have a separate food safety management statement, as long as their arrangements are recognised by the regulatory authority.

The note also advises some individual PPP standards have their own definitions of 'food safety management statement'. These standards were implemented before this version of standard 4.1.1, which contains an overarching clause on general food safety management requirements. The earlier definitions will be removed as FSANZ reviews those standards. However, this is not relevant to the horticulture standards, as they were all developed after this version of standard 4.1.1.

Standard 4.2.6 Production and Processing Standard for Seed Sprouts



Standard 4.2.6 – Production and Processing Standard for Seed Sprouts

Division 1 Preliminary

1 Interpretation

1(1) Unless the contrary intention appears, and subject to Standard 4.1.1, the definitions in Chapter 3 of this Code apply in this Standard.

This section states that definitions used in chapter 3 of the Code apply to standard 4.2.6, unless standard 4.1.1 advises a different meaning applies.

Some of the definitions in chapter 3 (in standard 3.1.1) contain a reference to the 'Act'. These should be read as a reference to an 'application Act', which means an Act or Ordinance of the Commonwealth, state or territory that applies the requirements of the Code. Examples are state and territory food acts and primary production acts.

In addition, standard 4.2.6 defines some terms that are used only in this standard; listed in the next section. The definitions given here apply to the interpretation of this standard, regardless of whether the words are defined in state and territory legislation.

Terms that are not specifically defined in the Code or by state and territory food/primary production laws should be given their ordinary meaning. Section 1.1.1—4 of the Code also provides that the Code is to be interpreted in accordance with the *Acts Interpretation Act 1901* (Cth).

1(2) In this Standard –

decontamination means a process using a controlled environment to reduce the level of pathogenic organisms that may be present in seed sprouts.

Decontamination of seeds before germinating them into sprouts is a critical control action in producing safe seed sprouts. It can be difficult to obtain seeds that are guaranteed free of pathogenic microorganisms – seeds are not sterile and it is very challenging to make them pathogen free. The decontamination process treats seeds to reduce and/or eliminate pathogens; key hazards in seed sprouts are pathogens such as *Salmonella,* shiga toxin-producing *E. coli* and others.

Generally, the process involves an initial rinse of seeds (to remove dirt and increase the efficiency of the decontamination treatment), treatment with a disinfectant, followed by a rinse to reduce disinfectant to an acceptable level. The details of the process may differ for different seeds; for example in the chemical type, concentration and exposure time. Guidelines on appropriate decontamination processes are available from government websites – see the Resources and references chapter.

This term is used in clauses 4 and 8 of this standard.

seed means seed for use in the production of seed sprouts.

Seeds used to make seed sprouts include brassicas, bulbs, grass, herbs and spices, nuts, legumes and pulses, oilseeds, root vegetables and others. Mung beans, alfalfa (lucerne) and snow pea are the main varieties of seeds used for sprout production in Australia, but the definition covers any seed used for seed sprout production.

seed sprouts means sprouted seeds or sprouted beans for human consumption that include all or part of the seed.

This definition distinguishes seed sprouts from microgreens and other plant shoots. While seed sprouts contain some or all of the seed, microgreens and other shoots are harvested such that the roots and seed are not part of the food for consumption. This standard does not apply to microgreens or other shoots that do not contain any part of the seed.

sprout processor has the meaning given by clause 4.

A business that does one or more of the activities listed under clause 4 below is a 'sprout processor' for this standard, and subject to the requirements that apply to sprout processors.

Underlined words are defined in this standard or standard 4.1.1.

2 Application to retail sale

This Standard does not apply to retail sale activities of a sprout processor.

If a sprout processor sells seed sprouts to the public, those retail sales activities do not come under this standard. Requirements related to retail sale of food are contained in chapter 3 of the Code.

Sprout processors who sell direct to the public will need to comply with this standard for the listed sprout processor activities, and then also comply with relevant requirements in chapter 3 for their retail sales activities.

3 Application of food safety standards

Standards 3.2.2 and 3.2.3 apply to a sprout processor.

> The intended outcome is that sprout processors keep seeds and sprouts safe throughout production, by complying with food safety requirements listed in standards 3.2.2 and 3.2.3. These standards cover food handling and temperature controls; health and hygiene; cleaning, sanitising and maintenance; and premises and equipment.

A sprout processor must comply with standards 3.2.2 and 3.2.3 in chapter 3 of the Code. Standard 3.2.2 specifies food handling controls related to the receipt, storage, processing, display, packaging, transportation, 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 food premises and equipment. Standard 3.2.3 contains requirements for the design and construction of food premises, fixtures, fittings, equipment and food transport vehicles.

This clause is intended to directly refer to the requirements in standards 3.2.2 and 3.2.3, rather than re-listing them all within standard 4.2.6.

FSANZ's Safe Food Australia guide book provides more detail on these chapter 3 standards.

Division 2 Processing of seed sprouts

4 Meaning of sprout processor

This section identifies the businesses that are considered to be sprout processors and need to meet requirements in this standard.

A sprout processor means a business, enterprise or activity that involves any or all of the following for producing seed sprouts –

(a) decontamination of seed or seed sprouts;
(b) soaking of seed;
(c) germination or growth of seed;
(d) harvest of seed sprouts; or
(e) washing, drying or packing of seed sprouts.

A business that does one or more of these activities is a sprout processor for the purposes of this standard, and must comply with all the relevant requirements for these activities.

5 General food safety management requirements

Seed sprouts can become contaminated with pathogenic microorganisms, chemicals and physical hazards during production and processing, unless proper controls and practices are applied.

The intended outcome is that sprout processors have, and implement, a documented and approved food safety management statement, to effectively manage their food safety risks with seed sprouts and verify its implementation is effective.

A sprout processor must comply with the general food safety management requirements.

A sprout processor must manage the contamination risks of their product throughout their operations. A documented and approved food safety system is required under this clause, to provide assurances that food safety is being managed.

The general food safety management requirements are contained in Division 2 of standard 4.1.1 (see this guide's chapter on standard 4.1.1). A business is required to have a food safety management statement and operate according to that statement. The statement must identify potential hazards and have verified control measures for each of those hazards. The business must have evidence that appropriate control measures are followed and verified as effective.

The business's food safety management statement must have been approved or recognised by the relevant authority (usually a government agency or department responsible for food or

primary production). It is subject to ongoing verification activities by the business and, if required, by the authority. The authority will require information from the business, such as business name, address, location of growing sites, and details of the activities the business does. Additional information may also be required.

A sprout processor must identify and address potential hazards related to seed receival, germination and all processing steps (including packing, storage and transport). 'Hazard' is defined in standard 4.1.1.

For seed sprouts, potential hazards include:

- Microbial hazards identified[1] as greatest concern are shiga toxin-producing *Escherichia coli* (STEC) and non-typhoidal *Salmonella* spp. Other microbial hazards include *Cryptosporidium*, *Giardia*, *Yersinia*, *Bacillus cereus*, *Clostridium* and *Listeria monocytogenes*.
- Chemical hazards may include pesticides, spilt fuels and oils, cleaning chemicals and chemicals used to treat water or sanitise seeds.
- Physical hazards include plastic, glass or metal fragments from damaged or broken equipment.

A business operating under an accredited food safety scheme (e.g. recognised by the Global Food Safety Initiative) may meet the outcomes of the food safety management requirements of this clause. The relevant authority may verify that the measures implemented meet the requirements of the standard.

6 Receiving seed

The intended outcome is that a sprout processor only uses seed that is safe and suitable for sprouting. The business must know what practices were applied by the seed supplier, and have some assurance the seed is acceptable for use in producing seed sprouts.

A sprout processor must not produce or process seed sprouts if the processor ought reasonably know or suspect that the seed is of a nature or in a condition that would make the seed sprouts unacceptable.

Seed produced for sprout production can become contaminated during growth, harvest and post-harvest steps (e.g. from animal faeces in farm soil and water, or dirty equipment). The main food safety concerns are pathogenic microorganisms.

Although seeds are treated with a decontamination step before germinating sprouts, this treatment may not eliminate all pathogens, especially if the seed is heavily contaminated.

If contaminated seed is then germinated, the warm moist conditions used for sprout germination and growth will allow rapid growth of any pathogens present. So, it is important for a sprout processor to start with safe and suitable seed.

A sprout processor should take steps to be sure the seed they use for sprouting has the lowest level of contamination that can be reasonably achieved. These steps could include:

- receiving evidence the seed supplier is operating under a food safety scheme
- receiving laboratory analysis results from the seed supplier (e.g. showing absence of *Salmonella* spp and STEC)

1. FSANZ risk assessment for seed sprout primary production and processing (Proposal P1004)

- submitting a sample of received seed to a laboratory for analysis, to have some assurance the seed is safe for sprouting.

It is good practice to keep a record of suppliers of seed and seed batches (and other inputs), for example from supplier agreements or invoices. This information will enable the business to know where seed has come from if there is a problem, and will also assist with traceability requirements (see clause 9).

'Unacceptable' is defined in standard 4.1.1 clause 3 and includes food that is unsafe or unsuitable.

7 Inputs

Inputs can be a source of contamination, with potential to introduce pathogenic microorganisms, chemicals or physical contaminants into the seed sprouts.

The intended outcome is that inputs the business uses to produce seed sprouts do not contaminate the sprouts.

A sprout processor must take all reasonable measures to ensure inputs do not make the seed sprouts unacceptable.

Inputs used to produce seed sprouts include seed, water, growth media, chemicals, containers and other equipment. If not properly managed, these inputs can be a source of contamination by harmful microorganisms, chemicals or physical hazards.

Sprout processors must do what they reasonably can to make sure all the inputs they use do not contaminate the seed sprouts and make them unacceptable to eat.

Best practice:
Examples of measures a sprout processor could take to reduce the risk of inputs contaminating their produce include:

- sourcing seeds from a reputable supplier
- testing and monitoring water quality and safety (including the reused/recycled water if used by the business)
- using clean and sanitary equipment
- keeping seeds, sprouts and growing media at appropriate temperatures to minimise risks of bacterial growth.

'Inputs' is broadly defined in standard 4.1.1 clause 1. 'Unacceptable' is defined in standard 4.1.1 clause 3 and includes food that is unsafe or unsuitable.

8 Decontamination

Decontamination processes must be done correctly to reduce or eliminate harmful microorganisms on seed sprouts.

The intended outcome is that seed sprouts have been effectively decontaminated, so they are acceptable to eat.

A sprout processor must implement effective decontamination processes prior to sale or supply of seed sprouts.

Decontamination processes are critical to making sure sprouts will be safe and suitable to eat. This is because the final product is not usually treated (e.g. with a heat treatment) before sale to reduce or eliminate pathogens that may be present. Seed sprouts may also be eaten raw, meaning consumers could become ill if pathogens are present.

Decontamination activities could include:

- disinfecting seeds using an established method
- using correct chemicals and following manufacturer's instructions
- using safe water (e.g. for diluting chemicals and rinsing seeds)
- implementing a cleaning, sanitation and maintenance schedule for equipment and facilities
- monitoring the efficacy of decontamination activities (see below)
- maintaining a record of decontamination procedures.

Recommended seed decontamination procedures (e.g. chemical type, concentration and time) vary depending on the type of seed and the business's operations. The sprout processor must determine the process appropriate to their business.

The business should have an appropriate monitoring procedure to be sure their decontamination processes actually result in safe and suitable sprouts. An example is provided in the box below.

'Decontamination' is defined in clause 1.

Example	**Demonstrating an effective decontamination procedure** A mung bean sprout processor follows a decontamination procedure recommended and approved by their relevant authority. The procedure includes a monitoring procedure that regularly tests spent irrigation water (that has been used for growing the sprouts) for *Salmonella* spp. The business collects a water sample once every 10 batches and gets it tested by a laboratory. The business also send samples of final sprout product at a set frequency (which will depend upon the businesses circumstances but could be weekly or every five batches) to be tested for *E.coli*. These two monitoring procedures inform the business whether their decontamination processes are working properly. If any tests came back positive, the business would examine its processes and take corrective actions (e.g. do a thorough clean and sanitisation, retrain staff).

9 Traceability

Being able to quickly identify unsafe or unsuitable food and remove it from sale as soon as possible is important in protecting consumers from harm.

The intended outcome is that the business can readily identify where their seed or seed sprouts have come from, and gone to, so any unsafe or unsuitable product can be removed from sale as quickly as possible.

A sprout processor must have a system to identify –

(a) from whom seed or seed sprouts were received;
(b) to whom seed or seed sprouts were supplied.

The business must be able to trace their seed or seed sprouts at least one step forward and one step back in the supply chain – that is, who and where they received seed from; as well as who and where they supplied seed sprouts to. This information is important in enabling sprouts to be removed promptly from the food supply chain if there is a food safety problem that could harm consumers. It also helps with investigating the cause of the issue. Prompt action reduces the risk of consumers getting ill, as well as costs to implicated businesses.

The more detailed information a business has on its suppliers and customers, the better it will be able to respond to an incident. For instance, if seed is received from multiple sources, knowing the seed supplier for each batch of sprouts can assist in limiting a recall to only the affected batch/es of seed sprouts. Further, if a seed supplier has multiple farm sites, the sprout processor may request the seed supplier can confirm traceback to farm site. Having an effective through chain traceability system is an important food safety tool.

Best practice:
A strong traceability system includes:

- procedures for identifying producers, suppliers, customers and products
- contact details (name, address, phone, email) of suppliers and a description of products or inputs they each supply
- customers' contact details and a description of the product supplied to them
- dates of transaction or delivery
- batch numbers or lot identifications (or other markings)
- quantities of product supplied or received
- any other production records relevant to the business.

10 Sale or supply

The intended outcome is that businesses do not sell or supply seed sprouts if they know or suspect they are unacceptable to eat.

A sprout processor must not sell or supply seed sprouts for human consumption if the sprout processor ought reasonably know or reasonably suspect that the seed sprouts are unacceptable.

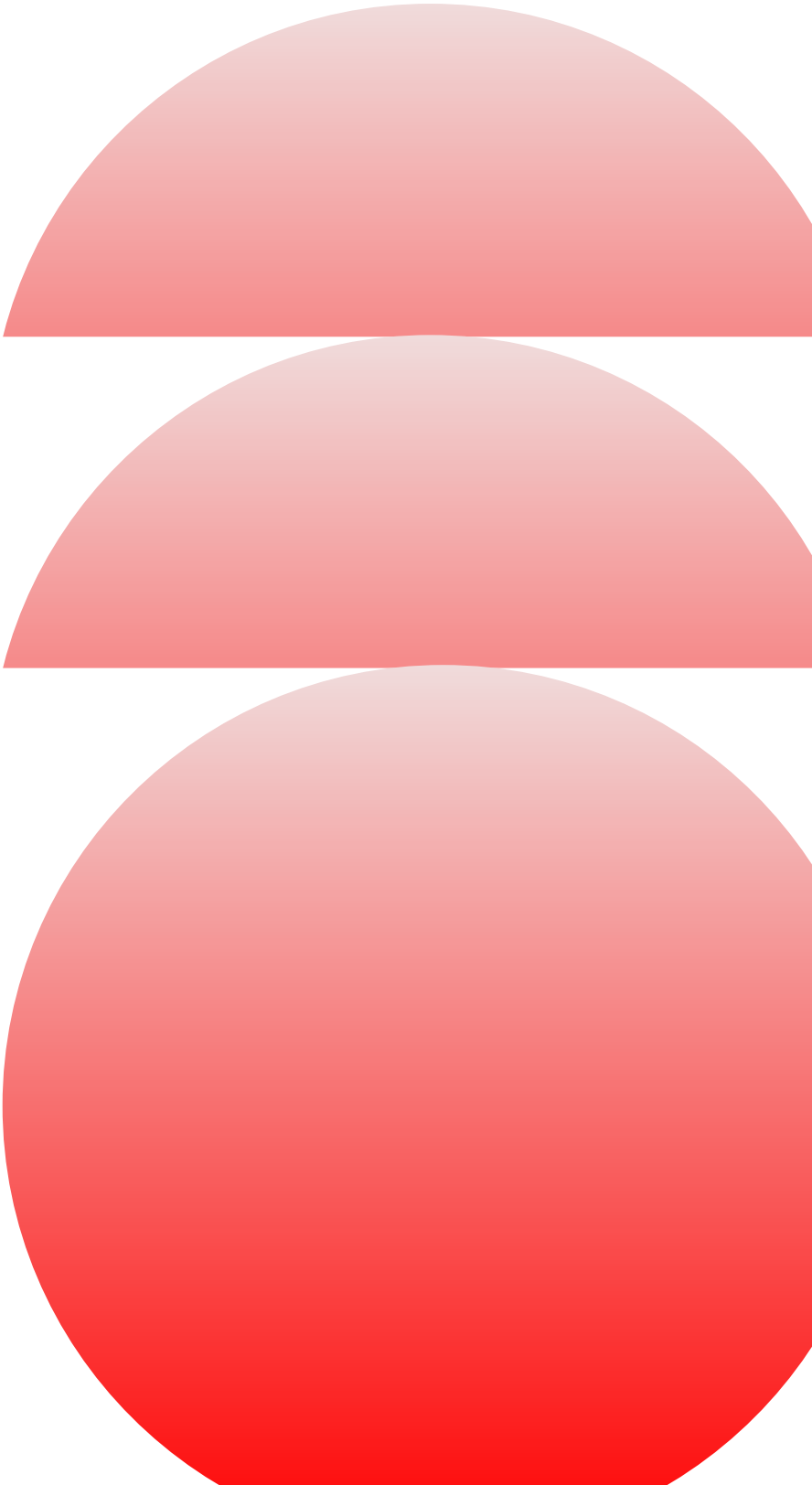
It is the sprout processor's responsibility to only sell or supply seed sprouts that are acceptable to eat.

Seed sprouts need appropriate controls to manage safety and suitability, from initial receipt through to final product. A sprout processor needs to consider all stages of its operations including seed, inputs, storage, cooling, packaging and transport. By actively monitoring its procedures, the business can confirm controls are working properly, and be reasonably sure the seed sprouts they sell or supply are acceptable. If the business knows or suspects the seed sprouts are unacceptable, they must not be sold.

‘Unacceptable’ includes food that is unsafe or unsuitable, as defined in clause 3 of standard 4.1.1. Examples of seed sprouts considered unacceptable include sprouts that:

- are contaminated with STEC, *Salmonella* spp or *Listeria monocytogenes*
- are contaminated with cleaning or disinfection chemicals
- contain dead insects or glass shards.

Standard 4.2.7 Primary Production and Processing Standard for Berries



Standard 4.2.7 – Primary Production and Processing Standard for Berries

Division 1 Preliminary

4.2.7—1 Name

This Standard is Australia New Zealand Food Standards Code – Standard 4.2.7 – Primary Production and Processing Standard for Berries.

This standard covers the primary production and processing of berries. The standard applies to fresh berries only, and for primary production and primary processing activities, as defined in section 4.2.7—2.

4.2.7—2 Definitions

In this Standard:

This section defines terms that are used only in Standard 4.2.7. These definitions apply to the interpretation of this standard, regardless of whether the words are defined in state and territory legislation.

In addition, the definitions in chapter 3 of the Code apply in relation to food safety requirements, unless standard 4.1.1 advises certain terms have a different meaning when applied to chapter 4 standards.

Some of the definitions in chapter 3 (in standard 3.1.1) contain a reference to the 'Act'. These should be read as a reference to an 'application Act', which means an Act or Ordinance of the Commonwealth, state or territory that applies the requirements of the Code. Examples are state and territory food acts and primary production acts.

Terms that are not defined in this standard or by other standards in the Code, or by the laws that apply standards in the Code should be given their ordinary meaning. Section 1.1.1–4 of the Code also provides that the Code is to be interpreted in accordance with the *Acts Interpretation Act 1901* (Cth).

Underlined words are defined in this standard or standard 4.1.1.

berries means fresh berries; and includes strawberries, blueberries, and berries from the genus *Rubus*.

The standard only applies to the primary production and processing of fresh berries. The list of berries is not an exhaustive list, but rather highlights the main types of berries grown in Australia. The standard is designed to manage food safety risks of fresh berries, which typically receive no further treatment (such as cooking) to reduce or eliminate pathogens before consumption.

growing site means any site used to grow berries; and includes an open, partially enclosed or enclosed planting area.

The definition clarifies 'growing site' is to be interpreted broadly, as any area, land or structure used to grow berries. It includes open fields, plastic tunnel houses, glass houses, hydroponic facilities or other areas used for growing berries.

harvest means all activities related to the collection and removal of berries from a growing site; and includes picking, cutting, field packing (including packaging for retail sale), and transport from the growing site to the next step in the supply chain.

'Harvest' means all activities associated with collecting and moving berries from a growing site. It includes the activities listed, but this is not an exhaustive list. The definition covers packing of berries on the growing site done as part of the harvest collection, whether this is packing for subsequent processing or retail-ready packaging such as punnets.

The definition also covers transport from the growing site to the next step in the supply chain, whether that is on the same property or elsewhere. This transport is in the context of activities of the primary horticulture producer (who's activities involve 'harvesting of berries', as below). It is not intended to cover transport businesses that would be usually considered as food businesses.

premises and equipment means equipment, infrastructure, structures and vehicles that:

a. **Are used by a primary horticulture producer or by a primary horticulture processor; and**
b. **Have direct or indirect contact with berries.**

The definition intends to include all equipment, infrastructure, growing facilities (e.g. greenhouses), sheds, packhouses and other structures and vehicles that are used for the growing, harvesting, handling, storage and transport of berries. 'Premises' also includes related land such as the growing site and surrounding areas.

Examples of equipment include irrigation pipes, cutting knives, conveyor belts, machinery for washing or sorting produce, tubs, punnets, bins and boxes.

Premises and equipment includes things in direct contact with berries (e.g. knives, packaging) as well as things that may not directly contact the fruit (e.g. irrigation pipes). Any of these things can be a potential source of contamination from harmful bacteria, chemicals and physical hazards (e.g. glass or metal fragments).

primary horticulture producer means a business, enterprise or activity that involves the growing and/or harvesting of berries.

A business that grows and/or harvests berries is considered to be a primary horticulture producer for the purposes of this standard.

primary horticulture processor means a business, enterprise or activity that involves one or more of the following activities in relation to berries that have been harvested:

a. **washing;**
b. **trimming;**
c. **sorting;**
d. **sanitising;**
e. **storing;**
f. **combining harvested berries;**

g. **packing; and**
h. **transporting between primary processing premises.**

A business is considered a primary horticulture processor for the purposes of this standard if they do any of the activities listed with (freshly) harvested berries. The definition applies regardless of the quantity of berries involved or how often they are processed by the business.

The definition is intended to clarify the scope of the standard includes businesses that handle fresh berries early in the supply chain, with minimal processing. It is not intended to include food processing businesses operating further down the supply chain that may be doing some of the listed activities – for example, a manufacturer or food service business that washes or stores berries prior to further processing or service would not be included. See also Application (4.2.7—3).

'Trimming' refers to the minimal cutting for removal of unwanted material, for example removing stalks. 'Combining harvested berries' refers to co-mingling batches of berries, and not to blending (for example with a mechanical blender) to produce berry pulp or juice. 'Packing' refers to packing or packaging done as an early chain step – for example, placing berries in a punnet container in a packhouse, and not packaging highly processed food such as berry jam.

relevant activity means:

a. **in relation to a primary horticulture producer, the growing and/or harvesting of berries; and**
b. **in relation to a primary horticulture processor, any of the following:**
   i. **washing harvested berries;**
   ii. **trimming harvested berries;**
   iii. **sorting harvested berries;**
   iv. **sanitising harvested berries;**
   v. **storing harvested berries;**
   vi. **combining harvested berries;**
   vii. **packing harvested berries; and**
   viii. **transporting harvested berries between primary processing premises.**

This definition lists the activities that relate to requirements for businesses to notify authorities and ensure workers have adequate skills and knowledge. See sections 4.2.7—4 and 4.2.7—8 for details on these requirements.

'Trimming', 'combining' and 'packing' are further described under the definition of primary horticulture processor (above).

4.2.7—3 Application

This section identifies which businesses the standard applies to, and what activities are excluded.

1. **This Standard applies to primary horticulture producers and to primary horticulture processors in Australia.**
2. **This Standard does not apply to the retail sale of berries.**
3. **This Standard does not apply to manufacturing of harvested berries which includes the cooking, freezing, drying, preserving, blending or juicing of harvested berries or the addition of other foods to harvested berries.**

The standard only applies to businesses producing and processing fresh berries in Australia. In New Zealand, alternate legislation applies.

The standard does not cover retail sale of berries, such as farm gate sales or 'pick-your-own' sales. Retail sale of food is covered by chapter 3 of the Code, so businesses involved in retail sale activities are 'food businesses' subject to requirements related to those activities. This is also the case for businesses that manufacture or further process harvested berries, such as freezing, juicing or any of the activities listed in 4.2.7—3 sub-section 3. These businesses must comply with the requirements for food businesses in chapter 3, particularly standards 3.2.2 and 3.2.3 (and 3.2.2A if applicable).

'Blending' in sub-section 3 refers to blitzing or pureeing berries, such as with a mechanical blender device. This is distinct from 'combining' in the listed activities of a primary processor (see explanation above).

Where a business does the activities listed for a primary horticulture producer and/or a primary horticulture processor (see definitions above) and then also sells to the public (retail sales), the requirements of standard 4.2.7 will apply to the activities related to primary production and processing activities, and chapter 3 requirements will apply to the retail sales activities. An example case study is provided below.

Example	**Example showing delineation between primary processing and further processing/manufacturing steps** A strawberry producer grows, harvests and packs strawberries for sale in their own retail outlet. The business also: • makes jam out of the strawberries grown on-site • has an on-site café • runs 'pick your own fruit' days for the public. The growing, harvesting and packing are covered by the PPP Standard 4.2.7. The jam manufacture, retail outlet and café are food business activities covered by Chapter 3 standards (Standards 3.2.2 and 3.2.3 and, if appropriate, Standard 3.2.2A). The 'pick your own fruit' is a retail activity also not within scope of the PPP standard.

4.2.7—4 Notification

It is important for regulators to know of businesses that are operating within an industry. This enables regulators to provide relevant information, education and regulation for businesses.

The intended outcome is that the proprietor of the business notifies the appropriate regulatory agency of their contact details, the nature of the business and the location of all their activities, and that the agency is notified of any proposed changes to that information.

1. **A primary horticulture producer and a primary horticulture processor must provide the specified information to the relevant authority before engaging in a relevant activity.**

In this section, specified information means the following information:

a. **The contact details of the primary horticulture producer or the primary horticulture processor, including the name of their business and the name and business address of the proprietor of their business;**
b. **A description of the activities the primary horticulture producer or the primary horticulture processor will undertake in relation to berries; and**
c. **The location or locations of each activity referred to in paragraph (b) that is within the jurisdiction of the relevant authority.**

2. **A primary horticulture producer and a primary horticulture processor must notify the relevant authority of any proposed change to specified information provided to a relevant authority in accordance with this section before that change occurs.**

A business that intends to produce or process berries must contact the relevant authority in their state or territory before growing or processing berries that are to be sold or supplied to another business.

'Relevant authority' means an authority responsible for enforcing the relevant application Act (e.g. a food or primary production act), and is usually a government department or agency.

The business will need to provide details of their business's name, the name and address of the proprietor (owner or person in charge), the business's activities with berries, and the location/s of those activities. The authority may also require additional information.

If a business intends to change any of the details they have provided, they must let the authority know before they make the change.

4.2.7—5 Traceability

Being able to quickly identify unsafe or unsuitable food and remove it from sale as soon as possible is important in protecting consumers from harm.

The intended outcome is that the business can readily identify where their berries have come from, and gone to, so any unsafe or unsuitable product can be removed from sale as quickly as possible. Businesses need to be able to track berries back to the growing site.

A primary horticulture producer and a primary horticulture processor must have in place a system that can identify:

a. **The growing site of berries which they grew or received; and**
b. **From whom the berries were received; and**
c. **To whom berries were supplied.**

This business must be able to trace the berries they handle at least one step forward and one step back in the supply chain – that is, who and where they received berries from; as well as who and where they supplied berries to. For any berries either received or grown by the business, the growing site must be identified.

This information is important in enabling berries to be removed promptly from the food supply chain if there is a food safety problem that could harm consumers. It also helps with investigating the cause of the issue. Prompt action reduces the risk of consumers getting ill, as well as costs to implicated businesses.

The more detailed information a business has about its suppliers and customers, the better it will be able to respond to an incident. For instance, if berries are received from multiple growing sites, knowing the site for each batch of berries can assist in limiting a recall to only the affected berries. This demonstrates the importance and value of an effective traceability system.

Best practice:
A strong traceability system includes:

- procedures for identifying producers, suppliers, customers and products
- contact details (name, address, phone, email) of suppliers and a description of products or inputs they each supply
- customers' contact details and a description of the product supplied to them
- dates of transaction or delivery
- batch numbers or lot identifications (or other markings)
- quantities of product supplied or received
- verification of the traceability system with regular mock recalls using relevant scenarios
- any other production records relevant to the business.

Example	**Examples of effective traceability systems.** 1. Business X grows strawberries, blackberries and raspberries on a single small farm. The harvested berries are packed in-field into retail-ready punnets. The punnets have a sticker with Business X's name, address details and date packed. The business keeps records of how many punnets of each berry type are harvested and the harvest date. They also record the name and contact details of the businesses they supply the berries to. For each sale they record the date and the quantities sold in a spreadsheet that is filed with other farm records. 2. Business Y is a large operation that produces berries from multiple sites and sends them to a pack house. Each growing site is uniquely identified and containers of berries harvested from each site are marked with a matching identifier. The pack house packs the berries into punnets that have Business Y's brand and contact details. An ink jet printer is used during packing to also include information on the date packed and site/lot identification in a computerised code on the punnets. Records are kept of the quantities of each product packed from each site on each date. The contact details of the business's customers are also recorded in the computer system, along with dates and quantities of each sale. Business Y conducts a mock recall once a year to check it can effectively trace its product back to the relevant farm site. 3. Business Z receives fresh berries from several farms and packs them for sale to a supermarket chain. They keep records of each batch that comes in from each supplier farm including the date, quantity, product type and growing site. As they pack the berries, they are labelled in a way that identifies each batch. In this way they can trace back to the relevant grower if there is a food safety issue.

4.2.7—6 Inputs – soil, fertiliser and water

Inputs can be a source of contamination, with potential to introduce pathogenic microorganisms, chemicals or physical contaminants onto berries. The intended outcome is that inputs the business uses to grow and process berries do not make the berries unacceptable.

A primary horticulture producer and a primary horticulture processor must take all reasonable measures to ensure that any of the following inputs do not make berries unacceptable:

a. **soil;**
b. **soil amendments (including manure, human biosolids, compost, and plant bio-waste);**
c. **fertiliser; and**
d. **water.**

Inputs covered by this requirement are specifically listed: soil, soil amendments (e.g. compost), fertiliser and water used to produce or process berries. If not properly managed, these inputs can be a source of contamination by harmful microorganisms, chemicals or physical hazards.

Berry producers and primary processors must do what they reasonably can to make sure these inputs do not contaminate the berries and make them unacceptable to eat. While the requirement lists specific inputs, it is best practice for businesses to ensure all the inputs they use are safe and suitable (e.g. pesticides and herbicides) so they don't contaminate the berries.

Best practice:
Examples of measures a berry business could use to manage risks from inputs include:

Soil, soil amendments and fertilisers

- Minimise contact between soil and the edible part of berry crops, for example by using plastic mulch under plants.
- Do not use untreated animal manures or human waste.
- If purchasing treated soil amendments, ensure amendments are certified, compliant with Australian Standard AS 4454-2012: Composts, soil conditioners and mulches.
- If making their own treated soil amendments, follow an approved, verified process to be sure microorganisms are reduced to safe levels (e.g. through appropriate heat, aeration and time).
- Check the recommended time to wait between applying any soil amendment and harvest (e.g. 90 days for a soil amendment used with produce grown close to the ground).
- Protect stored treated soil amendments from contamination (e.g. covered, away from chemicals, waste and animals).

Water

- For growing crops, ensure water used for irrigation and for applying fertilisers, pesticides and other agricultural chemicals does not contain levels of microorganisms that would make the produce unsafe.
- Regularly assess risks of water sources, including:
    - the potential for cross-contamination from water sources in normal and high rainfall or flooding
    - to ensure microbial quality of water is safe for its intended use (see below).
- Regularly test water sources and:
    - apply appropriate treatments if required (e.g. chlorine, UV, filtration) and monitor levels of chemicals used in the water
    - consider increasing testing and treatment if animals, weather (e.g. dust storms, heavy rain, drought) or other events could have affected water sources
    - keep appropriate testing records.
- Prevent water contamination (e.g. fence dams to keep animals away).
- Record water sources used for irrigation and the site of irrigation.

- Post-harvest, ensure water used to cool, wash or sanitise produce is clean and safe – town water or similar potable quality.
- Ensure water used for cleaning food contact surfaces is safe – town water or similar potable quality.

Other inputs
Other general measures include:
- sourcing runners from a reputable supplier
- using clean and sanitary equipment
- using approved chemicals (e.g. herbicides, pesticides) according to manufacturers' instructions.

'Inputs' is broadly defined in standard 4.1.1 clause 1. 'Unacceptable' is defined in standard 4.1.1 clause 3 and includes food that is unsafe or unsuitable.

4.2.7—7 Premises and equipment

Premises and equipment can contaminate berries if they are not properly designed, built, used and maintained.

The intended outcome is that berries are not contaminated due to the design, construction, maintenance and operation of premises and equipment; and that berries are not contaminated due to dirty or contaminated premises and equipment.

1. **A primary horticulture producer and a primary horticulture processor must take all reasonable measures to ensure that premises and equipment are designed, constructed, maintained and operated in a way that:**
   a. **allows for effective cleaning and sanitisation of the premises and equipment; and**
   b. **does not make berries unacceptable.**
2. **A primary horticulture producer and a primary horticulture processor must ensure that premises and equipment are kept clean, sanitised and in good repair to the extent required to ensure that berries are not made unacceptable.**

The business is required to do all they reasonably can to ensure their premises and equipment are designed, constructed, maintained and operated so they can be effectively cleaned and (if necessary) sanitised, and do not contaminate or damage the berries. The second part of this requirement states that premises and equipment must be kept clean, sanitised (as necessary) and in good repair to ensure berries are not made unacceptable.

This means the business must ensure the buildings, equipment and vehicles used are:
- well designed and constructed to suit the activity they are used for (e.g. made of non-porous material, easy to access and clean)
- kept in good condition (e.g. regularly checked for metal fatigue or loose pieces)
- regularly cleaned
- where appropriate, sanitised:
  - equipment and surfaces that directly touch berries need to be sanitised, such as cutting blades and containers used to store unpackaged berries
  - equipment that would not be a potential source of contamination does not have to be sanitised; such as the vehicle tyres, wooden pallets or computer equipment.

Best practice:
Examples of things the business could do to make sure the premises and equipment do not contaminate produce include checking:

- floors are designed and constructed to minimise risks of contaminating produce (e.g. can be easily cleaned, and are level or graded toward drains so water cannot form pools that could splash onto produce)
- surfaces that directly contact produce are able to be cleaned and are regularly cleaned, and where appropriate, sanitised
- harvest and processing equipment is regularly inspected and replaced or repaired as needed
- lighting in growing, packing and storage areas is bright enough for tasks to be done properly (e.g. to allow effective inspection of produce)
- chemicals, fertilisers and farm machinery are stored away from areas where berries are openly handled, packed and stored
- workers know how to properly use and maintain the premises and equipment.

4.2.7—8 Skills and knowledge

People who handle berries may contaminate them through their actions if they are not trained in food safety and food hygiene.

The intended outcome is that persons who do, or supervise, specific activities with berries have the right skills and knowledge in food safety and food hygiene to minimise risks of contaminating berries.

A primary horticulture producer and a primary horticulture processor must ensure that persons who engage in a relevant activity, or who supervise a person who engages in a relevant activity, have:

a. Knowledge of food safety and food hygiene matters; and

b. Skills in food safety and food hygiene matters

commensurate with their work.

Primary producers and primary processors of berries must ensure that each person who does a 'relevant activity' (defined in section 4.2.7—2; for example grows, harvests, trims, sorts, or packs berries) and each supervisor, has the knowledge and skills in food safety and food hygiene they need to do their work properly.

'Food hygiene' involves doing things during growing and processing that prevent berries becoming contaminated and keeping them safe to eat – for example, using safe water and clean equipment. 'Food safety' is the result of practicing good food hygiene, guaranteeing the produce will not harm consumers who eat it.

'Knowledge' means understanding food safety and hygiene issues related to different tasks – for example, people picking berries by hand must understand dirty hands could contaminate the fruit. 'Skills' means being able to do a task in a way that ensures the produce stays safe – for example, berry pickers need to be able to properly wash their hands.

The requirement means staff and their supervisors must have the right level of knowledge and skills to do their particular work. For example, producers need to know how to keep berries safe during growing and harvesting, and be able to do it. Primary processors need to have knowledge and skills that keeps berries safe during their processing steps. A person

who sorts and packs berries may have different skills and knowledge to a person who services equipment, but they all need to know and do their part to keep berries safe.

Obtaining the required skills and knowledge

Skills and knowledge can be achieved in different ways. Recognising this, the requirement does not mandate specific training.

Options a business could use to ensure staff obtain the skills and knowledge they need to produce acceptable berries include:

- in-house training
- working alongside an experienced worker
- distribution of guidance documentation to staff
- have operating procedures in place that clarify responsibilities of staff, visitors and supervisors
- attendance at food safety courses run by local councils or other bodies
- completion of online food safety training courses
- hiring a consultant to present a course
- formal training course
- have signage in place to remind staff of food safety practices.

Further information on food safety and hygiene courses are available from the National Register of VET (Vocational Education and Training) website.

Best practice:

A primary producer or primary processor could take the following steps to ensure their people have the right skills and knowledge:

- Understand all the activities their business does in the food supply chain – a process flow diagram could be useful for this.
- Map out the activities for which each of their staff/supervisors are responsible.
- Set rules on good food safety and hygiene practices and make sure everyone follows them.
- Ensure staff and supervisors can understand and follow food safety practices outlined in grower guides and other documentation (e.g. SOPs).
- Train staff to identify and report things that could make produce unsafe (for example, toxic weeds in fields or animal droppings in processing equipment).
- Provide food safety training when staff first start work and also regularly refresh training (e.g. each year).
- Display instructions and signs in appropriate areas – photos and diagrams remind staff what they should be doing to keep food safe.
- Develop a workplace culture that encourages supervisors and staff to do things correctly, ask questions and remind each other of best practices.

Useful guidance materials

Many best practice guidance materials (such as online training course, fact sheets, guidebooks and posters) covering various aspects of food safety and food hygiene are available free from national, state, territory and local governments as well as the Fresh Produce Safety Centre website. See the Resources and references chapter.

4.2.7—9 Health and hygiene of personnel and visitors

People can be a source of contamination for berries, for example through dirty hands or clothing, or coughing and sneezing. The intended outcome is that workers, visitors and other people do not contaminate berries through illness or poor personal hygiene.

A primary horticulture producer and a primary horticulture processor must take all reasonable measures to ensure that personnel and visitors exercise personal hygiene and health practices that do not make berries unacceptable.

Personnel (staff and contractors) and visitors can contaminate produce with harmful microorganisms, chemicals, or foreign matter from their hands, body, clothes or equipment. To reduce this risk, businesses need to set good personal health and hygiene practices and make sure they are understood and followed by anyone who visits or works on their site.

Good practices include:

- staff not attending work/ handling food while sick with gastro or respiratory illness
- staff telling supervisors of illness or events (e.g. spills) that could make food unsafe
- re-assigning workers that may still be recovering from illness to lower-risk duties (e.g. computer tasks)
- washing hands after toilet and lunch breaks, or any other time hands may have become contaminated (e.g. from animal faeces) or dirty
- wearing clean clothes and securing hair and jewellery in food processing areas
- wearing coverings appropriate to the task (e.g. gloves, shoe covers, hair nets, face masks).

Best practice:

Primary producers and primary processors of berries must do what they reasonably can to make sure personnel and visitors exercise personal and health practices that do not make produce unsafe or unsuitable to eat. Business could, for example, take the following steps:

- Understand common sources of contamination from personnel and visitors.
- Provide and maintain clean toilets and handwashing facilities in convenient locations.
- Provide staff hygiene training when they first start work and regularly refresh training (e.g. each year).
- Provide site inductions or materials on health, hygiene and food safety to visitors before they visit.
- Provide written instructions, signs and posters to tell people what they should do.
- Encourage staff to report illness and enable them to be re-assigned to low-risk tasks during recovery.
- Ask visitors to complete declarations they are not sick with intestinal or respiratory illness.

Example	
	Scenario: poor worker hygiene causing foodborne illness A berry picker who was still recovering from gastro illness caused by norovirus harvested fresh berries and field packed them into retail-ready punnets. Due to poor hand hygiene, norovirus was transferred from the worker to the fruit. Consumers eating the fruit ingested the virus and became ill. The affected worker should have informed the business they were ill, and either stayed off work or been reassigned to a lower-risk task that could not contaminate the berries (e.g. driving farm equipment, computer work). The business must take measures such as providing clean toilets and handwashing facilities in convenient locations, and reinforcing hygiene practices through training, signage etc. All personnel should thoroughly wash their hands before handling fresh berries, especially after using the toilet or when hands have become contaminated (e.g. from contact with bird droppings on plants).

4.2.7—10 Sale or supply of unacceptable berries

The intended outcome is that businesses do not sell or supply berries if they know or suspect they are unacceptable.

A primary horticulture producer and a primary horticulture processor must not sell or supply berries for human consumption if they ought reasonably know, or ought reasonably suspect, that the berries are unacceptable.

It is the business's responsibility to only sell or supply berries that are acceptable to eat.

Berries need appropriate controls to manage their safety and suitability, from initial growing steps through to the final product. The business needs to consider all stages of its operations including inputs, storage, cooling, packaging and transport. By actively monitoring its procedures, the business can confirm controls are working properly, and be reasonably sure the berries they sell or supply are acceptable.

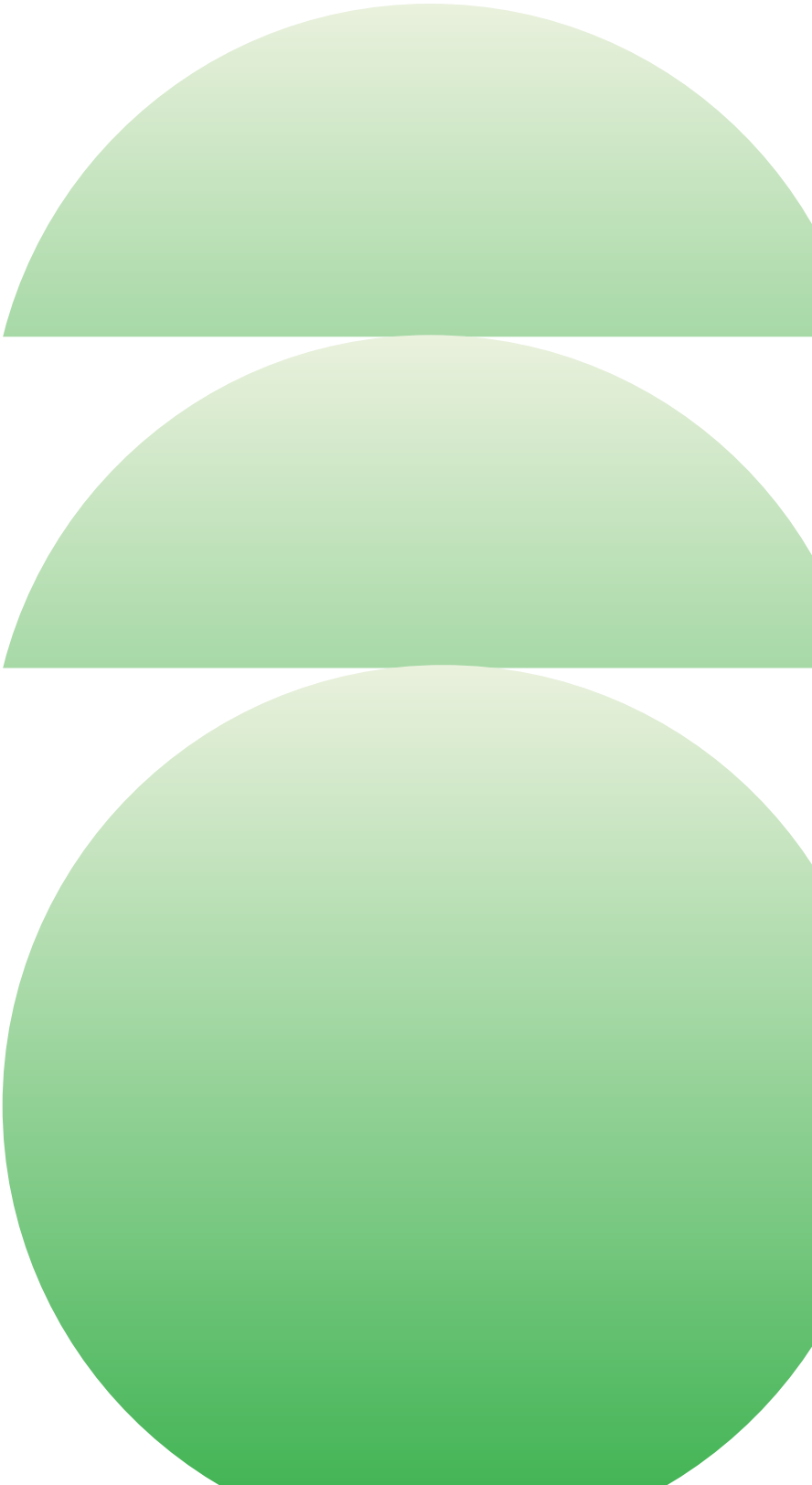
If the business knows or suspects the berries are unacceptable, they must not be sold.

'Unacceptable' includes food that is unsafe or unsuitable, as defined in clause 3 of standard 4.1.1

Examples of berries considered to be unacceptable include berries that are:
- affected by flood waters, with the fruit having been covered by flood water
- contaminated by fuel or chemicals that have been spilt over them
- covered in mould.

Example	**Example of how a business used appropriate controls to manage the safety and suitability of berries they sell:** A producer noticed overflowing sewerage in the vicinity of the strawberry growing site and took the following actions: • They immediately isolated the area by cordoning it off and informed staff to not pick berries from there. • A suitably qualified person was engaged to thoroughly decontaminate the areas where the sewerage effluent contaminated the ground near the strawberry field. • To prevent further surface water from contaminating the field, the business built an embankment to stop run off. • The business owner also contacted the relevant authority to keep them informed of the issue and their corrective actions. The business was able to demonstrate to the authority that the affected field had not been harvested for at least two weeks prior to the sewerage overflow. Because of this, no unsafe product had entered the supply chain and a recall was not required. The authority directed the business to not re-use that field until after it had been decontaminated and the cause of the overflow had been fully addressed.

Standard 4.2.8 Primary Production and Processing Standard for Leafy Vegetables



Standard 4.2.8 – Primary Production and Processing Standard for Leafy Vegetables

Division 1 Preliminary

4.2.8—1 Name

This Standard is Australia New Zealand Food Standards Code – Standard 4.2.8 – Primary Production and Processing Standard for Leafy Vegetables.

The standard covers the primary production and processing of leafy vegetables. The standard applies only to leafy vegetables consumed raw, and for primary production and primary processing activities, as defined in section 4.2.8—2.

4.2.8—2 Definitions

In this Standard:

This section defines terms that are used only in Standard 4.2.8. These definitions apply to the interpretation of this standard regardless of whether the words are defined in state and territory legislation.

In addition, the definitions in chapter 3 of the Code apply in relation to food safety requirements, unless standard 4.1.1 advises certain terms have a different meaning when applied to chapter 4 standards.

Some of the definitions in chapter 3 (in standard 3.1.1) contain a reference to the 'Act'. These should be read as a reference to an 'application Act', which means an Act or Ordinance of the Commonwealth, state or territory that applies the requirements of the Code. Examples are state and territory food acts and primary production acts.

Terms that are not defined in this standard or by other standards in the Code or by the laws that apply standards in the Code should be given their ordinary meaning. Section 1.1.1–4 of the Code also provides that the Code is to be interpreted in accordance with the *Acts Interpretation Act 1901* (Cth).

Underlined words are defined in this standard or standard 4.1.1.

leafy vegetables means vegetables of a leafy nature where the leaf is consumed raw; and includes baby leaves, lettuce, and leafy herbs; and does not include seed sprouts.

The standard only applies to the primary production and processing of leafy vegetables where the leaf is consumed raw. The below list of leafy vegetables is not exhaustive, but provides examples of leafy vegetables grown in Australia and commonly consumed raw.

Examples of leafy vegetables are all lettuces, spinach, kale, Asian leafy greens, leafy herbs, spring onions or shallots, silverbeet/chard, cabbage and microgreens. However, there may be others — the important feature is that the leaf is consumed raw. The standard is designed to manage food safety risks of fresh produce that receives no further treatment (such as cooking) to reduce or eliminate pathogens before consumption.

The definition clarifies that the standard does not apply to seed sprouts. Standard 4.2.6 covers the primary production and processing of seed sprouts.

growing site means any site used to grow leafy vegetables; and includes an open, partially enclosed or enclosed planting area.

The definition clarifies 'growing site' is to be broadly interpreted as any site used to grow leafy vegetables. It includes open fields, plastic tunnel houses, glass houses, hydroponics or other methods for growing leafy vegetables in scope.

harvest means all activities related to the collection and removal of leafy vegetables from a growing site; and includes picking, cutting, field packing (including packaging for retail sale), and transport from the growing site to the next step in the supply chain.

'Harvest' means all activities associated with collecting and moving leafy vegetables from a growing site. It includes the activities listed, but this is not an exhaustive list. The definition covers packing of leafy vegetables on the growing site done as part of the harvest collection, whether this is packing for subsequent processing or retail-ready packaging.

The definition also covers transport from the growing site to the next step in the supply chain, whether that is on the same property or elsewhere. This transport is in the context of activities of the primary horticulture producer (who's activities involve 'harvesting of leafy vegetables', as below). It is not intended to cover transport businesses that would be usually considered as food businesses.

premises and equipment means equipment, infrastructure, structures and vehicles that:

a. **Are used by a primary horticulture producer or by a primary horticulture processor; and**
b. **Have direct or indirect contact with leafy vegetables.**

The definition intends to include all equipment, infrastructure, growing facilities (e.g. greenhouses), sheds, packhouses and other structures and vehicles that are used for the growing, harvesting, handling, storage and transport of leafy vegetables. 'Premises' also includes related land such as the growing site and surrounding areas.

Examples of equipment include irrigation pipes, cutting knives, conveyor belts, machinery for washing or sorting produce, tubs, punnets, bins and boxes.

Premises and equipment includes things in direct contact with leafy vegetables (e.g. knives, conveyor belts, packaging) as well as things that may not directly contact the fruit (e.g. irrigation pipes).

Any of these things can be a potential source of contamination from harmful bacteria, chemicals and physical hazards (e.g. glass or metal fragments).

primary horticulture producer means a business, enterprise or activity that involves the growing and/or harvesting of leafy vegetables.

A business that grows and/or harvests leafy vegetables in scope is considered to be a primary horticulture producer for the purposes of this standard.

primary horticulture processor means a business, enterprise or activity that involves one or more of the following activities in relation to leafy vegetables that have been harvested:

a. **washing;**
b. **trimming;**
c. **sorting;**
d. **sanitising;**
e. **storing;**
f. **combining harvested leafy vegetables;**
g. **packing; and**
h. **transport between primary processing premises.**

A business is considered a primary horticulture processor for the purposes of this standard if they do any of the activities listed with harvested leafy vegetables in scope (see guidance under leafy vegetables definition above). The definition applies regardless of the quantity of leafy vegetables involved or how often they are processed by the business.

The definition is intended to clarify the scope of the standard includes businesses that handle fresh leafy vegetables early in the supply chain, with minimal processing. It is not intended to include food processing businesses operating further down the supply chain that may be doing some of the listed activities (e.g. washing or storing food) – for examples, see Application (4.2.8—3).

'Trimming' refers to the minimal cutting for removal of unwanted material, for example removing roots and/or stalks (topping and tailing). 'Combining harvested leafy vegetables' refers to comingling batches of leafy vegetables, and not to blending (for example with a mechanical blender) to shred or juice leafy vegetables. 'Packing' is intended to refer to packing or packaging done as an early chain step – for example, in a packhouse, and not packaging highly processed food.

Examples	**Examples to show delineation between primary processing and further processing/manufacturing** a. Business A receives whole lettuces, onions and carrots from various producers and: • sorts, dices, washes and packs lettuce for wholesale (these would be considered manufacturing activities and Chapter 3 food safety standards would apply) • sorts, dices, washes and packs onions and carrots for wholesale (Chapter 3 would apply to these manufacturing activities; also, onions and carrots are not within scope of the horticulture PPP standards) • sorts, trims and boxes up whole lettuce for wholesale (these would be considered primary processing activities and Chapter 4 PPP standard on leafy vegetables would apply). The business is required to have a food safety management statement for all chapter 4-related activities; however this business has a statement that covers all their produce and activities. It requires all their suppliers to notify them if the produce has been affected by weather events. Business A also checks all product on receival for excess slugs, snails, mud, etc. Corrective actions are specified such as pre-washing produce, and reviewing suppliers if the producer has not notified them of an adverse weather event.

Examples	
	b. Business B receives spinach leaves and shreds, washes and freezes them for sale in retail packages. This is the sole activity conducted at this business. This business is captured by Chapter 3 only because the produce is washed after it is shredded, so the washing is not considered a primary processing activity; similarly for the packing step. The primary producer that supplies the spinach leaves is required to inform Business B if the spinach has been affected by a weather event, as per Standard 4.2.8—8 (for primary producers). c. Business C is a food service business that stores leafy salad ingredients in the fridge, then washes them to prepare salad sandwiches and other meals. This is a food business activity and chapter 3 requirements would apply.

relevant activity means:

a. in relation to a primary horticulture producer, the growing and/or harvesting of leafy vegetables; and

b. in relation to a primary horticulture processor, any of the following:

i. washing harvested leafy vegetables;
ii. trimming harvested leafy vegetables;
iii. sorting harvested leafy vegetables;
iv. sanitising harvested leafy vegetables;
v. storing harvested leafy vegetables;
vi. combining harvested leafy vegetables;
vii. packing harvested leafy vegetables; and
viii. transporting harvested leafy vegetables between primary processing premises.

This definition lists the activities that relate to the requirement for businesses to ensure workers have adequate skills and knowledge (for these activities). See section 4.2.8—13 for skills and knowledge requirements.

'Trimming', 'combining' and 'packing' are described under the definition of primary horticulture processor (above).

4.2.8—3 Application

This section identifies which businesses the standard applies to, and what activities are excluded.

(1) This Standard applies to primary horticulture producers and to primary horticulture processors in Australia.
(2) This Standard does not apply to the retail sale of leafy vegetables.
(3) This Standard does not apply to manufacturing of harvested leafy vegetables which includes the cooking, freezing, drying, preserving, blending or juicing of harvested leafy vegetables or the addition of other foods to harvested leafy vegetables.

The standard only applies to businesses producing and processing leafy vegetables in Australia. In New Zealand, alternate legislation applies.

The standard does not cover retail sale of leafy vegetables, such as farm gate sales. Retail sale of food is covered by chapter 3 of the Code. Businesses involved in retail sale activities are 'food businesses' subject to requirements related to those activities. This is also the case for businesses that manufacture or further process harvested leafy vegetables, such as adding other food to make a ready-to-eat salad, or any of the activities listed in sub-section 3. These businesses must comply with the requirements for food businesses in chapter 3 of the Code, particularly standards 3.2.2 and 3.2.3 (and 3.2.2A if they are relevant food service businesses).

Where a business does the activities listed for a primary horticulture producer and/or a primary horticulture processor (see definitions above) and then also sells to the public (retail sales), the requirements of standard 4.2.8 will apply to the activities related to primary production and processing activities, and chapter 3 requirements will apply to the retail sales activities.

4.2.8—4 General food safety management requirements

Leafy vegetables can become contaminated with pathogenic microorganisms, chemicals and physical hazards during production and processing, unless proper controls and practices are applied.

The intended outcome is that primary producers and primary processors of leafy vegetables have, and implement, a documented and approved food safety management statement, to effectively manage their food safety risks with leafy vegetables.

A primary horticulture producer and a primary horticulture processor must comply with the general food safety management requirements.

Primary producers and primary processors of leafy vegetables must manage the contamination risks of their product throughout their operations. A documented food safety system is required under this section, to provide assurances that food safety is being managed.

The general food safety management requirements are contained in Division 2 of standard 4.1.1 (see this guide's chapter on standard 4.1.1). A business is required to have a food safety management statement and operate according to that statement. The statement must identify potential hazards and have verified control measures for each of those hazards. The business must have evidence that appropriate control measures are followed and verified as effective.

The food safety management statement must have been approved or recognised by the relevant authority (usually a government agency or department responsible for food or primary production). It is subject to ongoing verification activities by the business and, if required, by the authority. The authority will require information from the business, such as business name, address, location of growing sites, details of the activities the business does. Additional information may also be required.

A leafy vegetable primary producer and primary processor must identify and address potential hazards related to all the production and processing steps relevant to this standard (i.e. for the relevant leafy vegetables and activities). 'Hazard' is defined in standard 4.1.1. Businesses should not rely on another business further along the supply chain to potentially

address food safety problems that are more effectively addressed by the producer and processor.

For leafy vegetables, potential hazards include:

- Microbial hazards identified[2] as greatest concern are shiga toxin-producing *Escherichia coli* (STEC), non-typhoidal *Salmonella* spp. and *Listeria monocytogenes*.
- Chemical hazards include pesticides, spilt fuels and oils, cleaning chemicals and chemicals used to treat water or sanitise leafy vegetables.
- Physical hazards include the presence of toxic weeds among leafy vegetables, soil on leafy vegetables and metal fragments from broken equipment.

A business operating under an accredited food safety scheme (e.g. recognised by the Global Food Safety Initiative) may meet the outcomes of the food safety management requirements of this clause. The relevant authority may need to verify this.

4.2.8—5 Traceability

Being able to quickly identify unsafe or unsuitable food and remove it from sale as soon as possible is important in protecting consumers from harm.

The intended outcome is that the business can readily identify where their leafy vegetables have come from, and gone to, so any unsafe or unsuitable product can be removed from sale as quickly as possible.

A primary horticulture producer and a primary horticulture processor must have in place a system that can identify:

a. from whom the leafy vegetables were received; and

b. to whom leafy vegetables were supplied.

The business must be able to account for all the leafy vegetables it has grown, received or supplied. The business must have a system that can trace the leafy vegetables at least one step forward and one step back in the supply chain – that is, who and where they received/grew leafy vegetables from; as well as who and where they supplied leafy vegetables to.

This information is important in enabling leafy vegetables to be removed promptly from the food supply chain if there is a food safety problem that could harm consumers. It also helps with investigating the cause of the issue. Prompt action reduces the risk of consumers getting ill, as well as costs to implicated businesses.

The more detailed information a business has on its suppliers and customers, the better it will be able to respond to an incident. For instance, if leafy vegetables are received from multiple sources, knowing the supplier or growing site for each batch of leafy vegetables can assist in limiting a recall to only the affected batch/es. This demonstrates the importance and value of an effective traceability system.

Best practice:

A strong traceability system includes:

- procedures for identifying producers, suppliers, customers and products

* FSANZ risk assessment for leafy vegetable primary production and processing (Proposal P1052)

- contact details (name, address, phone, email) of suppliers and a description of products or inputs they each supply
- customers' contact details and a description of the product supplied to them
- dates of transaction or delivery
- batch numbers or lot identifications (or other markings)
- quantities of product supplied or received
- verification of the traceability system with regular mock recalls using relevant scenarios
- any other production records relevant to the business.

4.2.8—6 Inputs – seed, seedling, soil, fertiliser and water

Inputs can be a source of contamination, with potential to introduce pathogenic microorganisms, chemicals or physical contaminants onto leafy vegetables.

The intended outcome is that inputs the business uses to grow and process leafy vegetables do not make the leafy vegetables unacceptable.

A primary horticulture producer and a primary horticulture processor must take all reasonable measures to ensure that any of the following inputs do not make leafy vegetables unacceptable:

a. seeds;
b. seedlings;
c. soil;
d. soil amendments (including manure, human biosolids, compost, and plant bio-waste);
e. fertiliser; and
f. water.

Inputs used to produce leafy vegetables include seeds and seedlings, soil, water, fertilisers, mulch, compost, chemicals (e.g. pesticides, herbicides), containers, conveyor belts and other equipment. If not properly managed, these inputs can be a source of contamination by harmful microorganisms, chemicals or physical hazards.

Primary producers and primary processors of leafy vegetables must do what they reasonably can to make sure the inputs they use do not contaminate their leafy vegetables and make them unacceptable to eat.

Best practice:
Examples of measures a business could take to reduce the risk of inputs contaminating their produce include:

Soil, soil amendments and fertilisers

- Minimise contact between soil and the edible part of leafy vegetable crops, for example by using plastic mulch under plants.
- Do not use untreated animal manures or human waste.
- If purchasing treated soil amendments, ensure they are certified, compliant with Australian Standard AS 4454-2012: Composts, soil conditioners and mulches.
- If making their own treated soil amendments, follow an approved, verified process to be sure microorganisms are reduced to safe levels (e.g. through appropriate heat, aeration and time).

- Check the recommended time to wait between applying any soil amendment and harvest (e.g. 90 days for a soil amendment used for produce grown close to the ground).
- Protect stored treated soil amendments from contamination (e.g. covered, away from chemicals, waste and animals).

Water

- For growing crops, water used for irrigation and for applying fertilisers, pesticides and other agricultural chemicals should not contain levels of microorganisms that would make the produce unsafe.
- Regularly assess risks of their water sources, including
    - the potential for cross-contamination from water sources in normal and high rainfall or flooding
    - to ensure microbial quality of water is safe for its intended use (see below).
- Regularly test water sources and:
    - apply appropriate treatments if required (e.g. chlorine, UV, filtration) and monitor levels of chemicals used in the water
    - increase testing if animals, weather (e.g. dust storms, heavy rain, drought) or other events could have affected water sources
    - keep appropriate testing records.
- Prevent water contamination (e.g. fence dams to keep animals away).
- Record water sources used for irrigation and the site of irrigation.
- Post-harvest, ensure water used to cool, wash or sanitise produce is clean and safe (town water or similar potable quality).
- Ensure water used for cleaning food contact surfaces is safe – town water or similar potable quality.

Seeds and seedlings

- If buying leafy vegetable seedlings, consider only buying from suppliers that have managed their inputs so seedlings have not been contaminated with harmful bacteria and the seeds have not been contaminated with toxic weed seeds. Ensure the supplier provides information about any chemicals that may have been used to treat seeds or control pests and diseases.
- If producing seedlings from seed, purchase seed from suppliers that have taken steps to prevent contamination of the seed. Ensure purchased seed is stored to protect it from contamination by rats, mice or other contamination sources (e.g. dirty water or chemicals).
- Suppliers of seeds or seedlings may operate according to a food safety scheme or provide some other assurance about how they have prevented contamination of the seed and seedlings.

Other inputs

Other general measures include:

- using equipment that is clean and (as necessary) sanitary
- using approved chemicals according to manufacturers' instructions.

'Inputs' is broadly defined in standard 4.1.1 clause 1. 'Unacceptable' is defined in standard 4.1.1 clause 3 and includes food that is unsafe or unsuitable.

4.2.8—7 Growing sites

The growing site can be a source of contamination for leafy vegetables, depending on where it is and what it has been used for. If produce gets contaminated while it's growing on the site, it can be difficult to address later in the supply chain.

The intended outcome is that businesses routinely assess their growing sites, consider what hazards may be present or emerging, and only proceed to grow leafy vegetables at sites where there is minimal risk of contamination.

A primary horticulture producer must take all reasonable measures to ensure that a growing site is located, designed, constructed, maintained and operated such that leafy vegetables are not made unacceptable.

The primary producer needs to know about their growing site, what it was used for previously, what is happening nearby and what other potential sources of contamination exist. The business must take all reasonable actions to ensure any area used to grow leafy vegetables is safely located, designed and constructed for that purpose. The site must also then be maintained and operated throughout the production of leafy vegetables, to keep them safe and suitable.

Where the business identifies there are risks of contaminating the produce (e.g. land that was previously used for waste management could contaminate produce grown on that site with waste chemicals or pathogenic microorganisms), they must take action to eliminate or manage those sources of contamination. If the site is not suitable, or cannot be made suitable, it mustn't be used for growing leafy vegetables.

Best practice:
Examples of things the business could do to make sure the growing site is safe and suitable to grow and harvest produce include:

- Know what previous crops were planted, what weeds were present and what chemical sprays were applied. Some weeds can be toxic and can produce seeds that emerge years later, and some chemicals can remain in the soil for a long period.
- Ensure growing areas are not located where it is likely harmful bacteria could pose a high risk (e.g. if adjacent land is used for a feedlot or poultry production).
- Check around the growing site and surrounding areas before planting leafy vegetables, to assess for sources of contamination (e.g. damaged fence allowing livestock in from an adjacent paddock, or toxic weeds such as *Datura stramonium*).
- Check the site for hazards routinely throughout the crop's lifecycle, and at least within a week of harvest.
- If potential hazards are identified at any point, use buffer areas, ditches, physical barriers and other strategies to minimise the likelihood of leafy vegetables becoming contaminated.

Example

Case study: toxic weeds in spinach caused poisoning

In 2022, more than 100 Australians were reportedly poisoned after eating spinach accidentally contaminated with a toxic weed. Health authorities said some reported symptoms were severe and included hallucinations, delirium, rapid heartbeat and blurred vision. Affected people needed medical attention.

The producer involved said major supermarkets recalled dozens of spinach products across the country and consumer demand plummeted overnight. The producer lost almost $1 million overnight and other salad producers were also significantly impacted as consumers avoided bagged salads.

As soon as the producer was advised of the possible contamination, they told their customers to remove the impacted spinach from their shelves and contacted state health and federal food authorities. They went back to the paddock the batch was picked from and identified the weed in larger numbers than expected.

The producer reviewed the business's operations and improved practices to prevent the problem recurring.

Source: ABC news 15 Dec 2022 NSW Health urges people to throw out Riviera Farms spinach from Costco after more people seek medical attention
ABC Rural article 8 Aug 2023 Spinach producers recovering after contamination event devastates businesses

4.2.8—8 Weather events

Weather events such as storms and floods can contaminate leafy vegetables if they are not appropriately managed.

The intended outcome is that leafy vegetables that may be contaminated or damaged by weather events do not enter the food supply.

A primary horticulture producer and a primary horticulture processor must take appropriate remedial action to ensure that leafy vegetables adversely affected by weather conditions are not unacceptable.

Severe weather events include drought, dust storms, floods, strong winds and hail storms. These events can physically damage produce and/or contaminate it for example, with dirt, chemicals or animal faeces carried by wind or flood water.

Primary producers and primary processors of leafy vegetables must take appropriate action to ensure that produce affected by a weather event is not used if it is unacceptable to eat. Businesses need to understand the food safety risks, and what to do with produce after weather events, to prevent unsafe and unsuitable produce entering the food supply.

Best practice:
Examples of things a business could do to prepare for, or respond to, weather events include:

- Ensure fields have good drainage, so water does not pool around produce.
- Use wind breaks and other shelter to reduce dust and dirt blowing onto produce and equipment.
- During droughts and floods when water quality can go down, monitor water sources more closely and more often.
- Do not harvest produce that has been touched by flood water, because flood waters contain contaminants (e.g. sewage, chemicals, harmful bacteria and physical hazards).
- Inspect produce harvested or received after storms and remove, treat or divert (away from raw, ready-to-eat supply for human consumption) any that is likely to be unsafe or unsuitable.
- Adjust procedures for produce washing and sanitising after storms (e.g. amend washing regime) because produce is more likely to be contaminated with soil and dust.

Example	**Responding to a weather event to manage the food safety risks** See case study of weather-affected produce in melon chapter, under 4.2.9—8.

4.2.8—9 Premises and equipment

Premises and equipment can contaminate leafy vegetables if they are not properly designed, built, used and maintained.

The intended outcome is that leafy vegetables are not contaminated due to the design, construction, maintenance and operation of premises and equipment; and that leafy vegetables are not contaminated due to dirty or contaminated premises and equipment.

1. **A primary horticulture producer and a primary horticulture processor must take all reasonable measures to ensure that premises and equipment are designed, constructed, maintained and operated in a way that:**
   a. **allows for effective cleaning and sanitisation of the premises and equipment; and**
   b. **does not make leafy vegetables unacceptable.**
2. **A primary horticulture producer and a primary horticulture processor must ensure that premises and equipment are kept clean, sanitised and in good repair to the extent required to ensure that leafy vegetables are not made unacceptable.**

The business is required to do all they reasonably can to ensure their premises and equipment are designed, constructed, maintained and operated so they can be effectively cleaned and (if necessary) sanitised, and do not contaminate or damage the leafy vegetables. The second part of this requirement states that premises and equipment must be

kept clean, sanitised (as necessary) and in good repair to ensure leafy vegetables are not made unacceptable.

This means the business must ensure the buildings, equipment and vehicles used are:

- well designed and constructed to suit the activity they are used for (e.g. made of non-porous material, easy to access and clean),
- kept in good condition (e.g. regularly checked for metal fatigue or loose pieces) and
- regularly cleaned
- where appropriate, sanitised (e.g. equipment and surfaces that will directly touch leafy vegetables such as cutting blades, conveyor belts and harvest containers).

Best practice:
Examples of things the business could do to make sure the premises and equipment do not contaminate produce include checking:

- Floors are designed and constructed to minimise risks of contaminating produce (e.g. can be readily cleaned and are laid so water cannot form pools that could splash onto produce).
- Surfaces that directly contact produce are able to be cleaned and are regularly cleaned and where appropriate sanitised.
- Harvest and processing equipment is regularly inspected and replaced or repaired as needed.
- Lighting in growing, packing and storage areas is bright enough for tasks to be done properly (e.g. to allow effective inspection of washed produce).
- Chemicals, fertilisers and farm machinery are stored away from areas where leafy vegetables are openly handled, packed, and stored.
- Workers know how to properly use and maintain the premises and equipment.

4.2.8—10 Temperature of harvested leafy vegetables

If pathogenic microorganisms are present on leafy vegetables, these can multiply rapidly following harvest if the produce is kept in warm conditions.

The intended outcome is harvested leafy vegetables are kept in a temperature range that slows growth of bacteria or moulds that could cause foodborne illness.

A primary horticulture producer and a primary horticulture processor must keep harvested leafy vegetables at a temperature that does not make the leafy vegetables unacceptable.

Primary producers and primary processors must keep harvested leafy vegetables at a temperature that does not make the food unsafe or unsuitable to eat. This means keeping harvested produce at a temperature that minimises the growth of any harmful microorganisms (bacteria and moulds) that may be present on them.

The business will need to monitor the temperature of harvested produce and adjust conditions (cooling as necessary) to keep it cool. Doing this once produce has been harvested, and then during processing, storage and transport can not only reduce the risk of harmful microorganisms growing in the food, but also helps retain the product's quality and reduce food waste.

Best practice:
Things a business could do to ensure harvested produce is kept at an appropriate temperature include:

- Harvest in the morning or at night when temperatures are cooler.
- Map out post-harvest steps that may need temperature control and how the business might manage those steps – a flow diagram showing all processes may be useful.
- Keep harvested produce out of direct sunlight – for example, cover it with light coloured shade cloth.
- Cool produce using water, ensuring clean town water is used (or a similar potable quality).
- Use refrigeration equipment, regularly checking the temperature and making sure the refrigeration is working correctly.
- Use cool rooms, ensuring they are regularly cleaned and sanitised and cooling units are serviced so they operate efficiently.
- Determine what temperatures are safe for particular produce – for example, washed and packed leafy vegetables should be kept at 0° to 5°C to manage food safety risks.

4.2.8—11 Washing and sanitisation of harvested leafy vegetables

Dirty leafy vegetables can contain harmful microorganisms on their surface. If washing and sanitisation are done incorrectly, it can fail to remove contamination or even introduce further contamination, making the leafy vegetables unacceptable.

The intended outcome is that leafy vegetables are cleaned to remove visible surface dirt, and if they are washed and sanitised, these processes are effective, resulting in leafy vegetables that are acceptable to eat.

A primary horticulture processor must take all reasonable measures to ensure that:

a. Visible extraneous material on harvested leafy vegetables is removed; and

b. Any washing or sanitising of harvested leafy vegetables does not make the leafy vegetables unacceptable.

Washing and sanitising are two distinct processes serving different purposes:

- Washing fresh produce removes any visible material such as dirt.
- Sanitisation is an additional process that reduces microorganisms on the surface of produce to a safe level, usually with a chemical (e.g. food grade bleach). Sanitisation must only be done after washing, because dirt can make sanitisers less effective.

The first requirement of this section is that primary processors must take all reasonable measures to ensure their leafy vegetables are cleaned (e.g. wiped or washed, as appropriate) to remove all visible material (such as soil). Washing is not mandated, although the business may determine that washing is the best way to clean the leafy vegetables.

The second requirement of this section is that any washing or sanitisation process used by the business does not make the leafy vegetables unacceptable. This means the business must design and control their washing and sanitisation processes so their produce is effectively cleaned and is not contaminated by harmful bacteria, chemicals or physical hazards.

Best practice:
Things a business could do to ensure effective washing and sanitisation of their produce include:

- Use an appropriate method to remove surface dirt and other visible material from leafy vegetables (e.g. shaking off dirt before trimming off roots, or washing).
- Know the best and most effective ways to wash and sanitise the leafy vegetables, as it varies depending on the specific type of produce
- When a washing process is used, ensure safe water is used, and regularly monitor the water quality. If the water gets too dirty, it could contaminate the leafy vegetables. It could also make a subsequent sanitising step less effective.
- Where chemical sanitisers are used, ensure appropriate chemical concentrations and contact times are applied.
- Auto-dose for chemicals, and regularly monitor water quality and sanitisers to help with correct sanitising of leafy vegetables.

4.2.8—12 Animals and pests

Animals and pests are sources of contamination for leafy vegetables.

The intent is that businesses put control measures in place to minimise the risks associated with animals and pests.

A primary horticulture producer and a primary horticulture processor must take all reasonable measures to minimise the presence of animals, vermin and pests in growing sites, and in premises and equipment, to ensure that leafy vegetables are not made unacceptable.

Animals, vermin and pests include livestock, pets and working dogs, rats and mice, birds, wild animals (e.g. kangaroos, possums and deer), flies, cockroaches and other insects.

Animals and pests are known to carry harmful microorganisms that can contaminate produce and make it unacceptable. They can directly contaminate crops through their faeces and urine, hair/feathers or carcasses left on growing sites. They can also indirectly contaminate fresh produce through contaminating buildings, equipment and inputs such as water.

Primary producers and primary processors of leafy vegetables must do all they reasonably can to minimise the presence of animals, vermin and pests in growing sites, premises and equipment, to ensure they do not make their produce unacceptable. The business needs to consider how animals, vermin and pests could get in or on their produce, and then work out what they will do to minimise their presence or prevent their access.

Best practice:
Examples of things a business could do to reduce the risk of animals contaminating their leafy vegetables include:

- Regularly assess risks of the growing site, buildings and equipment, including looking for signs (e.g. droppings, digging, nests) that wildlife, vermin or pest insects are present.
- Protect and maintain growing sites to discourage animals from entering (e.g. by using fencing, and limiting surface water and produce waste in the area).
- Regularly look for animals and pests, especially just before harvest. If they are seen in growing sites, the business must decide whether produce is safe to harvest from those areas.

- Use a pest control plan for buildings (e.g. use approved baits and traps to reduce rats and mice around the outside of the building, and record details).

Example	**Scenario – managing free range chickens** A business grows herbs and salad vegetables on a family plot to supply to restaurants. They also keep free range chickens for their eggs and manure. On inspection of the plot, a regulator notices chickens among the growing crops and points out this is unsafe, because the birds' droppings could contaminate the soil and leafy vegetables with salmonella and other harmful bacteria. The business subsequently fixes this issue by separating the chickens away from the plants with wire fencing , and they conduct a risk assessment in consultation with the regulator to determine when it would be safe to harvest the affected plants. The business is also advised to not use any fresh manure on or near the vegetables and to make sure manure is thoroughly composted before use.

4.2.8—13 Skills and knowledge

People who handle leafy vegetables may contaminate them through their actions if they are not trained in food safety and food hygiene.

The intended outcome is that persons who do, or supervise, specific activities with leafy vegetables have the right skills and knowledge in food safety and food hygiene to minimise risk of contaminating leafy vegetables.

A primary horticulture producer and a primary horticulture processor must ensure that persons who engage in a relevant activity, or who supervise a person who engages in a relevant activity, have:

a. Knowledge of food safety and food hygiene matters; and

b. Skills in food safety and food hygiene matters

commensurate with their work.

Primary producers and primary processors of leafy vegetables must ensure that each person who does a 'relevant activity' (defined in 4.2.8—2; for example, grows, harvests, trims, washes, sorts, or packs leafy vegetables) and each supervisor, has the knowledge and skills in food safety and food hygiene they need to do their work properly.

'Food hygiene' involves doing things during growing and processing that prevent leafy vegetables becoming contaminated and keeping them safe to eat – for example, using safe water and clean equipment. 'Food safety' is the result of practicing good food hygiene, guaranteeing the leafy vegetables will not harm consumers who eat it.

'Knowledge' means understanding food safety and hygiene issues related to different tasks – for example, people picking leafy vegetables by hand must understand dirty hands could contaminate the produce. 'Skills' means being able to do a task in a way that ensures the produce stays safe – for example, people that trim leafy vegetables need to be able to properly wash their hands and sanitise a knife.

The requirement means staff and their supervisors must have the right level of knowledge and skills to do their particular work. For example, producers need to know how to keep leafy

vegetables safe during growing and harvesting, and be able to do it. Primary processors need to have knowledge and skills that keep leafy vegetables safe during their processing steps. A person who sorts and packs leafy vegetables may have different skills and knowledge to a person who services equipment, but they all need to know and do their part to keep leafy vegetables safe.

Obtaining the required skills and knowledge
Skills and knowledge can be achieved in different ways. Recognising this, the requirement does not mandate specific training.

Options a business could use to ensure staff obtain the skills and knowledge they need to produce acceptable leafy vegetables include:

- in-house training
- working alongside an experienced worker
- distribution of guidance documentation to staff
- have operating procedures in place that clarify responsibilities of staff, visitors and supervisors
- attendance at food safety courses run by local councils or other bodies
- completion of online food safety training courses
- hiring a consultant to present a course
- formal training course
- have signage in place to remind staff of food safety practices.

Further information on food safety and hygiene courses are available from the National Register of VET (Vocational Education and Training) website.

Best practice:
A primary producer or primary processor could take the following steps to ensure their people have the right skills and knowledge:

- Understand all the activities their business does in the food supply chain – a process flow diagram could be useful.
- Map out the activities for which each of their staff/ supervisors are responsible.
- Set rules on good food safety and hygiene practices and make sure everyone follows them.
- Ensure staff and supervisors can understand and follow food safety practices outlined in grower guides and other documentation (e.g. SOPs).
- Train staff to identify and report things that could make produce unsafe (for example, toxic weeds in fields or animal droppings in processing equipment).
- Provide food safety training when staff first start work and regularly refresh training (e.g. each harvest season).
- Display instructions and signs in appropriate areas – photos and diagrams remind staff what they should be doing to keep food safe.
- Develop a workplace culture that encourages supervisors and staff to do things correctly, ask questions and remind each other of best practices

Useful guidance materials

Many best practice guidance materials (such as online training course, fact sheets, guidebooks and posters) covering various aspects of food safety and food hygiene are available free from national, state, territory and local governments as well as the Fresh Produce Safety Centre website – see the Resources and references chapter.

4.2.8—14 Health and hygiene of personnel and visitors

The intended outcome is that workers, visitors and other people do not contaminate leafy vegetables through illness or poor personal hygiene.

A primary horticulture producer and a primary horticulture processor must take all reasonable measures to ensure that personnel and visitors exercise personal hygiene and health practices that do not make leafy vegetables unacceptable.

Personnel (staff and contractors) and visitors can contaminate produce with harmful microorganisms, chemicals, or foreign matter from their hands, body, clothes or equipment. To reduce this risk, businesses need to set good personal health and hygiene practices and make sure they are understood and followed by anyone who visits or works on their site.

Good hygiene practices include:

- staff not attending work/ handling food while sick with gastro or respiratory illness
- staff telling supervisors of illness or events (e.g. spills) that could make food unsafe
- re-assigning workers that may still be recovering to lower-risk duties (e.g. computer tasks)
- washing hands after toilet and lunch breaks, or any other time hands may have become contaminated (e.g. from animal faeces) or excessively dirty
- wearing clean clothes and securing hair and jewellery in food processing areas
- wearing coverings appropriate to the task (e.g. gloves, shoe covers, hair nets, face masks).

Best practice:
Primary producers and primary processors of leafy vegetables must do what they reasonably can to make sure personnel and visitors exercise personal and health practices that do not make produce unsafe or unsuitable to eat. Business could, for example, take the following steps:

- Understand common sources of contamination from personnel and visitors.
- Provide and maintain clean toilets and handwashing facilities in convenient locations.
- Provide staff hygiene training when they first start work and regularly refresh training (e.g. each harvest season).
- Provide site inductions or materials on health, hygiene and food safety to visitors before they visit.
- Provide written instructions, signs and posters to tell people what they should do.
- Encourage staff to report illness and enable them to be re-assigned to low-risk tasks during recovery.
- Ask visitors to complete declarations they are not sick with intestinal or respiratory illness.

For an example scenario of how poor hygiene can cause food safety problems, see the Berries chapter, section 4.2.7—9.

4.2.8—15 Sale or supply of unacceptable leafy vegetables

The intended outcome is that businesses do not sell or supply leafy vegetables if they know or suspect they are unacceptable.

A primary horticulture producer and a primary horticulture processor must not sell or supply leafy vegetables for human consumption if they ought reasonably know, or ought reasonably suspect, that the leafy vegetables are unacceptable.

It is the business's responsibility to only sell or supply leafy vegetables that are acceptable to eat.

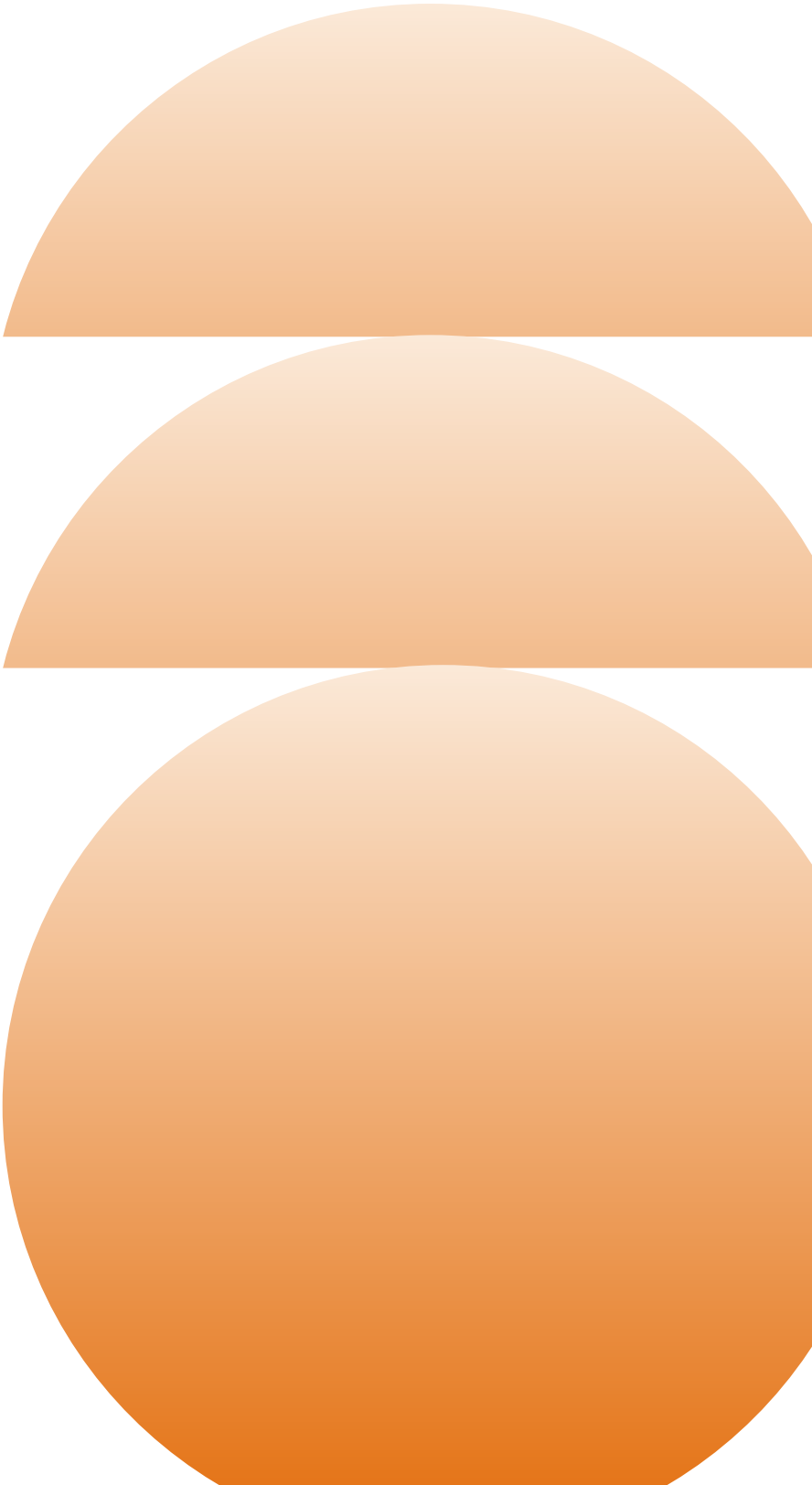
Leafy vegetables need appropriate controls to manage their safety and suitability, from initial growing steps through to the final product. The business needs to consider all stages of its operations including inputs, storage, cooling, packaging and transport. By actively monitoring its procedures, the business can confirm controls are working properly, and be reasonably sure the leafy vegetables they sell or supply are acceptable.

If the business knows or suspects the leafy vegetables are unacceptable, they must not be sold.

'Unacceptable' food includes food that is unsafe or unsuitable, as defined in clause 3 of standard 4.1.1.

Examples of leafy vegetables considered unacceptable include leafy vegetables that are:
- affected by flood waters, with the edible leaves having been covered by flood water
- contaminated by fuel or chemicals that have been spilt over them
- bagged, ready to eat, but have visible soil/dirt, insects, spiders or frogs present.

Standard 4.2.9 Primary Production and Processing Standard for Melons



Standard 4.2.9 – Primary Production and Processing Standard for Melons

Division 1 Preliminary

4.2.9—1 Name

This Standard is Australia New Zealand Food Standards Code – Standard 4.2.9 – Primary Production and Processing Standard for Melons.

This standard covers the primary production and processing of melons. The standard applies to fresh melons only, and for primary production and primary processing activities, defined in section 4.2.9—2.

4.2.9—2 Definitions

In this Standard:

This section defines terms that are used only in Standard 4.2.9. These definitions apply to the interpretation of the standard, regardless of whether the words are defined in state and territory legislation.

In addition, the definitions in chapter 3 of the Code apply in relation to food safety requirements, unless standard 4.1.1 advises certain terms have a different meaning when applied to chapter 4 standards.

Some of the definitions in chapter 3 (in standard 3.1.1) contain a reference to the 'Act'. These should be read as a reference to an 'application Act', which means an Act or Ordinance of the Commonwealth, state or territory that applies the requirements of the Code. Examples are state and territory food acts and primary production acts.

Terms that are not defined in this standard or by other standards in the Code, or by the laws that apply standards in the Code should be given their ordinary meaning. Section 1.1.1–4 of the Code also provides that the Code is to be interpreted in accordance with the *Acts Interpretation Act 1901* (Cth).

Underlined words are defined in this standard or standard 4.1.1.

melons means fresh melons; and includes watermelon, rockmelon, honeydew melon, and piel de sapo.

The standard only applies to the primary production and processing of fresh melons. The list of melons is not exhaustive, but provides some examples of melons commonly grown in Australia. The standard is designed to manage food safety risks of fresh melons, which receive no further treatment (such as cooking) to reduce or eliminate pathogens before consumption.

growing site means any site used to grow melons; and includes an open, partially enclosed or enclosed planting area.

This definition clarifies 'growing site' is to be interpreted broadly, as any site used to grow melons. It includes open fields, plastic tunnel houses, greenhouses, hydroponic facilities or other areas used for growing melons.

harvest means all activities related to the collection and removal of melons from a growing site; and includes picking, cutting, field packing (including packaging for retail sale), and transport from the growing site to the next step in the supply chain.

'Harvest' means all activities associated with collecting and moving melons from a growing site. It includes the activities listed, but this is not an exhaustive list. The definition covers packing of melons on the growing site done as part of the harvest collection, whether this is packing for subsequent processing or retail-ready packaging.

The definition also covers transport from the growing site to the next step in the supply chain, whether that is on the same property or elsewhere. This transport is in the context of activities of the primary horticulture producer (who's activities involve 'harvesting of melons', as below). It is not intended to cover transport businesses that would be usually considered as food businesses.

premises and equipment means equipment, infrastructure, structures and vehicles that:

a. **are used by a primary horticulture producer or by a primary horticulture processor; and**
b. **have direct or indirect contact with melons.**

The definition intends to include all equipment, infrastructure, growing facilities (e.g. greenhouses), sheds, packhouses and other structures and vehicles that are used for the growing, harvesting, handling, storage and transport of melons. 'Premises' also includes related land such as the growing site and surrounding areas.

Examples of equipment include irrigation pipes, cutting knives, conveyor belts, machinery for washing or sorting produce, tubs, punnets, bins and boxes.

Premises and equipment includes things in direct contact with melons (e.g. knives, packaging) as well as things that may not directly contact the fruit (e.g. irrigation pipes). Any of these things can be a potential source of contamination from harmful bacteria, chemicals and physical hazards (e.g. glass or metal fragments).

primary horticulture producer means a business, enterprise or activity that involves the growing and/or harvesting of melons.

A business that grows and/or harvests melons is considered to be a primary horticulture producer for the purposes of this standard.

primary horticulture processor means a business, enterprise or activity that involves one or more of the following activities in relation to melons that have been harvested:

a. **washing;**
b. **trimming;**
c. **sorting;**
d. **sanitising;**
e. **storing;**
f. **combining harvested melons;**

g. packing; and
h. transport between primary processing premises.

A business is considered a primary horticulture processor for the purposes of this standard, if they do any of the listed activities with (freshly) harvested melons. The definition applies regardless of the quantity of melons involved or how often they are handled by the business.

The definition is intended to clarify the scope of the standard includes businesses that handle fresh harvested melons early in the supply chain, with minimal processing. It is not intended to include processing businesses operating further down the supply chain that may be doing some of the listed activities – for example, a manufacturer or food service business that washes or stores melons would not be included. See Application (4.2.7—3).

'Trimming' refers to the minimal cutting for removal of unwanted material, for example removing stalks. It is not intended to include further cutting such as halving melons or dicing melon for a salad. 'Combining harvested melons' refers to comingling batches of melons, and not to blending (for example with a mechanical blender) to produce melon pulp or juice. 'Packing' is intended to refer to packing or packaging done as an early chain step – for example, packing melons in a packhouse into boxes or crates, and not packaging highly processed food like diced melon pieces into plastic tubs for retail sale.

Example	**Scenario to show delineation between primary processing and further processing/manufacturing** Food business A receives rockmelons and watermelons from a producer and washes them before wholesale to food business B, who also washes the melons before dicing them to make fruit salad for food service. Food business A – would be considered a primary processor under standard 4.2.9, so requirements in chapter 4 would apply. Food business B – would be considered a manufacturer, so requirements in Chapter 3 would apply.

relevant activity means:

a. in relation to a primary horticulture producer, the growing and/or harvesting of melons; and
b. in relation to a primary horticulture processor, any of the following:
  i. washing harvested melons;
  ii. trimming harvested melons;
  iii. sorting harvested melons;
  iv. sanitising harvested melons;
  v. storing harvested melons;
  vi. combining harvested melons;
  vii. packing harvested melons; and
  viii. transporting harvested melons between primary processing premises.

This definition lists the activities that relate to the requirement for businesses to ensure workers have adequate skills and knowledge (for these activities). See section 4.2.9—13 for skills and knowledge requirements.

Explanations of trimming, combining and packing are provided in the definition above for primary horticulture processor.

4.2.9—3 Application

This section identifies which businesses the standard applies to, and what activities are excluded.

1. **This Standard applies to primary horticulture producers and to primary horticulture processors in Australia.**
2. **This Standard does not apply to the retail sale of melons.**
3. **This Standard does not apply to manufacturing of harvested melons which includes the cooking, freezing, drying, preserving, blending or juicing of harvested melons or the addition of other foods to harvested melons.**

The standard only applies to businesses producing and processing melons in Australia. In New Zealand, alternate legislation applies.

The standard does not cover retail sale of melons, such as farmgate sales. Retail sale of food is covered by chapter 3 of the Code, so businesses involved in retail sale activities are 'food businesses' subject to requirements related to those activities. This is also the case for businesses that manufacture or further process harvested melons, such as adding other food to make a ready-to-eat fruit salad or any of the activities listed in sub-section 3. These businesses must comply with the requirements for food businesses in chapter 3, particularly standards 3.2.2 and 3.2.3 (and 3.2.2A if they are relevant food service businesses).

4.2.9—4 General food safety management requirements

Melons can become contaminated with pathogenic microorganisms, chemicals and physical hazards during production and processing, unless proper controls and practices are applied.

The intended outcome is that primary producers and primary processors of melons have, and implement, a documented and approved food safety management statement, to effectively manage their food safety risks with melons.

A primary horticulture producer and a primary horticulture processor must comply with the general food safety management requirements.

Primary producers and primary processors of melons must manage the contamination risks of their product throughout their operations. A documented food safety system is required under this clause, to provide assurances that food safety is being managed.

The general food safety management requirements are contained in Division 2 of standard 4.1.1 (see this guide's chapter on standard 4.1.1). A business is required to have a food safety management statement and operate according to that statement. The statement must identify potential hazards and have verified control measures for each of those hazards. The business must have evidence that appropriate control measures are followed and verified as effective.

The food safety management statement must have been approved or recognised by the relevant authority (usually a government agency or department responsible for food or primary production). It is subject to ongoing verification activities by the business and, if required, by the authority. The authority will require information from the business, such as

business name, address, location of growing sites, details of the activities the business does. Additional information may also be required.

A melon primary producer and primary processor must identify and address potential hazards related to all the production and processing steps relevant to this standard. 'Hazard' is defined in standard 4.1.1. Businesses should not rely on another business further along the supply chain to potentially address food safety problems that are more effectively addressed by the producer and processor.

For melons, potential hazards include:

- Microbial hazards identified*[3] as greatest concern for melons are *Salmonella* spp. and *Listeria monocytogenes*.
- Chemical hazards include pesticides, spilt fuels and oils, cleaning chemicals and chemicals used to treat water or sanitise melons.
- Physical hazards include the presence of soil on melons and metal fragments from broken equipment.

A business operating under an accredited food safety scheme (e.g. recognised by the Global Food Safety Initiative) may meet the outcomes of the food safety management requirements of this clause. The relevant authority would need to verify this within their jurisdiction.

4.2.9—5 Traceability

Being able to quickly identify unsafe or unsuitable food and remove it from sale as soon as possible is important in protecting consumers from harm.

The intended outcome is that the business can readily identify where their melons have come from, and gone to, so any unsafe or unsuitable product can be removed from sale as quickly as possible.

A primary horticulture producer and a primary horticulture processor must have in place a system that can identify:

a. from whom the melons were received; and

b. to whom melons were supplied.

The business must be able to account for all the melons it has grown, received or supplied. The business must have a system that can trace the melons at least one step forward and one step back in the supply chain – that is, who and where they received melons from; as well as who and where they supplied melons to.

This information is important in enabling melons to be removed promptly from the food supply chain if there is a food safety problem that could harm consumers. It also helps with investigating the cause of the issue. Prompt action reduces the risk of consumers getting ill, as well as costs to implicated businesses.

The more detailed information a business has on its suppliers and customers, the better it will be able to respond to an incident. For instance, if melons are received from multiple sources, knowing the supplier or growing site for each batch of melons can assist in limiting a recall to only the affected batch/es. This demonstrates the importance and value of an effective traceability system.

* FSANZ risk assessment for melon primary production and processing (Proposal P1052)

Best practice:
A strong traceability system includes:

- procedures for identifying producers, suppliers, customers and products
- contact details (name, address, phone, email) of suppliers and a description of products or inputs they each supply
- customers' contact details and a description of the product supplied to them
- dates of transaction or delivery
- batch numbers or lot identifications (or other markings)
- quantities of product supplied or received
- verification of the traceability system with regular mock recalls using relevant scenarios
- any other production records relevant to the business.

4.2.9—6 Inputs – soil, fertiliser and water

Inputs can be a source of contamination, with potential to introduce pathogenic microorganisms, chemicals or physical contaminants onto melons.

The intended outcome is that inputs the business uses to grow and process melons do not make the melons unacceptable.

A primary horticulture producer and a primary horticulture processor must take all reasonable measures to ensure that any of the following inputs do not make melons unacceptable:

a. soil;
b. soil amendments (including manure, human biosolids, compost, and plant bio-waste);
c. fertiliser; and
d. water.

Inputs used to produce melons include soil, water, fertilisers, mulch, compost, chemicals (e.g. pesticides, herbicides), containers, conveyor belts and other equipment. If not properly managed, these inputs can be a source of contamination by harmful microorganisms, chemicals or physical hazards.

Primary producers and primary processors of melons must do what they reasonably can to make sure the inputs they use do not contaminate their melons and make them unacceptable to eat.

Best practice:
Examples of measures a business could take to reduce the risk of inputs contaminating their produce include:

Soil, soil amendments and fertilisers

- Minimise contact between soil and the edible part of melon crops, for example by using plastic mulch under plants.
- Do not use untreated animal manures or human waste.
- If purchasing treated soil amendments, ensure they are certified, compliant with Australian Standard AS 4454-2012: Composts, soil conditioners and mulches.

- If making their own treated soil amendments, follow an approved, verified process to be sure microorganisms are reduced to safe levels (e.g. through appropriate heat, aeration and time).
- Check the recommended time to wait between applying any soil amendment and harvest (e.g. 90 days for a soil amendment used for produce grown close to the ground).
- Protect stored treated soil amendments from contamination (e.g. covered, away from chemicals, waste and animals).

Water

- For growing crops, ensure water used for irrigation and for applying fertilisers, pesticides and other agricultural chemicals does not contain levels of microorganisms that would make the produce unsafe.
- Regularly assess risks of their water sources, including
    - the potential for cross-contamination from water sources in normal and high rainfall or flooding
    - to ensure microbial quality of water is safe for its intended use (see below).
- Regularly test water sources and:
    - apply appropriate treatments if required (e.g. chlorine, UV, filtration) and monitor levels of chemicals used in the water
    - increase testing if animals, weather (e.g. dust storms, heavy rain, drought) or other events could have affected water sources
    - keep appropriate testing records.
- Prevent water contamination (e.g. fence dams to keep animals away).
- Record water sources used for irrigation and the site of irrigation.
- Post-harvest, ensure water used to cool, wash or sanitise produce is clean and safe (town water or similar potable quality).
- Ensure water used for cleaning food contact surfaces is safe – town water or similar potable quality.

Other inputs

Other general measures include:

- using equipment that is clean and (as necessary) sanitised
- using approved chemicals according to manufacturers' instructions.

'Inputs' is broadly defined in standard 4.1.1 clause 1. 'Unacceptable' is defined in standard 4.1.1 clause 3 and includes food that is unsafe or unsuitable.

4.2.9—7 Growing sites

The growing site can be a source of contamination for melons, depending where it is, what it has been used for and what goes on around it. If produce gets contaminated while it's growing on the site, it can be difficult to address later in the supply chain.

The intended outcome is that businesses will routinely assess their growing sites, consider what hazards may be present or emerging and only proceed to growing melons at sites where there is minimal risk of contamination.

A primary horticulture producer must take all reasonable measures to ensure that a growing site is located, designed, constructed, maintained and operated such that melons are not made unacceptable.

The primary producer needs to know about their growing site, what it was used for previously, what is happening nearby and what other potential sources of contamination exist. The business must take all reasonable actions to ensure any area used to grow melons is safely located, designed and constructed for that purpose. The site must also then be maintained and operated throughout the production of melons, to keep them safe and suitable.

Where the business identifies there are risks of contaminating the produce (e.g. land that was previously used for waste management could contaminate produce grown on that site with waste chemicals or pathogenic microorganisms), they must take action to eliminate or manage those sources of contamination. If the site is not suitable, or cannot be made suitable, it mustn't be used for growing melons.

Best practice:
Examples of things the business could do to make sure the growing site is safe and suitable to grow and harvest produce include:

- Know what previous crops were planted, what weeds were present and what chemical sprays were applied. Some chemicals can remain in the soil for a long period.
- Ensure growing areas are not located where it is likely harmful bacteria could pose a high risk (e.g. if adjacent land is used for a feedlot or poultry production).
- Check around the growing site and surrounding areas before planting melons, to assess the site and surrounding area for sources of contamination (e.g. damaged fence allowing livestock in from an adjacent paddock).
- Check the site for hazards routinely throughout the crop's lifecycle, and at least within a week of harvest.
- If potential hazards are identified at any point, use buffer areas, ditches, physical barriers and other strategies to minimise the likelihood of melons becoming contaminated.

4.2.9—8 Weather events

Weather events such as storms and floods can contaminate or damage melons, so businesses need to make sure affected melons are appropriately managed.

The intended outcome is that melons that may be contaminated or damaged by weather events do not enter the food supply.

A primary horticulture producer and a primary horticulture processor must take appropriate remedial action to ensure that melons adversely affected by weather conditions are not unacceptable.

Severe weather events include drought, dust storms, floods, strong winds and hail storms. These events can physically damage produce and/or contaminate melons; for example, with dirt, chemicals or animal faeces carried by wind or flood water.

Primary producers and primary processors of melons must take appropriate action to ensure that produce affected by a weather event is not unacceptable to eat if it is to enter the supply chain as a fresh melon. Businesses need to understand the food safety risks, and what to do with produce after weather events, to prevent unsafe and unsuitable produce entering the food supply.

Best practice:
Examples of things a business could do to prepare for, or respond to, weather events include:

- Ensure fields have good drainage, so water does not pool around produce.
- Use wind breaks and other shelter to reduce dust and dirt blowing onto produce and equipment.
- During droughts and floods the water quality can go down, so monitor water sources more closely and more often during these times.
- Do not harvest produce that has been touched by flood water, because flood waters contain contaminants (e.g. sewage, chemicals, harmful bacteria and physical hazards).
- Inspect produce harvested or received after storms and remove, treat or divert (away from fresh consumption) any that is likely to be unsafe.
- Adjust procedures for produce washing and sanitising after storms, because produce is more likely to be contaminated with soil and dust.

Example	**Case study - Severe weather events cause high contamination of produce and result in foodborne illness** A listeriosis outbreak in 2018 resulting in 7 deaths and a miscarriage was linked to consumption of rockmelons from a farm in NSW. An investigation[1] concluded that adverse weather events were the major contributors to the outbreak, with heavy rains in December and subsequent dust storms significantly increasing the organic load and amount of Listeria bacteria on the melons. Although the farm had melon washing and sanitising procedures in place, these had not been adequate to cope with the higher levels of contamination. The outbreak triggered a large-scale recall of rockmelons across Australia at significant cost to the business. It also had considerable flow-on effects on the broader melon industry – estimated at over $100 million loss of melon market sales value in the years following the outbreak[2]. Corrective actions by the business included changes to cleaning and sanitising procedures (e.g. increasing chlorine concentration in pre-wash and sanitising wash steps, restricting use of pressurised cleaning guns). They also made extensive modifications to equipment and the packing line to enable better cleaning (e.g. moving equipment for easier access, removing porous material on the packing table, improving hand wash facilities). 1. Listeria Outbreak Investigation - Summary Report for the Melon Industry 2018 2. FSANZ 2022 Decision Regulation Impact Statement for P1052 – Primary Production and Processing Requirements for Horticulture (Berries, Leafy Vegetables and Melons)

4.2.9—9 Premises and equipment

Premises and equipment can contaminate melons if they are not properly designed, built, used and maintained.

The intended outcome is that melons are not contaminated due to the design, construction, maintenance and operation of premises and equipment; and that melons are not contaminated due to dirty or contaminated premises and equipment.

1. **A primary horticulture producer and a primary horticulture processor must take all reasonable measures to ensure that premises and equipment are designed, constructed, maintained and operated in a way that:**
   a. allows for effective cleaning and sanitisation of the premises and equipment; and
   b. does not make melons unacceptable.
2. **A primary horticulture producer and a primary horticulture processor must ensure that premises and equipment are kept clean, sanitised and in good repair to the extent required to ensure that melons are not made unacceptable.**

The business is required to do all they reasonably can to ensure their premises and equipment are designed, constructed, maintained and operated so they can be effectively cleaned and (if necessary) sanitised, and do not contaminate or damage the melons. The second part of this requirement states that premises and equipment must be kept clean, sanitised (as necessary) and in good repair to ensure melons are not made unacceptable.

This means the business must ensure the buildings, equipment and vehicles used are
- well designed and constructed to suit the activity they are used for (e.g. made of non-porous material, easy to access and clean)
- kept in good condition (e.g. regularly checked for metal fatigue or loose pieces)
- regularly cleaned
- where appropriate, sanitised (e.g. equipment and surfaces that will directly touch melons, such as cutting blades, conveyor belts and harvest containers).

Best practice:
Examples of things the business could do to make sure the premises and equipment do not contaminate produce include checking:
- floors are designed and constructed to minimise risks of contaminating produce (e.g. can be readily cleaned, and are laid so water cannot form pools that could splash onto melons)
- surfaces that directly contact produce are able to be cleaned and are regularly cleaned and where appropriate sanitised
- harvest and processing equipment is regularly inspected and replaced or repaired as needed
- lighting in growing, packing and storage areas is bright enough for tasks to be done properly (e.g. to allow effective inspection of washed produce)
- chemicals, fertilisers and farm machinery are stored away from areas where melons are openly handled, packed and stored
- workers know how to properly use and maintain the premises and equipment.

4.2.9—10 Temperature of harvested melons

If pathogenic microorganisms are present on melons, these can multiply rapidly following harvest if the produce is kept in warm conditions.

The intended outcome is harvested melons are kept in a temperature range that slows growth of bacteria and moulds that could cause foodborne illness.

A primary horticulture producer and a primary horticulture processor must keep harvested melons at a temperature that does not make the melons unacceptable.

Primary producers and primary processors must keep harvested melons at a temperature that does not make the food unsafe or unsuitable to eat. This means keeping harvested melons at a temperature that minimises the growth of any harmful microorganisms (bacteria and moulds) that may be present on them.

The business will need to monitor the temperature of harvested produce and adjust conditions (cooling as necessary) to keep it cool. Doing this once produce has been harvested, and then during processing, storage and transport can not only reduce the risk of harmful microorganisms growing in the food, but also help keep the product's quality and reduce food waste.

Best practice:
Things a business could do to ensure harvested produce is kept at an appropriate temperature include:

- Harvest in the morning or at night when temperatures are cooler.
- Map out post-harvest steps that may need temperature control and how the business might manage those steps – a flow diagram showing all processes may be useful.
- Keep harvested produce out of direct sunlight – for example, cover it with light coloured shade cloth.
- Pre-cool harvested melons to remove field heat in cool rooms, preferably with forced air cooling.
- Use refrigeration equipment, regularly checking the temperature and making sure the refrigeration is working correctly.
- Use cool rooms, ensuring they are regularly cleaned and sanitised and cooling units are serviced so they operate efficiently.
- Determine what temperatures are safe for particular produce – for example, optimum storage temperatures to minimise food safety risks and maintain quality for rockmelons is 5°C and other specialty melons at 7° to 10°C for periods up to 12 to 14 days (NSW DPI 2019).

4.2.9—11 Washing and sanitisation of harvested melons

Dirty melons can contain harmful microorganisms on their surface, especially melons that have a rough or netted skin. If washing and sanitisation are done incorrectly, it can fail to remove contamination or even introduce further contamination, making the melons unacceptable.

The intended outcome is that melons are cleaned to remove visible surface dirt, and if they are washed and sanitised, these processes are effective, resulting in melons that are acceptable to eat.

A primary horticulture processor must take all reasonable measures to ensure that:

a. visible extraneous material on harvested melons is removed; and

b. any washing or sanitising of harvested melons does not make the melons unacceptable.

Washing and sanitising are two distinct processes serving different purposes:

- Washing melons removes any visible material such as dirt.
- Sanitisation is an additional process that reduces microorganisms on the surface of melons to a safe level, usually with a chemical (e.g. food grade bleach). Sanitisation must only be done after washing, because dirt can make sanitisers less effective.

The first requirement of this section is that primary processors must take all reasonable measures to ensure their melons are cleaned (e.g. wiped or washed, as appropriate to the type of melon) to remove all visible material (such as soil). Washing is not mandated, although the business may determine that washing is the best way to clean the melons.

The second requirement of this section is that any washing or sanitisation process used by the business does not make the melons unacceptable. This means the business must design and control their washing and sanitisation processes so their produce is effectively cleaned and is not contaminated by harmful bacteria, chemicals or physical hazards.

Best practice:
Things the business could do to ensure effective washing and sanitisation of their produce include:

- Use an appropriate method to remove surface dirt and other visible material from melons – for example, wiping with a cloth may be sufficient for smooth-skinned watermelons, but washing with high pressure water and brushes should be used for rough-skinned rock melons (NSW DPI 2019).
- When a washing process is used, ensure safe water is used, and regularly monitor the water quality. If the water gets too dirty, it could contaminate the melons. It could also make a subsequent sanitising step less effective.
- Know the most effective ways to sanitise melons, ensuring appropriate chemical concentrations and contact times are applied, as the best method varies depending on the specific melon (e.g. 200 ppm free chlorine for 1 minute is generally recommended for rock melons, NSW DPI 2019).
- Auto-dose for chemicals, and regularly monitor water quality and sanitisers to help with correct sanitising of melons.
- Refer to the Melon food safety toolbox and other resources (see Resources and references chapter below) for practical advice.

4.2.9—12 Animals and pests

Animals and pests are sources of contamination for melons.

The intended outcome is that businesses put control measures in place to minimise the risks associated with animals and pests.

A primary horticulture producer and a primary horticulture processor must take all reasonable measures to minimise the presence of animals, vermin and pests in growing sites, and in premises and equipment, to ensure that melons are not made unacceptable.

Animals, vermin and pests include livestock, pets and working dogs, rats and mice, birds, wild animals (e.g. kangaroos, possums and deer), flies, cockroaches and other insects.

Animals and pests are known to carry harmful microorganisms that can contaminate produce and make it unacceptable. They can directly contaminate crops through their faeces and urine, hair/feathers or carcasses left on growing sites. They can also indirectly contaminate produce through contaminating buildings, equipment and inputs such as water.

Primary producers and primary processors of melons must do all they reasonably can to minimise the presence of animals, vermin and pests in growing sites, premises and equipment, to ensure they do not make their melons unacceptable. The business needs to consider how animals, vermin and pests could get in or on their produce, and then work out what they will do to minimise their presence or prevent their access.

Best practice:
Examples of things a business could do to reduce the risk of animals contaminating their melons include:

- Regularly assess risks of the growing site, buildings and equipment, including looking for signs (e.g. droppings, digging, nests) that wildlife, vermin or pest insects are present.
- Protect and maintain growing sites to discourage animals from entering (e.g. by using fencing, and limiting surface water and produce waste in the area).
- Regularly look for animals and pests, and especially just before harvest. If they are seen in growing sites, the business must decide whether produce is safe to harvest from those areas.
- Use a pest control plan for buildings (e.g. use approved baits and traps to reduce rats and mice around the outside of the building, and record details).

4.2.9—13 Skills and knowledge

People who handle melons may contaminate them through their actions if they are not trained in food safety and food hygiene.

The intended outcome is that persons who do, or supervise, specific activities with melons have the right skills and knowledge in food safety and food hygiene matters to minimise risk of contaminating melons.

A primary horticulture producer and a primary horticulture processor must ensure that persons who engage in a relevant activity, or who supervise a person who engages in a relevant activity, have:

a. knowledge of food safety and food hygiene matters; and

b. skills in food safety and food hygiene matters

commensurate with their work.

Primary producers and primary processors of melons must ensure that each person who does a 'relevant activity' (defined in section 4.2.9—2; for example, grows, harvests, trims, washes, sorts, or packs melons) and each supervisor, has the knowledge and skills in food safety and food hygiene appropriate for their work.

'Food hygiene' involves doing things during growing and processing that prevent produce becoming contaminated and keep them safe to eat – for example, using safe water and clean equipment.

'Food safety' is the result of practicing good food hygiene, guaranteeing the produce will not harm consumers who eat it.

'Knowledge' means understanding food safety and hygiene issues related to different tasks – for example, people picking melons by hand must understand that dirty hands could contaminate them. 'Skills' means being able to do a task in a way that ensures the produce stays safe – for example, people trimming produce must be able to properly wash their hands and sanitise a knife.

The requirement means staff and their supervisors must have the right level of knowledge and skills to do their particular work. For example, producers need to know how to keep melons safe during growing and harvesting, and be able to do it. Primary processors need to have knowledge and skills that keeps melons safe during their processing steps. A person who trims and washes melons may have different skills and knowledge to a person who services equipment, but they all need to know and do their part to keep melons safe.

Obtaining the required skills and knowledge

Skills and knowledge can be achieved in different ways. Recognising this, the requirement does not mandate specific training.

Options a business could use to ensure staff obtain the skills and knowledge they need to produce acceptable melons include:

- in-house training
- working alongside an experienced worker
- distribution of guidance documentation to staff
- have operating procedures in place that clarify responsibilities of staff, visitors and supervisors
- attendance at food safety courses run by local councils or other bodies
- completion of online food safety training courses
- hiring a consultant to present a course
- formal training course
- have signage in place to remind staff of food safety practices.

Further information on food safety and hygiene courses are available from the National Register of VET (Vocational Education and Training) website.

Best practice:
A primary producer or primary processor could take the following steps to ensure their people have the right skills and knowledge:

- Understand all the activities their business does in the food supply chain – a process flow diagram could be useful.
- Map out the activities for which each of their staff/ supervisors are responsible.
- Set rules on good food safety and hygiene practices and make sure everyone follows them.
- Ensure staff and supervisors can understand and follow food safety practices outlined in grower guides and other documentation (e.g. SOPs).
- Train staff to identify and report things that could make produce unsafe (for example, animal droppings in processing equipment or contaminated/flood water touching melons in the field).
- Provide food safety training when staff first start work and regularly refresh training (e.g. each year).
- Display instructions and signs in appropriate areas – photos and diagrams remind staff what they should be doing to keep food safe.
- Develop a workplace culture that encourages supervisors and staff to do things correctly, ask questions and remind each other of best practices.

Useful guidance materials

Many best practice guidance materials (such as online training course, fact sheets, guidebooks and posters) covering various aspects of food safety and food hygiene are available free from national, state, territory and local governments as well as the Fresh Produce Safety Centre website. See the Resources and references chapter.

4.2.9—14 Health and hygiene of personnel and visitors

People can be a source of contamination for melons, for example through dirty hands or clothing, or coughing and sneezing.

The intended outcome is that workers, visitors and other people do not contaminate melons through illness or poor personal hygiene.

A primary horticulture producer and a primary horticulture processor must take all reasonable measures to ensure that personnel and visitors exercise personal hygiene and health practices that do not make melons unacceptable.

Personnel (staff and contractors) and visitors can contaminate produce with harmful microorganisms, chemicals, or foreign matter from their hands, body, clothes or equipment. To reduce this risk, businesses need to set good personal health and hygiene practices and make sure they are understood and followed by anyone who visits or works on their site.

Good practices include:

- staff not attending work/ handling food while sick with gastro or respiratory illness
- staff telling supervisors of illness or events (e.g. spills) that could make food unsafe
- re-assigning workers that may still be recovering to lower-risk duties (e.g. computer tasks)
- washing hands after toilet and lunch breaks, or any other time hands may have become contaminated (e.g. from animal faeces) or excessively dirty

- wearing clean clothes and securing hair and jewellery in food processing areas
- wearing coverings appropriate to the task (e.g. gloves, shoe covers, hair nets, beard masks).

Best practice:
Primary producers and primary processors of melons must do what they reasonably can to make sure personnel and visitors exercise personal and health practices that do not make produce unsafe or unsuitable to eat. Business could, for example, take the following steps:

- Understand common sources of contamination from personnel and visitors.
- Provide and maintain clean toilets and handwashing facilities in convenient locations.
- Provide staff hygiene training when they first start work and regularly refresh training (e.g. each year).
- Provide site inductions or materials on health, hygiene and food safety to visitors before they visit.
- Provide written instructions, signs and posters to tell people what they should do.
- Encourage staff to report illness and enable them to be re-assigned to low-risk tasks during recovery.
- Ask visitors to complete declarations they are not sick with intestinal or respiratory illness.

4.2.9—15 Sale or supply of unacceptable melons

The intended outcome is that businesses do not sell or supply melons if they know or suspect they are unacceptable.

A primary horticulture producer and a primary horticulture processor must not sell or supply melons for human consumption if they ought reasonably know, or ought reasonably suspect, that the melons are unacceptable.

It is the business's responsibility to only sell or supply melons that are acceptable to eat.

Melons need appropriate controls to manage their safety and suitability, from initial growing steps through to the final product. The business needs to consider all stages of its operations including inputs, storage, cooling, packaging and transport. By actively monitoring its procedures, the business can confirm controls are working properly, and be reasonably sure the melons they sell or supply are acceptable.

If the business knows or suspects the melons are unacceptable, they must not be sold.

'Unacceptable' includes food that is unsafe or unsuitable, as defined in clause 3 of standard 4.1.1.

Examples of melons considered to be unacceptable include melons that are:

- affected by flood waters, where melons have been covered or touched by flood water
- contaminated by fuel or chemicals that have been spilt over them
- packed melons that have been damaged, with cuts penetrating into the edible flesh of the melon.

Resources and references

Resources and references

Agriculture Victoria Guide: Food Safety for Seed Sprout Producers
https://agriculture.vic.gov.au/__data/assets/word_doc/0003/557571/Food-safety-for-seed-sprout-producers-guide.docx

Fresh Produce Safety Centre 2022 Guidelines for Fresh Produce Food Safety
https://fpsc-anz.com/publications-resources/

FSANZ (Food Standards Australia New Zealand) 2010 Technical Paper: A through-chain analysis of food safety hazards and control measures in the production and supply of seed sprouts for human consumption. Supporting document 1, P1004 – Primary production and processing standard for seed sprouts.
https://www.foodstandards.gov.au/code/proposals/pages/proposalp1004primary4361.aspx

FSANZ 2021 Microbiological assessment of berries, leafy vegetables and melons. Supporting document 2, P1052 - Primary production and processing requirements for horticulture (berries, leafy vegetables and melons)
https://www.foodstandards.gov.au/sites/default/files/food-standards-code/proposals/Documents/SD2 FINAL_2nd CFS Micro RA P1052 with appendices_ref unlinked.docx

FSANZ 2022 Decision Regulation Impact Statement for P1052 – Primary production and processing requirements for horticulture (berries, leafy vegetables and melons)
https://www.foodstandards.gov.au/sites/default/files/food-standards-code/proposals/Documents/P1052 SD1 DRIS at approval.docx

International Sprout growers association – professional association of sprout growers and companies that supply products and services to the sprout industry.
https://isga-sprouts.org/

NSW Department of Primary Industries (DPI) Listeria Outbreak Investigation - Summary Report for the Melon Industry 2018
https://www.foodauthority.nsw.gov.au/sites/default/files/_Documents/foodsafetyandyou/listeria_outbreak_investigation.pdf

NSW DPI, SP Singh 2019 Melon food safety – A best practice guide for rockmelons and specialty melons
https://secureservercdn.net/198.71.233.156/exm.9c1.myftpupload.com/wp-content/uploads/2020/09/Melon-food-safety-best-practice-guide.pdf

NSW DPI Berries – resources web site
https://www.dpi.nsw.gov.au/agriculture/horticulture/berries

NSW Food Authority Watermelon food safety: A best practice guide and toolbox
https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0011/1394516/Watermelon-food-safety-guide.pdf

Safe Food Queensland Safeguarding your sprouts
https://www.safefood.qld.gov.au/newsroom/safeguarding-your-sprouts/

Industry web sites

Fresh Produce Safety Centre Australia & New Zealand
https://fpsc-anz.com/

Hort Innovation
https://www.horticulture.com.au/

Melons Australia
https://www.melonsaustralia.org.au/

Berries Australia
https://berries.net.au/home/about/berries-australia/

AUSVEG - Industry representative body for vegetable and potato growers
https://ausveg.com.au/

Government web sites

National

Australian Department of Agriculture, Fisheries and Forestry Farming, food and rural support - DAFF (agriculture.gov.au)

Australian Competition and Consumer Commission
https://www.accc.gov.au/

Australian Small Business and Family Enterprise Ombudsman (ASBFEO)
https://www.asbfeo.gov.au/

FSANZ (Food Standards Australia New Zealand) Food safety in horticulture webpage
https://www.foodstandards.gov.au/foodsafety/standards/Pages/Food-safety-in-horticulture.aspx

States and territories

ACT Health Businesses web page
https://health.act.gov.au/businesses

NSW Food Authority Industry web page
https://www.foodauthority.nsw.gov.au/industry

NSW Department of Primary Industries Horticulture web page
https://www.dpi.nsw.gov.au/agriculture/horticulture

Northern Territory Business and industry web page
https://nt.gov.au/industry

SA Department of Primary Industries and Regions Horticulture web page
https://www.pir.sa.gov.au/biosecurity/food_safety/horticulture

Queensland Health The Food Pantry portal for businesses
https://www.qld.gov.au/health/staying-healthy/food-pantry

Safe Food Queensland Food business web page
https://www.safefood.qld.gov.au/food-business/

SA Health Food safety for businesses
https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/public+health/food+safety+for+businesses

Tasmanian Department of Health Food safety for businesses and community organisations
https://www.health.tas.gov.au/health-topics/food-safety/food-safety-businesses-and-community-organisations

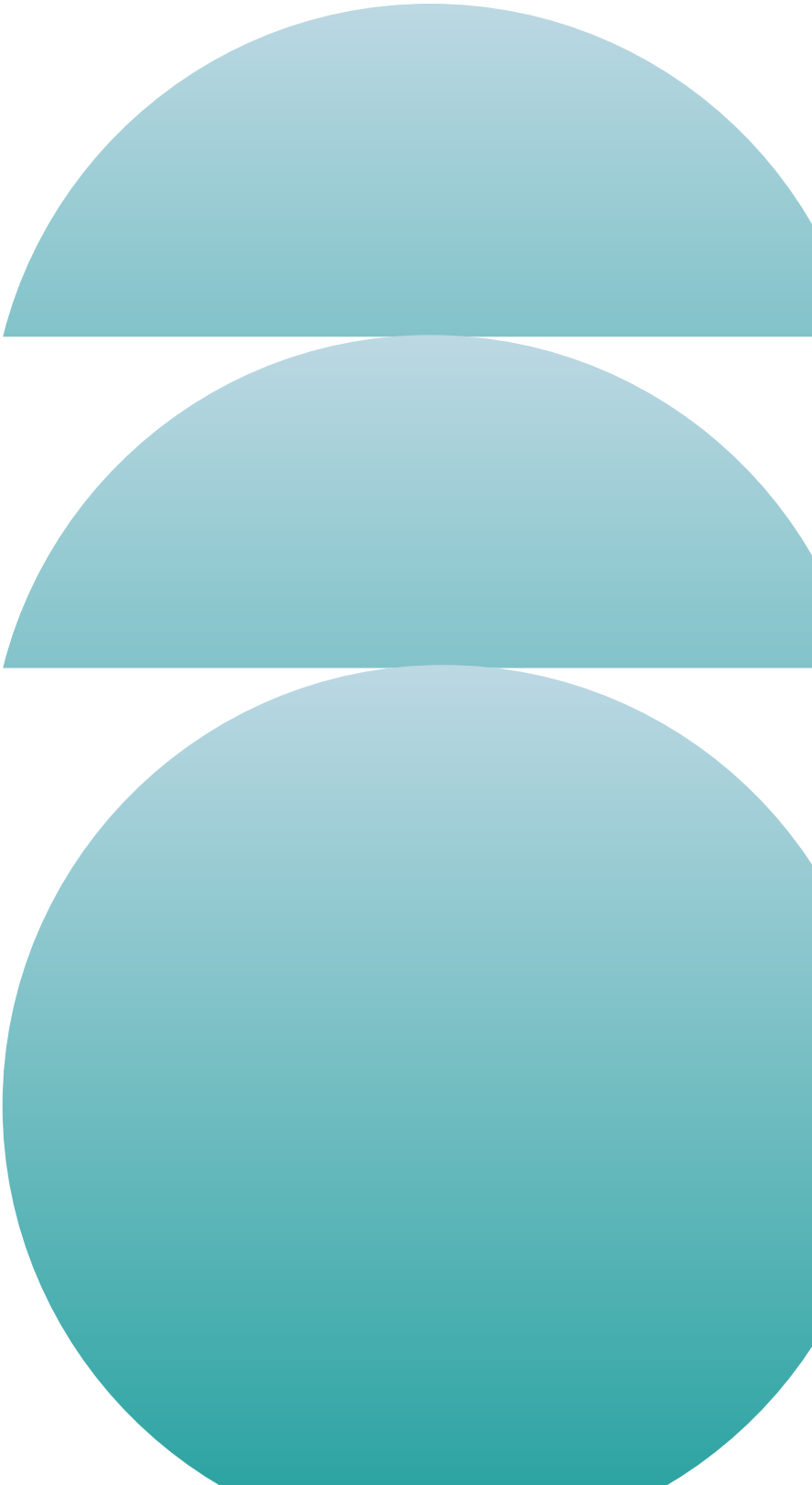
Agriculture Victoria Food safety for horticulture producers
https://agriculture.vic.gov.au/biosecurity/food-safety/food-safety-for-horticulture-producers

Victoria Health Food businesses web page
https://www.health.vic.gov.au/food-safety/food-businesses

WA Department of Health Seeds and bean sprouts
https://www.health.wa.gov.au/Articles/S_T/Seeds-and-bean-sprouts-food-standards

WA Department of Health Primary production and processing standards for leafy vegetables, melons, and berries
https://www.health.wa.gov.au/Articles/N_R/Primary-production-and-processing-standards-for-leafy-vegetables-melons-and-berries

Appendices



Appendix 1. Improving food safety through business culture

'Food safety culture' is about attitudes, behaviours and the priority given to food safety in an organisation. It is how everyone (owners, managers, employees) thinks and acts in their daily job to make sure the business's food is safe.

In a strong food safety culture, people take both responsibility and care in producing safe food. They understand the importance of making safe food and the consequences of things going wrong. People have the right knowledge and skills and a genuine commitment to doing things the right way, every time.

Food safety culture starts at the top but needs support from everyone across the business. It includes not only food handlers, but also people involved in cleaning, maintenance, purchases, recruitment and other activities, as they contribute to the business's food safety and culture too.

Why is food safety culture important?

In Australia, people expect to enjoy their food with the assurance it is safe to eat. A good food safety culture in your business can protect:

- consumers from illnesses and death from unsafe food
- your brand's reputation
- your business from financial loss.

Preventable problems

Each year in Australia there are approximately:

- 4.7 million cases of foodborne illness, with contaminated food causing about 47,900 hospitalisations and 38 deaths
- 80 food recalls, mostly due to contamination by disease-causing microorganisms or allergens not listed on the label.

It's clear that despite having legislation, standards, quality assurance programs and other food safety systems in place, sometimes things go wrong. Problems with unsafe food have been linked to poor hygiene practices or mistakes by people handling food and equipment, even when people are trained and businesses are inspected and audited. These problems are largely preventable, if there is a strong food safety culture in the business.

People are the key to food safety systems working properly. After all, it is people who make the decisions, handle the food, use and maintain equipment and clean things up.

Where to start

The table on the next page shows the basic components of a good food safety culture. You can improve your business's food safety culture through three steps:

- **Know** – know what your business's food safety culture is (e.g. assess it with a survey)
- **Do** – do something to improve the culture (e.g. improve communications on food safety, allocate funding for equipment, training); even small steps can make a difference
- **Follow through** – monitor food safety progress and commit to continually improving.

FSANZ has some useful resources designed to help businesses and regulators – visit www.foodstandards.gov.au (see the Food safety culture section under business guidance).

What does a strong food safety culture look like?

	What?	How? (examples)
Strong leadership	Senior leaders show the way, openly commit to making safe food the top priority throughout the business	*I make sure there is a regular meeting or get-together where we report and discuss our food safety performance.* *I personally follow up on things we decided need to be done (e.g. assign time, people or money to specific tasks, make sure corrective actions are done).* *I review our food safety performance and budget with my team as part of our overall business performance at least once a month.*
Committed managers	Managers show their commitment to food safety through dedicating time and effort	*I exemplify best practice food safety when working in my business.* *I communicate and follow up on my expectation that all staff spend 10 minutes each week in team meetings discussing and solving our food safety challenges.* *I schedule and lead a regular event (e.g. team meeting, webinar, safety demonstration) where I personally speak to my teams about food safety.* *I make sure my leadership team discusses and acts on suggestions about improving food safety at least monthly.*
Everyone contributes	Everyone in the business believes safe food is important and everyone plays a part	*I speak up and correct anyone's behaviour if I see something wrong.* *I offer suggestions I think could improve the business's food safety performance.* *I ask questions if I don't understand why food safety practices are changed.*
Everyone's accountable	Everyone understands that they are held responsible for ensuring food is safe	*I understand my role and responsibilities in food safety and that if I do not take them seriously consumers could become ill or die and the business could be harmed.* *I help new colleagues and share my pride in what our business expects and achieves when it comes to food safety.*
Knowing and acting right	More than training people – making sure everyone knows the risks and does the right thing, every time	*I assign time and budget for staff to receive food safety training, as well as regular updates or refresher sessions.* *I make sure there is a plan for everybody to be involved in food safety observations (e.g. food temperature, equipment sanitation), so we are all checking that we know and do what is expected.* *I actively encourage and reward people/ teams who have shown a strong commitment to food safety.* *I always speak up and/or take action if I see something is wrong (e.g. a food safety observation).*
Continual improvement	Be proactive – monitor what goes on, look for ways to improve, prevent problems happening in the future	*I discuss findings from food safety observations with my team at a pre-set and regular time so we can find better ways to do things and remove obstacles.* *I am encouraged to bring ideas about improving food safety to my supervisor and often do this.* *I see my supervisor and the business as a whole taking my comments and suggestions seriously. This makes me feel proud and valued.*

Appendix 2. Business activities under chapter 3 and chapter 4 of the Code

This appendix broadly sets out how requirements related to horticulture activities are contained in chapter 3 and chapter 4 of the Food Standards Code. Specific examples of activities considered to be under chapter 4 or chapter 3 are provided in commodity chapters of this guide book.

Chapter 4 contains the PPP standards, with requirements for businesses that do primary production activities (e.g. growing and harvesting) as well as particular processing steps, as defined in each PPP standard.

Chapter 3 contains food safety standards for businesses considered to be 'food businesses' as defined in standard 3.1.1:

> **food business means a business, enterprise or activity (other than primary food production) that involves –**
> **(a) the handling of food intended for sale; or**
> **(b) the sale of food;**
> **regardless of whether the business, enterprise or activity concerned is of a commercial, charitable or community nature or whether it involves the handling or sale of food on one occasion only**.

Primary food production is excluded from the definition of food business, and therefore from chapter 3 requirements. Primary food production is defined in standard 3.1.1 as:

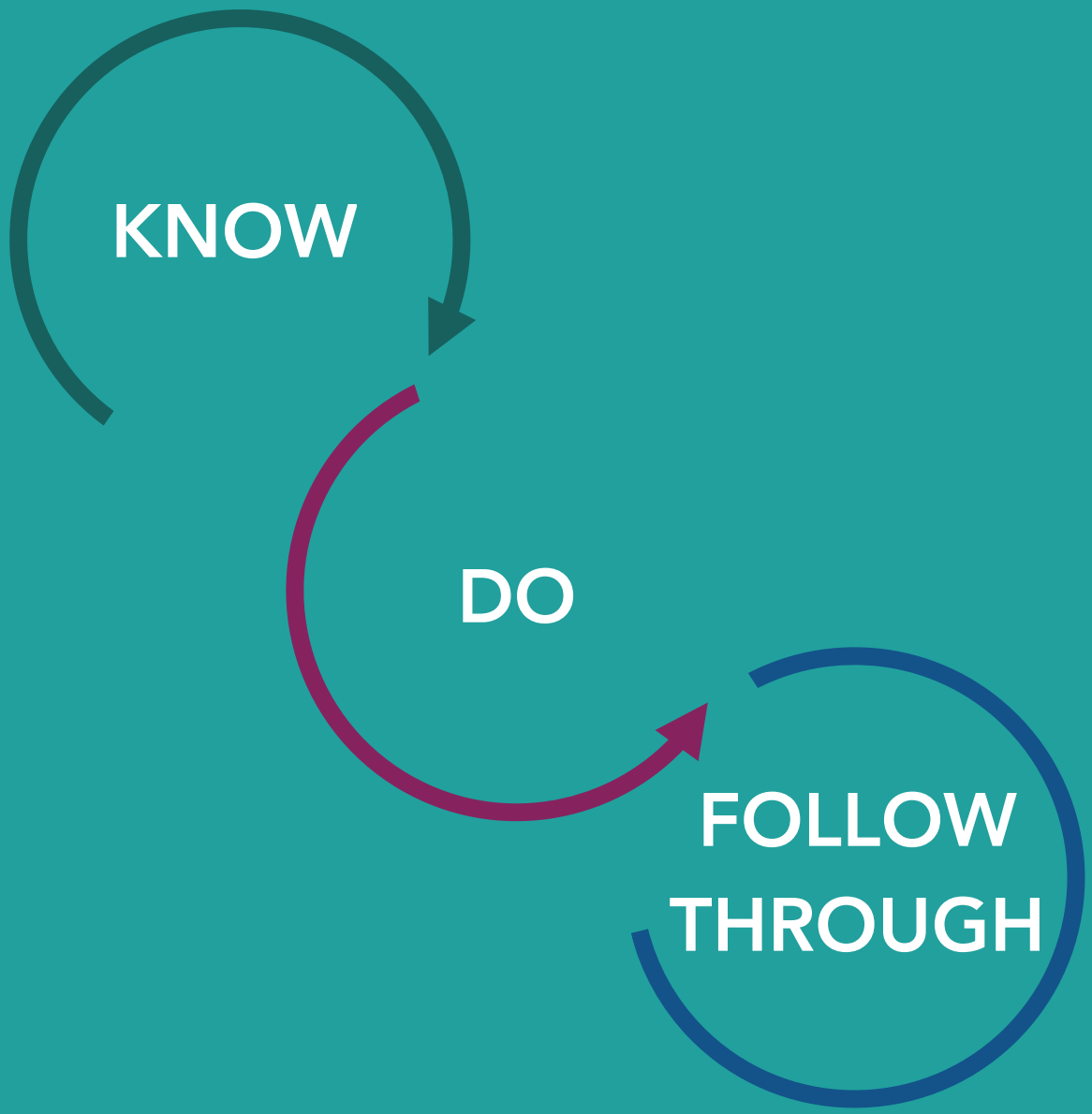
> **primary food production means the growing, cultivation, picking, harvesting, collection or catching of food, and includes the following –**
> - **(a) the transportation or delivery of food on, from or between the premises on which it was grown, cultivated, picked, harvested, collected or caught;**
> - **(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.**

A business's activities may include some cross over or extension of activities from primary production into early processing or further processing. This may mean the business needs to meet requirements in both chapter 3 and chapter 4, depending on the different activities. For example, they may need to meet PPP requirements for growing, harvesting, washing and trimming harvested produce, and then meet chapter 3 requirements for chopping up produce and mixing it with other ingredients. Retail sale of fresh produce (e.g. farm gate sales to the public) is also covered under chapter 3.

Different government agencies may be responsible for regulating chapter 3 and chapter 4 activities. For example, some states have an agency that specifically regulates primary production (e.g. a primary industries agency), and another agency (e.g. a health department or local government) that regulates chapter 3 activities.

Where chapter 3 applies, the most relevant standards for horticulture processors are standards 3.2.2 and 3.2.3, which cover preventative food safety requirements. For further guidance on these standards, refer to Safe Food Australia.

FOOD SAFETY DOESN'T JUST HAPPEN



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