FOOD STANDARDS
Australia New Zealand
Te Mana Kounga Kai – Ahitereiria me Aotearoa

SUPPORTING DOCUMENT 3

Proposal P1004 – Primary Production & Processing Standard for Seed Sprouts

Summary of existing requirements for seed sprout production

Existing Requirements for Sprout Production (International and Australian)

1.0 Summary of existing requirements applicable to each sector

Requriements	Seed Production	Seed Processing	Sprout Production
Australia and New Zealand Food Standards Code Chapter 1 – General Food Standards • including Standard 1.6.1 - Microbiological Limits for Food Chapter 3 – Food Safety Standards • including Standards 3.2.2 - Food Safety Practices and General Requirements and 3.2.3 - Food Premises and Equipment http://www.foodstandards.gov.au/foodstandards/foodstandardscode/	**No** **No**	Refer to discussion in Section 4.3 of 2nd Assessment Report	**Yes** **No**
State and Territory requirements **NSW Food Regulation 2004** **Plant Products Food Safety Scheme** and associated **Plant Products Safety Manual** http://www.foodauthority.nsw.gov.au/_Documents/industry_pdf/Plant+Products+Manual.pdf (March 2010)	**No**	**No**	**Yes**
Export requirements **Export Control (Plant and Plant Products) Orders 2005** http://www.comlaw.gov.au/ComLaw/Legislation/LegislativeInstrumentCompilation1.nsf/0/7BE1D9C554F67735CA2573860003F987/$file/ExpContPlantsPlantProd2005.pdf	**Yes**	**Yes**	**Yes**
International and codes of practice **Codex Alimentarius** Code of Hygienic Practice for Fresh Fruits and Vegetables Annex Sprout Production. http://www.codexalimentarius.net/web/more_info.jsp?id_sta=10200 **Reducing Microbial Food Safety Hazards for Sprouted Seeds – Guidance for Industry (US FDA)** http://www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/ProduceandPlanProducts/ucm120244.htm **Canadian Code of Practice for the Hygienic Production of Sprouted Seeds** http://www.inspection.gc.ca/english/fssa/frefra/safsal/sprointe.shtml	**Yes** **Yes** **Yes**	**Yes** **Yes** **Yes**	**Yes** **Yes** **Yes**

Code of Practice for Food Safety in the Fresh Produce Supply Chain in Ireland (Chapter 4: Microbiological Safety of Sprouted seed Production) http://www.fsai.ie/assets/0/86/204/7332e0dd-fc90-45a0-a633-79c8066863ec.pdf	**No**	**No**	**Yes**
Industry **Code of Hygienic Practice for Whole Mung Beans** http://www.mungbean.org.au/pdf/Code%20of%20hygienic%20practice%20for%20mungbeans.pdf or via http://www.mungbean.org.au/foodsafetyandhygiene.html **Australian New Zealand Sprouters Association** Guidelines for Australian and New Zealand Sprout Producers Update 7 July 2008 **Woolworths (2007) WQA Product Category Requirement - Produce,**	**Yes** **No** **No**	**Yes** **No** **No**	**No** **Yes** **Yes**

2. Australia New Zealand Food Standards Code

Chapter 3 – Food Safety Standards

Standards 3.2.2 Food Safety Practices and General Requirements and 3.2.3 Food Premises and Equipment set out specific requirements for food businesses, food handlers and the food premises and equipment with which they operate to ensure the safe production of food. Standard 3.2.2 specifies process control requirements to be satisfied at each step of the food handling process:

- receipt
- storage
- processing
- display
- packaging
- transportation
- disposal
- recall

In addition there are requirements for skills and knowledge, health and hygiene of food handlers and the cleaning, sanitising and maintenance of premises and equipment.

Standard 3.2.3 sets out requirements to ensure that food premises, fixtures, fittings, equipment and transport vehicles are designed and constructed to minimise opportunities for food contamination and are cleaned and sanitised where necessary.

The food safety standards apply to all food businesses in Australia. A food business is defined in the Code as follows:

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 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 production activity that is regulated by or under an Act prescribed by the regulations for the purposes of this definition.

While the operation of a seed sprout business may involve a number of the food handling activities generally undertaken by food businesses, State and Territory jurisdictions (excepting NSW) have not been able to apply Chapter 3 requirements to them because, in accordance with these definitions, seed sprout businesses have been regarded as a primary food producers (a grower of sprouts).

Chapter 1 – General Food Standards

The food standards in Chapter 1 of the Code generally apply to all food sold or traded at retail and wholesale level in Australia and cover labelling requirements, the use of additives and processing aids, contaminants and natural toxicants, MRLs, articles and materials in contact with food and microbiological limits for food. The only provision in Chapter 1 that is specific for seed sprouts is a microbiological limit in Standard 1.6.1.

Standard 1.6.1 - Microbiological Limits for Food specifies a microbiological limit for *Salmonella* in “cultured seeds and grains” (alfalfa sprouts, bean sprouts etc.):

Food	Micro-organism	n	c	m	M
Cultured seeds and grains (bean sprouts, alfalfa etc)	*Salmonella*/25g	5	0	0	

Where:
n means the minimum number of sample units which must be examined from a lot of food
c means the maximum allowable number of sample units that can exceed m
m means the acceptable microbiological level in a sample unit
M means the level, when exceeded in one or more samples, would cause the lot to be rejected.

2. State and Territory requirements

New South Wales food safety scheme- seed sprouts

The NSW Food Regulation 2004 was amended in September 2005 to include the Plant Products Food Safety Scheme, applying to specified high risk plant product industries including sprouting and processing of seed sprouts.

Businesses that produce, store or transport seed sprouts for supply to the retail and food service sectors must hold a licence with the New South Wales Food Authority stating the activities that they are authorised to undertake and specific controls relevant to the industry. Businesses producing or handling unsprouted seed, unsprouted beans or wheatgrass do not require a licence.

Businesses that receive seeds for sprouting and produce seed sprouts must comply with the NSW Food Act 2003, Food Regulation 2004, the Australia New Zealand Food Standards Code and the Plant Products Safety Manual[1]. The manual outlines and explains the requirements of the Plant Products Food Safety Scheme. Sprout producers must demonstrate compliance though implementing a food safety program, based on Codex HACCP or Standard 3.2.1, which is certified by the Authority and audited. Businesses that only transport, distribute or store seed sprouts do not require a food safety program and are inspected for compliance with the legislation and the manual.

As part of their food safety program, sprout producers must address the following:

- raw material receival and storage;
- seed pre-screening for *Salmonella* (this may be certified by the seed supplier);
- raw material quality either by obtaining Authority approval to source seed from a supplier that can provide evidence that seed is produced under an audited HACCP-based food safety program or sanitising seed as specified in the manual;
- washing and sprouting;
- testing of spent irrigation water for *Salmonella*;
- post harvest washing;
- sprout storage;
- cleaning and sanitising of equipment and processing surfaces; and
- finished product testing for *E. coli*.

Sprout producers must also ensure that they have documented procedures for notifying the Authority of tests that fail to meet the microbiological testing requirements in the manual and the microbiological and chemical standards in the Australia New Zealand Food Standards Code. Laboratories testing these products are also required to notify failures to the Authority.

[1] Plant Products Safety Manual NSW/FA/FI012/0711 version 1 issued 12/11/07 available on the website of the NSW Food Authority at www.foodauthority.nsw.gov.au/industry/industry-sector-requirements/plant-products/

Specific requirements, detailed explanations and guidance for these activities are provided in the manual.

3. Export requirements

Schedule 3A of the *Export Control (Plant and Plant Products) Orders 2005* prescribes structural requirements and operational and hygiene requirements for establishments preparing mung beans aimed, primarily focussed on pest control, effective cleaning and personal hygiene. Clause 6 of this schedule specifies the following:

- A registered establishment in which mung beans are prepared or inspected for export:

  (a) must be equipped and operated in a manner which permits effective pest control and hygienic conditions to be maintained at the establishment; and
  (b) must have a defined program of hygiene and pest control.

- All machinery, equipment and surrounding floor area must be thoroughly cleaned of all waste material and debris at intervals not exceeding one week, or at such other times as an approved inspector considers necessary.

- Mung bean debris and waste must be removed from areas where mung beans are prepared each day and removed from the establishment each week.

- Any material likely to contaminate, infest or provide a source of infestation of mung beans must not be stored or handled in a building or area used for their preparation or storage or in any area likely to create a source of contamination.

- Toxic substances and other substances which may contaminate mung beans must not be stored in an area or a building where mung beans are handled or stored.

- Animals (including birds and rodents) must not be present in the establishment where preparation of mung beans takes place.

- A person who:

  (a) is suffering from a communicable disease; or
  (b) is a carrier of a communicable disease; or
  (c) may transmit pathogenic organisms to mung beans;

- must not enter any registered establishment used for the preparation of mung beans.

- All persons handling mung beans must maintain a high degree of personal cleanliness.

- Handwashing facilities and toilet facilities must be kept in a clean and sanitary condition at all times.

Additionally there are specific packaging requirements for mung beans (packaging materials must adequately protect the mung beans from contamination) as well inspection procedures for pests and contaminants (Schedule 6A).

4.2 Industry measures

4.2.1 Seed producers

Mung bean producers have formed an industry association (Australian Mungbean Association) that comprise all sectors of the mung bean industry. An industry Code of Hygienic Practice for Whole Mung Beans[2] has been developed and is promoted by the Australian Mungbean Association as a minimum standard with which the industry should comply. The mung bean Code of Hygienic Practice covers:

- hygiene requirements on the farm and during transport to the mung bean grading establishment;
- design and facilities of the mung bean processing establishment;
- hygienic requirements for the mung bean processing establishment;
- hygienic processing requirements in the mung bean processing establishment;
- storage and transport of the end-product; and
- reference sampling of finished product.

Lucerne producers have also formed an industry association (Lucerne Australia) to represent all sectors of the lucerne industry. Lucerne seed is primarily grown as a non-food crop for pasture. However, as lucerne seeds have been used to produce alfalfa sprouts, and problems with contaminated lucerne seeds have been raised, microbiological testing (coliforms, *E. coli*, *Salmonella*, *L. monocytogenes*) of seed lots has been implemented by some lucerne seed producers and/or processors. Additionally, growers have been investigating on-farm measures they can implement to minimise contamination of lucerne seeds by microbial pathogens on-farm.

4.2.2 Sprout producers

The production of seed sprouts in Australia is a relatively small industry undertaken by small, often family owned businesses (there are approximately 30 sprout producers located throughout Australia). Historically, they have had no industry association or representation. Following the outbreaks of *Salmonella* in Australia in 2005-2006 attributed to seed sprouts, sprout producers have formed an industry association[3] and in consultation with State jurisdictions have developed a set of industry guidelines to support the safer production of seed sprouts. Currently, this Association represents just over half of the industry.

The Guidelines prepared by the Australian New Zealand Sprout Producers Association categorise sprouts into four risk categories:

- Category A – alfalfa
- Category B – all others including sunflower
- Category C – snow pea shoots/sprouts

[2] Code of Practice is available on the Australian Mungbean Association website at: http://www.mungbean.org.au/foodsafetyandhygiene.html

[3] Australian New Zealand Sprouters Association

- Category D – sprouts/shoots grown using a growing medium

The guidelines essentially specify seed sanitation, sampling and microbiological testing protocols for each category, with an overarching requirement for the business to implement a HACCP based food safety program. Uptake of these guidelines is voluntary. There are currently no certification mechanisms for demonstrating compliance.

4.2.3 Retailers

One large retailer has developed produce specifications for seed sprout products supplied to it. While these specifications cover a number of quality attributes, they also cover safety and generally specify microbiological limits (generally for *E. coli*, *Listeria monocytogenes* and *Salmonella*) and criteria for Use By Dates (e.g. not to exceed a certain number of days from date of packaging). Where sprout businesses supply product under the retailers own label, they must be accredited and audited against food safety and quality management schemes such as Woolworths Quality Assurance (WQA), Safe Quality Food (SQF) 2000 and BRC (British Retail Consortium). Currently only one supermarket chain supplies seed sprout products (not alfalfa sprouts) under its own label.

4. Summary of international Guidelines/Codes of Practice

Codex Alimentarius

Codex has developed a Code of Hygienic Practice for Fresh Fruits and Vegetables which includes an Annex for Sprout Production. The annex recommends control measures to occur in two areas: during seed production and during sprout production. During seed production, conditioning and storage, the application of Good Agricultural Practices (GAPs) and good Hygieninc Practices (GHPs) are aimed at preventing microbial pathogen contamination of seeds. During sprout production, good hygienic practices are aimed at preventing the introduction of microbial pathogens and minimising their potential growth with a microbiological seed decontamination step included to reduce potential contaminants. A summary of the measures included in the annex is provided below.

Codex Code of Hygienic Practice for Fresh Fruits and Vegetables – ANNEX II Annex for Sprout Production	
Step in production chain	**Control measures included (additional to those specified in the Code of Hygienic Practice for Fresh Fruits and Vegetables)**
Primary production of seeds:	
• Hygienic production of seeds	o Manure and biosolids: Wild or domestic animals should not be allowed to graze in the fields, Manure, biosolids and other natural fertilizers should only be used when they have undergone a pathogen reduction treatment. o Agricultural chemicals: Only chemicals (e.g. pesticides, desiccants) which are acceptable for seeds intended for the production of sprouts for human consumption should be used.
• Handling, storage and transport	o Segregation of seed intended for sprout production from seed intended for forage crops and clear labelling. o Maintain sanitation in drying yards.
• Analyses	o Lots of seeds should be tested for microbial pathogens (seed producers, distributors and sprout producers). If contamination found, seeds to be diverted or destroyed.
• Recall Procedures	o Recall procedures in place to enable complete and rapid recall of

	implicated seed. o Practices should minimise the quantity of seed identified as a single lot and avoid mixing of multiple lots. Records kept for each lot. Lot number, producer and country of origin should be indicated on each container. o System in place to effectively identify lots, trace production sites and inputs.
Establishment for Sprout Production:	
• Design and layout of establishment	o Storage, seed rinsing, microbiological decontamination, germination and packaging area should be physically separated.
Control of Operation	
• Water use	o Quality of water used dependent on stage of operation (clean water for initial washing staged, potable water in later production processes).
• Initial rinse	o Seeds rinsed and thoroughly agitated in large volumes of clean water (maximise surface contact). Process should be repeated until rinse water remains clear.
• Microbiological decontamination	o Recommended that seeds are treated prior to use. Seeds should be agitated in large volumes of antimicrobial agent to maximise surface contact. Duration of treatment/concentration of agent should be accurately recorded.
• Rinse after seed treatment	o As appropriate to eliminate any antimicrobial agent
• Pre-germination soak	o Seeds should be soaked in cleaned water for the shortest possible time (to minimise microbial growth). After soaking seeds should be rinsed with potable water.
• Germination	o Only potable water should be used o Soils and other matrices should be treated to achieve a high degree of microbial reduction
• Harvest	o Harvesting should be done with dedicated, cleaned and disinfected tools.
• Final Rinse and cooling	o As appropriate, rinse with cool potable water o Water should be changed to prevent cross-contamination o Drain sprouts using appropriate equipment o Steps to facilitate rapid cooling should be taken (if additional cooling time necessary)
• Storage	o Sprouts should be kept under cold temperature (5ºC to minimise microbial growth fro the intended shelf life of the product (as appropriate)
• Microbiological and other specifications	o Recommended that seed and sprouts or spent irrigation water be tested for the presence of pathogens. o Each new lot of seeds received at the sprouting facility should be tested before entering production o Producers should have in place sampling/testing plan to regularly monitor for pathogens at one or more stages after the start of germination (e.g. spent irrigation water, finished product). Recommended that every production lot is tested.
• Microbiological cross-contamination	o Traffic patterns should prevent cross-contamination of sprouts
Incoming Material Requirements	
• Seed specifications	o Sprout producers should require evidence from seed producers that product was grown in accordance with measures outlined under primary production of seeds (assurance that chemical residues are within limits and certificates of analysis for microbial pathogens)
• Control of incoming seeds	o Seed containers should be examined for physical damage and signs of contamination (particularly from pests). o Seed lots analysed for the presence of microbial pathogens should not be used until results available.
• Seed storage	o Seeds should be stored to prevent mould and bacterial growth and

	facilitate pest control o Open containers should be stored such that they are protected from pests and other sources of contamination
Documentation and Records	
• Documentation and Records	o Records should be maintained of the seed supplier, the lot number and country of origin to facilitate recall procedures. o Records must include seed sources and lot numbers; water analysis results, production volumes, storage temperature monitoring, product distribution and consumer complaints.
Awareness and responsibilities	
• Awareness and responsibilities	o Producer should have a written training program that is routinely reviewed and updated. Systems should be in place to ensure food handlers remain aware of all procedures necessary to maintain safety of product.