



CSIRO Submission 09/359

Proposal P1004 - Primary Production and Processing Standard for Seed Sprouts (First Assessment Report)

Food Standards Australia New Zealand

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Introduction

CSIRO welcomes the opportunity to comment on Food Standards Australia New Zealand Proposal 1004, Primary Production and Processing Standard for Seed Sprouts (First Assessment Report). The comments in this submission are based on CSIRO's scientific expertise in food microbiology and safety. CSIRO cannot comment on aspects of the proposed regulatory framework as this is a policy issue and a matter for Government.

Comments

General

FSANZ appear to have captured the most relevant information relating to the microbiological hazards associated with both seed and sprout production and have clearly identified the importance of maintaining a through-chain approach. The problem and public health risks have been clearly defined and the information provided in P1004 Attachment 2 adequately describes the microbiological hazards associated with seed and sprout production. Further comments by CSIRO on specific areas of the proposal for which we have the relevant expertise appear below.

Scientific evaluation of the risk

It is clear that there is a lack of specific scientific information on the levels (both prevalence and quantity) of microbiological hazards in Australian seeds and sprouts, with no extensive nationally coordinated surveys conducted. In addition there is little information on the sources of seed contamination and their relative impacts. The availability of such data would better inform the decision process in developing standards and appropriate controls for limiting contamination of seeds and sprouts. Without such information the standards and controls will be based on limited information from within Australia, and on information and experiences from other countries. During the process of developing standards for seed and sprout production, it would be prudent to consider specific Australian production factors. If relying on overseas information (either scientific studies or overseas regulations) an assessment of compatibility and applicability to Australian industry practices is likely to be beneficial.

Contaminated seed used for sprouting has been identified as the most significant source of pathogens and it is therefore important to consider Good Agricultural Practices (GAP) during production on the farm. There is currently little information on how seeds become contaminated during production, but the most likely sources (as indicated in section 9.1.2) include animal faeces (both grazing and wild), manures (applied as fertilisers), soils, contaminated water and farming equipment. Extensive research by CSIRO, in collaboration with Meat and Livestock Australia, has determined that grazing animals, including sheep, goats and cattle from within Australia can shed *E. coli* O157 and *Salmonella* in their faeces (2, 3, 4, 5). Shedding of pathogens is sporadic and it would not be feasible to identify when, or in which animals this occurs. In analysing the risks for seed contamination it should therefore be considered that any group of grazing animals could be shedding these pathogens at any time. However, there is no evidence to suggest that grazing animals pose any greater risk to seed contamination than wild animals (including birds, rodents and other mammals) as the levels of *E. coli* O157 and *Salmonella* carried by wild animals are unknown. These pathogens can survive in soil and on pasture as already detailed in the proposal and in more recent studies (10, 12), and it has been suggested that wild and domestic animals should be prevented from grazing fields used for growing seeds for sprout production (1). It is noteworthy in this regard however that some crops used for producing seed for sprouting can serve as a valuable feed source for animals, particularly in times of climate uncertainty. The use of animal manures has also been identified as a potential source of contamination for seeds and appropriate composting or other treatments would be advisable before application, particularly when applied close to harvest.

Climatic conditions and rainfall may also play a role in the spread of pathogens (6, 13). For instance, large rainfall events might result in runoff from pastures containing animals to nearby fields containing seeds. This may lead to seed contamination even if grazing animals have been excluded from the growing field. Limiting the contamination of water sources is essential as the microbiological quality of water used for irrigation and processing is important in the production of fresh produce (9).

Risk mitigation

Testing of seed lots for microbial pathogens has been suggested as a potential control measure for sprout production. Batches of seed with high contamination levels are likely to be discovered and can be removed from sprout production. However, the occurrence of pathogens on seeds is likely to be low and a negative test does not guarantee the absence of pathogens in untested seed (11). It will be fruitful in this regard to carefully evaluate the most appropriate frequency of sampling, size of the sample to be tested and any microbiological specifications required to provide the most effective outcome. The absence of *Salmonella* in 25g of seed is recommended in the UK as a microbiological specification for seed used for sprouting (7, 8).

It may be beneficial also to consider the definition of lots when developing standards and regulations as this would likely provide industry with the flexibility to cover different production scales and at the same time be appropriate for testing and sampling.

Summary

In this first assessment report, FSANZ have identified the major microbiological risks associated with seed and sprout production based on the available scientific information. CSIRO would be more than happy to provide further assistance and information to the inquiry committee if required.

References

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