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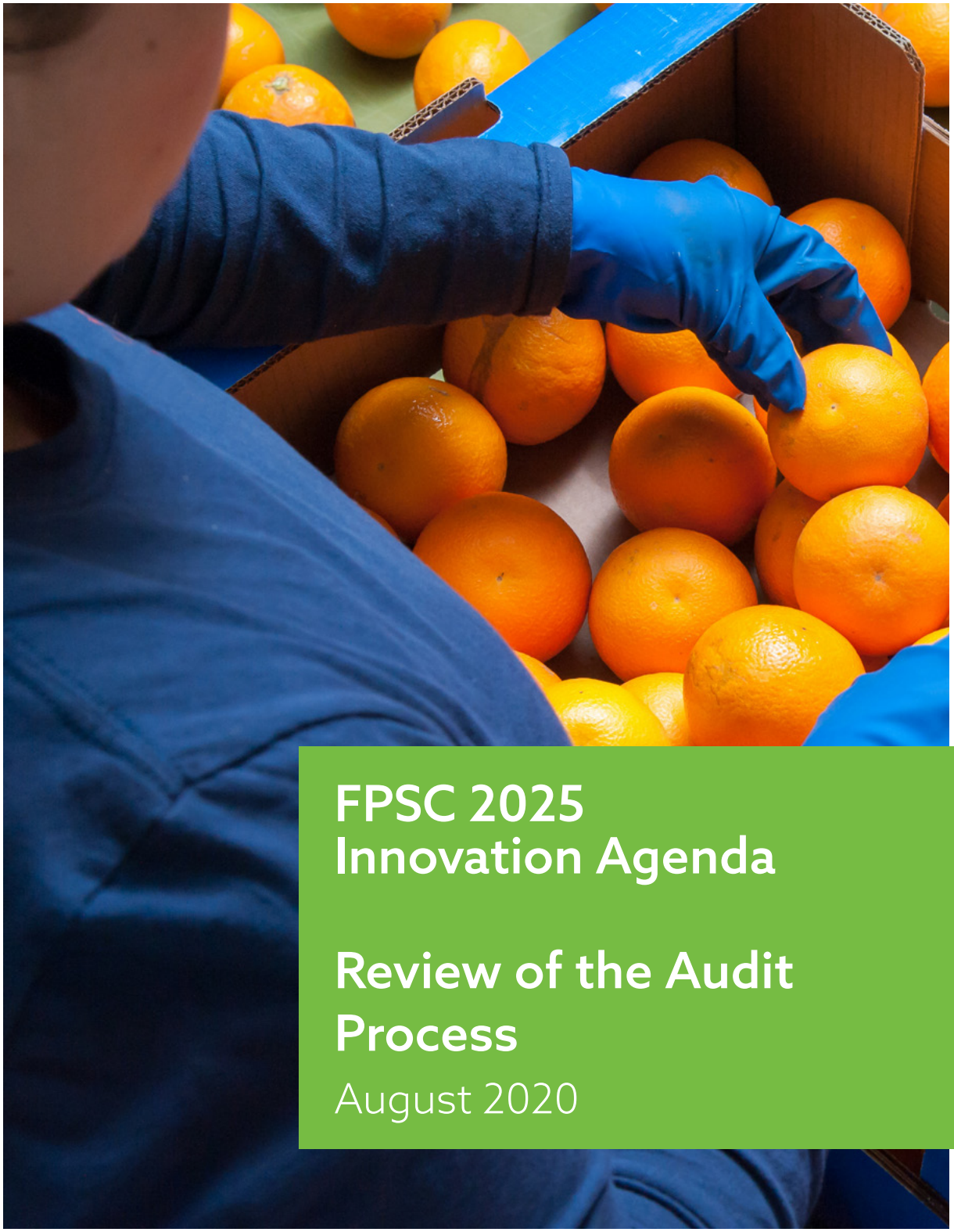

FPSC 2025 Innovation Agenda

Review of the Audit Process

August 2020

About the FPSC

The Fresh Produce Safety Centre Australia & New Zealand brokers connections and collaborations with global leaders in fresh produce to build industry capacity and capability that delivers safer fresh produce to consumers. We do this through innovation, knowledge and leadership. More **here**.

We are supported by these industry stakeholders, and we thank them for their support:

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Please read our disclaimer **here**.

Review of the Audit Process

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List of Acronyms

AFGC	Australian Food and Grocery Council
A-NZ	Australia – New Zealand
BSI	British Standards Institution
CAR	corrective action record
CB	certification body
CCAR	critical corrective action record
CDFA	California Department of Food and Agriculture
CFIA	Canada Food Inspection Agency
CPCC	control points compliance criteria
CPO	Certification Programme Owners
FIAL	Food Innovation Australia Limited
FMI	Food Marketing Institute
FPSC	Fresh Produce Safety Centre – Australia & New Zealand
GAP	Good Agricultural Practices
GFSI	Global Food Safety Initiative
GFSR	Global Food Safety Resource
GMP	Good Manufacturing Practices
HACCP	Hazard Analysis and Critical Control Points
HARPS	Harmonised Australian Retailer Produce Scheme
IAF	International Accreditation Forum Inc
ICT	information and communications technology
IFS	International Featured Standards
IOS	International Organization for Standardization
JAS-ANZ	Joint Accreditation System of Australia and New Zealand
LGMA	California Leafy Greens Marketing Agreement
MPI	New Zealand Ministry for Primary Industries
NCR	non-conformance report
NGS	next generation sequencing
NZGAP	New Zealand Good Agricultural Practice
PIB	peak industry body
SHAS	Sustainable Horticulture Assurance Scheme
SQF	Safe Quality Food
SQFI	SQF Institute
VDEDJTR	Victorian Department of Economic Development, Jobs, Transport and Resources
WGS	whole genome sequencing

1. EXECUTIVE SUMMARY

The Fresh Produce Safety Centre Australia & New Zealand (FPSC) is an industry-led, not-for-profit company established to enhance fresh produce safety across Australia and New Zealand. Under its 2025 Innovation Agenda, the FPSC has identified the audit/food compliance process as an area which has the potential to be improved and made both more efficient and cost-effective.

We wanted to answer the question: "What does fresh produce food safety compliance look like by 2025?" The current food safety compliance system (effectively an annual audit) is working reasonably well. However, the system does have its weaknesses and the purpose of this study was to uncover work that is being done locally and globally to deliver a more robust, efficient and cost-effective food safety compliance system that underpins consumer expectations, today and into the future.

While the audit process is generally working, and is valued by food businesses and regulators alike, there are challenges. A major and much publicised challenge is the issue of the **cost, frequency and overlap of multiple audits** required by customers, regulatory agencies and for market access. This issue has been addressed to some extent with the introduction of HARPS.

There is a challenge of moving from a perceived 'one-day-per-year' mentality and seeing the audit only as a compliance and market access mechanism – '**a necessary evil**' – to an **improved food safety culture** across the business at any point in time. Organisations around the globe (particularly scheme owners) are addressing this issue with the objective of streamlining the audit process and outcomes. The aim is for business to view the annual audit day as no different to the food safety activity they undertake for the other 364 days of the year.

The **auditor workforce**, professional development issues, an ageing workforce, and barriers to entry combine to create a limited auditor pool. This is an issue not just in Australia and New Zealand. Some countries are attempting to deal with issues associated with an ageing auditor workforce, through **training and incentive** programs.

Old technology, the use of paper-based systems, and a failure to integrate information across the supply chain is another challenge.

In the US, in a bid to increase food safety and meet stringent regulatory requirements (including the Food Safety Modernization Act and the Produce Safety Rule), there is a move towards **more testing and increasing the frequency of audits** in fresh produce. In Europe, recognising the cost of multiple audits, **risk-based assessments** are being investigated, primarily increasing audit frequency for poor performers or commodities and processes with higher-risk. **Unannounced audits**, such as in the UK, and spot-check audits can play a role in improving compliance; however, as even unannounced audits will only take place during a certain period of the year, these unannounced audits may not necessarily assist for the rest of the year. In other parts of Europe, risk-based approaches have been flagged: where those businesses with good audit performance and low-risk may have the requirements for annual on-site audits reduced and replaced with remote audits in some years. A further consideration is of the **blended audit**, where part of the audit is conducted off-site and part on-site, potentially allowing more time to be spent on-site and arguably leading to improved safety outcomes.

Technology is generating much activity around streamlining the audit process, but for GFSI-benchmarked schemes this option has been limited, as, until recently, the **annual audit must be completed on-site**. However, GFSI has recently published an extension to their 2020 benchmarking document which now allows for **blended audits** under particular circumstances using information and communications technology (ICT), for part of the audit process, as a voluntary option. Some other technology solutions being instituted involve moving data collection off old technology into the cloud, online self-assessment checklists and developing online dashboards for integrated supplier and customer management. Technology is also improving track-and-trace capability in the event of a food safety-driven recall or outbreak,

plus the detection of food fraud/allergens, which is a requirement of most, if not all, food safety schemes.

A suite of **new technologies** based on blockchain, the Internet of Things (sensors, beacons, etc.) and potentially wearables such smart glasses, are promising companies along the supply chain greater control over supply chain management and food safety/quality issues. The development and widespread adoption of these technologies has the potential to transform the way food safety is managed in business and will have flow on effects for the conduct of audits. Smart glass technology also has the potential to reduce the costs of running a scheme or a certification body.

Finally, the **COVID-19 pandemic** is also likely to have a significant impact on the way food safety audits are conducted in the future as companies seek to protect themselves from the reduced ability to travel and the need to apply technology to the way they conduct business.

The following **conclusions** can be drawn from the review:

- The key to improved food safety is a robust food safety culture across the business and from top to bottom. The Australian and New Zealand fresh produce industries may be able to be more proactive on food safety culture and should consider additional industry-wide responses to map, measure and improve food safety culture in produce businesses throughout the year. As food safety culture strengthens, a move towards a differentiated approach to audits may be warranted.
- Australia and New Zealand could focus on incentivising food businesses to move from a compliance/market access mindset, to the opportunity of a strong and robust food safety culture.
- Remote auditing or blended (mix of on-site and remote) auditing is a trend on the global audit horizon, brought into sharp focus through the COVID-19 pandemic. GFSI provides the benchmark for food safety schemes, and until recently has mandated on-site annual audits: GFSI recently published an extension to their 2020 benchmarking document which now allows for blended audits under particular circumstances.
- Risk-based auditing is developing as a trend, with variations including a more frequent audit regime for poor performers/higher risk crops, and, very occasionally, a less frequent regime for good performers/lower-risk crops, although this is not currently an option for GFSI-benchmarked schemes.
- Strengthened self-assessments are also growing in prevalence, with self-assessments forming part of some schemes' processes.
- Unscheduled or unannounced audits are being used as a tool for ensuring year-round compliance. Stakeholders in the Australian and New Zealand fresh produce industries should consider the longer-term value and costs of unannounced audits.
- Regulatory requirements can necessitate more frequent audits, however the cost to the business is a key factor for consideration.

- Auditor professional development, travel requirements, and attractiveness of the job are key issues that need to be addressed through training and development and other means, which may include blended audits. More frequent and targeted calibrations throughout the year (through web-based calibration sessions and other means) could be considered to achieve more consistency across auditors.

- Sharing of audit data across key stakeholders is becoming more common.

- Australian and New Zealand schemes could immediately improve their technology platforms for hosting and engaging with audit data, and the interface between key stakeholders in the audit process, based on the experiences in other countries, such as Ireland and the UK.

- Schemes and certification bodies are currently investigating the use of new technologies and there would be significant benefit in global collaboration on potential technologies.

- New technology is likely to be taken up as the business case plays out and demonstrates the viability of the technology; it will play a greater role with the approval by key stakeholders of technology use for audit purposes.

The following **recommendations** are made:

- FPSC to distribute this report and seek responses from all industry stakeholders on the priorities for the next stage of the project. Following feedback from industry, FPSC to identify the top five areas that the industry can collectively work on to improve the audit outcomes.

- For industry to consider all findings from this report that are not necessarily transformational but have the opportunity to improve the existing situation, for example the work being done overseas on food safety culture and recruitment and training of auditors.

- For FPSC to engage with key organisations (such as GFSI) to ensure that global changes can be communicated back to the Australian and New Zealand industries and any suggestions or recommendations from Australia and New Zealand can be channelled to GFSI.

- For FPSC to work closely with the retailers (through the HARPS management team) to act on priorities that may be identified from this report that have the achievable potential to significantly improve the audit process.

- For FPSC to work closely with grower organisations to identify (i) areas that growers consider need improvement and (ii) impediments to the adoption of new technologies.

- For FPSC to facilitate the building of a network of like-minded organisations and individuals, such as a community of food safety practice, to influence change in the audit process and other areas for transformational change in produce safety in Australia and New Zealand.

2. BACKGROUND AND THE 2025 FPSC INNOVATION AGENDA

The Fresh Produce Safety Centre, established in 2014, is an industry-led, not-for-profit company established to enhance fresh produce safety across Australia and New Zealand. The company brokers connections and collaborations with global leaders in fresh produce to build industry capacity and capability to deliver safer fresh produce to consumers. FPSC was established by the PMA A&NZ and The University of Sydney, with support from Horticulture Innovation Australia. The FPSC is supported by businesses, industry organisations and not-for-profits, listed here[1], and their ongoing support is gratefully acknowledged.

In June 2019, the FPSC invited 30 key influencers from Australia and New Zealand's horticultural and innovation sectors to a one-day Innovation Forum, with the theme "Food Safety Compliance Beyond 2025?". The result was a mandate that FPSC lead the conversation and activities to investigate opportunities to empower the Australian and New Zealand fresh produce industry with novel and innovative systems and processes that leads to safer fresh produce for consumers. The 2025 Innovation Agenda focuses on transformational risk management in fresh produce food safety by tapping into local and global talent within fresh produce, the research community, and the technology and innovation experts outside our natural space to help find solutions.

The Innovation Forum considered the question "What does fresh produce food safety compliance look like by 2025?" The current food safety compliance system (effectively an annual audit) is working adequately. However, the system does have its weaknesses and the **purpose of this project is to find a more robust, efficient and cost-effective food safety compliance system that underpins consumer expectations today and into the future**. Any changes to the system will not in any way change the existing food safety standards such as Freshcare, GLOBALG.A.P, etc. but simply how those standards are implemented and managed by growers of fresh produce and assessed for compliance by their customers. The aim of the project was to look at ways that the current system can be improved, and to be careful not make recommendations that would increase complexity or compliance requirements.

The initial scope (Stage One) of the 2025 Agenda was to undertake a desktop analysis to produce a review of food safety compliance systems across the globe with an understanding of what components can be used in Australia and New Zealand that have the potential to be transformational in the way the current audit process is conducted.

This report is the output of the desktop analysis of the audit processes and food compliance systems across the globe with an understanding of what is transformative and innovative. The information in this desktop analysis was compiled from data gathered from a volunteer-working group. Members of the Innovation Agenda Desktop Analysis working group are:

- Belinda Hazell from Optimum Standard
- Belinda Millard from HARPS
- Bill Northausen from Costa Group
- Angela Steain from Freshcare
- Ilango Surendran from iFoodDecision Sciences Inc (iFoodDS)
- Naline Ter Wolbeek from Costa Group
- Hannah White from PMA A&NZ
- Melanie Wishart from GS1
- Michael Worthington from FPSC.

We sincerely thank all the members of the working group, and their contacts globally who contributed information to feed into this report.

This report was compiled by the FPSC Executive Officer, Emma Walters with support from Directors of the FPSC. Thank you also to Kim Leighton from JAS-ANZ, Simon Thorpe and Lucy MacLennan from Red Tractor, Damien Farrelly from NZGAP, Fiona Grime from Freshcare, Dave Brackston from BRCGS, Annmarie Schwanke and Rob Taylor from AUS-QUAL, Stefan Kunze from AMAG.A.P., Heather Gale from CanadaGAP, Todd Redwood from BSI, Bill McBride and Leann B. Chuboff from SQFI and Belinda Hazell from Optimum Standard for being available for interview, or responding to written questions, and generously sharing their time and knowledge.

1 https://fpsc-anz.com/our-supporters/

3. OBJECTIVES AND LIMITATIONS OF THIS REPORT

From the FPSC's 2025 Innovation Agenda, the objective is to produce a single report that has reviewed food safety compliance systems across the globe, identifying any differences between those systems and the system used in Australia and New Zealand, particularly where those differences have the potential to partly or wholly transform the regional system.

This report is produced recognising that the audit process and specific audit data captured tends to be prescribed by the accreditation processes (ISO 17065) and benchmark requirements (e.g. the Global Food Safety Initiative, GFSI) that standards must comply with. However, we were looking for key learnings, in-practice processes and any innovations (technological and other) that Australia and New Zealand can examine and learn from, with the key purpose of producing more cost-effective, efficient and timely auditing of food safety in the fresh produce supply chain.

As this was a volunteer effort, a limited number of schemes and certification bodies were investigated. There are many scheme owners/certification bodies present globally and thirteen of these were engaged with for this report. A further limitation is that this investigation was generally conducted among English-speaking nations. However, major schemes in the US, UK, Europe and Oceania were examined, and we feel confident that we have a fair representation of schemes to identify key trends in innovation.

Additionally, this report and the process adopted for the investigation was intended to utilize industry contacts and know-how and is not presented as an academic paper. There was a variety in the depth and comprehensiveness of responses. Efforts were made where necessary to follow up with an interview, but this was not possible in every case.

More schemes than certification bodies were investigated. Nevertheless, certification bodies are active in innovation in the audit space.

Finally, the range of technology with the potential to improve the audit process is vast and evolving – the section on technology is intended only as an overview. Mention of specific companies does not imply an endorsement of that company's product or service.

4. BACKGROUND TO AUDITING

To start with the definitions: an audit is a "systematic, independent and documented process for obtaining objective evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled."[2]

What is a food safety audit? "A food safety audit focuses on gathering information about a food business to identify any areas of potential improvement in the business's food safety processes and systems. It also identifies areas of the business that have deficiencies and the appropriate action to correct any deficiencies."[3]

The audit system globally is complex and multi-faceted. There are many key stakeholders ranging from global intergovernmental, non-government and private organisations through to national

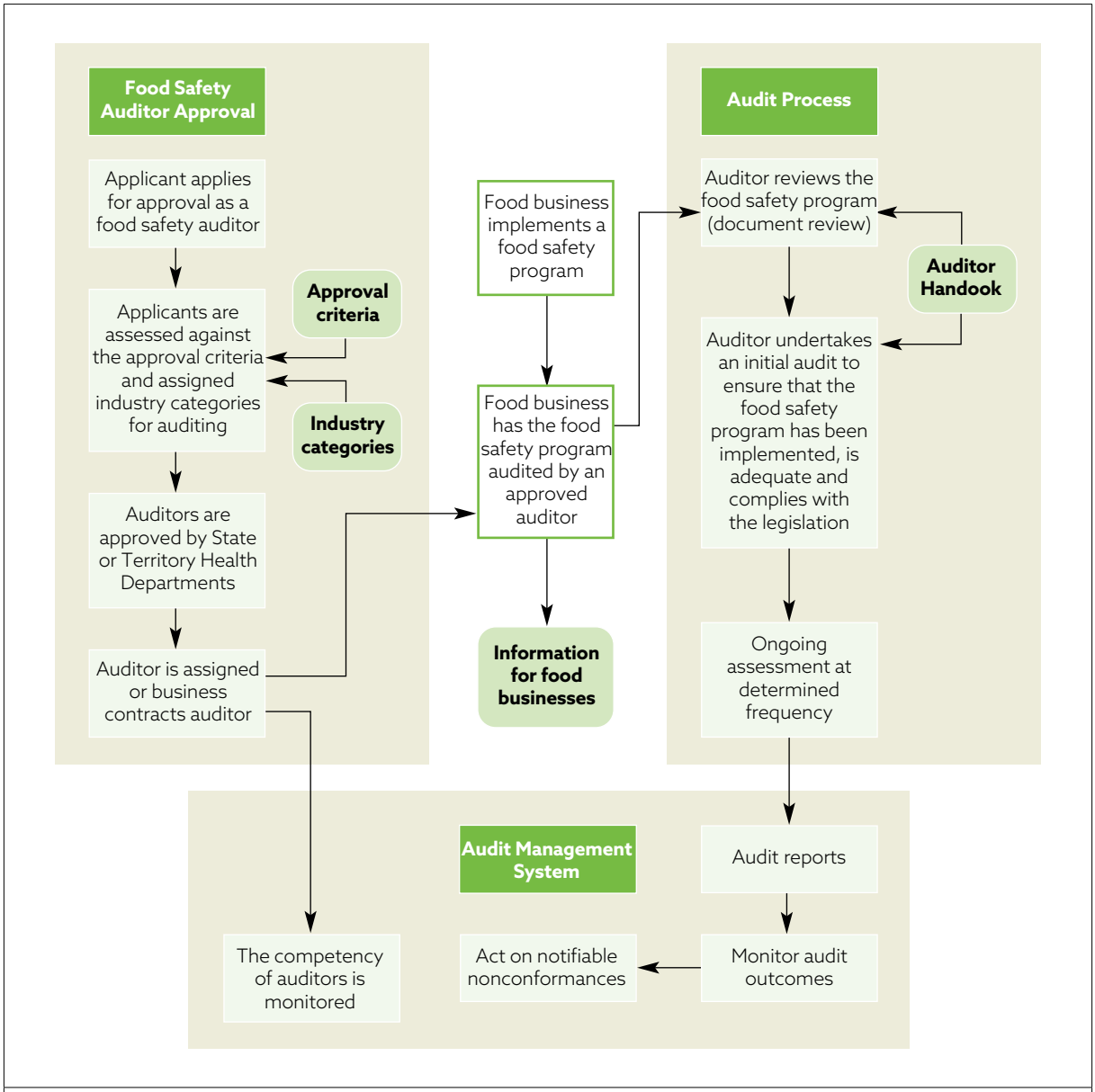


Figure 1. The Three Elements of the Audit System

Source: ANZFA. 2001. *Food Safety: an Audit System*.

2 ISO19011:2018

3 ANZFA. 2001. Food Safety: an Audit System. https://www.foodstandards.gov.au/publications/Pages/anauditsystem.aspx

organisations (again government, non-government and private), to state or provincial bodies to single consultant auditors.

Audits can be conducted by private organisations (such as certification bodies, employing staff or contractors) or government bodies. Audits can be conducted by customers of a business's product or services. Audits can also be conducted internally by the business itself. Audits occur along the supply chain, across sites and across both products and systems. Products and systems must meet "regulatory requirements and customer specifications described in regulation, general industry standards, and/or bespoke company standards".[4]

Audits usually contain the following five steps:

1. Planning
2. Execution
3. Corrective and Preventive Action
4. Verification
5. Audit Evaluation.[5]

The audit system is categorised into three types of audits:

- First party audits, where the company audits itself to ensure it is complying with standards;
- Second party audits, assessing the performance of suppliers and contractors; and
- Third party audits, conducted by an outside organisation (government, private or non-profit), which usually leads to certification.[6]

There are three key elements to the audit system: food safety auditor approval, the audit process and the audit management systems. A diagram of the key elements of the audit system (which references Health departments and compliance with legislation but does not necessarily reflect the auditor approval and audit process for food safety and quality schemes and certification) is reproduced in **Figure 1**.

4 Annison, Geoffrey and Fleming, Fiona. 2015. Food Safety Auditing Project Report. AFGC, FIAL, AusIndustry. p4
5 GFSR. 2016. Food Safety Audits. https://globalfoodsafetyresource.com/food-safety-audits/#
6 Kotsanopoulos and Arvanitoyannis. 2017. The Role of Auditing, Food Safety, and Food Quality Standards in the Food Industry: A Review

5. GLOBAL STANDARDS

Global standards underpin the food safety audit system. This section provides a brief explanation of the major global standards and the prominent harmonisation initiative, GFSI.

5.1 Codex Alimentarius

Codex Alimentarius is the international standards set by the Codex Alimentarius Commission (Codex), established by the UNFAO and the World Health Organization. The Codex Alimentarius is "international food standards, guidelines and codes of practice contribute to the safety, quality and fairness of this international food trade" aimed to protect consumer health, remove barriers to trade and Codex standards are recognised by the World Trade Organization. "Codex standards and related texts are not a substitute for, or alternative to national legislation. Every country's laws and administrative procedures contain provisions with which it is essential to comply."[7]

More information: http://www.fao.org/fao-who-codexalimentarius/en/

5.2 ISO Standards

ISO is the International Organization for Standardization and it is an independent, non-governmental organisation bringing together national standards bodies (e.g. Standards Australia). They develop, with their members, consensus-based, market-relevant and voluntary International Standards "from soap to spacecraft".[8] The standards most relevant to this report are ISO22000 Food safety management systems — Requirements for any organization in the food chain, ISO17065 Requirements for Bodies Certifying Products, Processes and Services, ISO17021 Requirements for Certification Bodies and ISO19011 Guidelines for auditing management systems.

More information: https://www.iso.org/home.html

5.3 GFSI

The Global Food Safety Initiative (GFSI) is a private organization, established and managed by the international trade association, the Consumer Goods Forum, under Belgian law in May 2000. The GFSI maintains a scheme to benchmark food safety standards for manufacturers as well as farm assurance standards.

"GFSI aims to improve food safety and business efficiency. GFSI's work in benchmarking and harmonisation fosters mutual acceptance of GFSI-recognised certification programmes across the industry and enables a simplified 'once certified, recognised everywhere' approach. This reduces inefficiencies from duplication of audits and helps reduce trade barriers. The GFSI Benchmarking process is now the most-widely recognised in the food industry worldwide."[9]

"The GFSI Benchmarking Requirements were first created in 2001 by a group of retailers motivated by the necessity of harmonising food safety standards across the global supply chain. These requirements are frequently updated with input from food safety experts around the world to keep up to date with food safety trends."[10]

GFSI recognises as a number of certification programs that meet the GFSI Benchmarking Requirements: it does not provide certification itself.

As a certification programme owner (standard owner), achieving GFSI recognition is through a benchmarking process against specified scopes of recognition. The current benchmark criteria is version v2020.

The scopes of recognition, relevant to this report, are the following (examples of certification programs are provided in italics).

BI. Farming Of Plants – *GLOBALG.A.P., Freshcare FSQ4.1, SQF Primary Production, CanadaGAP, Primus GFS, AsiaGAP*

BII. Farming Of Grains And Pulses - *Asia GAP, PrimusGFS*

7 http://www.fao.org/fao-who-codexalimentarius/about-codex/en/
8 https://www.iso.org/home.html
9 https://mygfsi.com/what-we-do/harmonisation/
10 https://mygfsi.com/how-to-implement/recognition/

D. Pre-Processing Handling of Plant Products – *GLOBALG.A.P., Freshcare, SQF Manufactured Food, BRCGS Food, Canada GAP, Primus GFS, AsiaGAP; FSSC*

J. Provision Of Storage And Distribution Services – *BRCGS Storage and Distribution; SQF storage and Distribution; FSSC, IFS Logistics, PrimusGFS, Freshcare Supply Chain (will apply in 2020)*

N. Food Broker/ Agent – *BRCGS Agents and Brokers; IFS Broker, Freshcare Supply Chain (will apply in 2020).*

The GFSI benchmarking process is comprehensive, involving a seven-step process from application through to final GFSI board approval. All of the standards are underpinned by accreditation against either ISO/IEC17065 or ISO/IEC17021. Once approved, there is a detailed integrity process in place for each certified program owner to ensure the requirements are continuing to be met.

More information: https://mygfsi.com/

5.4 GS1

GS1 is a not-for-profit organisation. It is are driven and governed by its members, and all its services are provided on a cost recovery basis. GS1 collaborates with their local stakeholder communities to develop and implement a robust system of standards which enable the unique identification, accurate capture and automatic sharing of authentic information about products, locations and events. GS1 is at the forefront of eCommerce and supply chain management initiatives, and are committed to helping Australian businesses adopt the world's best practice supply chain management techniques and streamline their processes.[11]

5.5 HACCP (Hazard Analysis and Critical Control Point)

HACCP is a food safety management system which addresses safety through analysing and addressing microbiological, chemical and physical hazards along the supply chain, from harvest to consumption. It was developed in the 1950s in the US. It was adopted by the US National Advisory Committee on Microbiological Criteria for Foods in 1997, and is now recognised internationally and used widely in the food industry.

"HACCP is a systematic approach to the identification, evaluation, and control of food safety hazards based on the following seven principles:

Principle 1: Conduct a hazard analysis.

Principle 2: Determine the critical control points (CCPs).

Principle 3: Establish critical limits.

Principle 4: Establish monitoring procedures.

Principle 5: Establish corrective actions.

Principle 6: Establish verification procedures.

Principle 7: Establish record-keeping and documentation procedures."[12]

More information: https://www.fda.gov/food/guidance-regulation-food-and-dietary-supplements/hazard-analysis-critical-control-point-haccp and https://www.foodsafety.com.au/resources/articles/everything-you-need-to-know-about-haccp

11 https://www.gs1au.org/what-we-do/about-us/our-mission-and-vision
12 https://www.fda.gov/food/hazard-analysis-critical-control-point-haccp/haccp-principles-application-guidelines

6. ISSUES WITH THE AUDITING PROCESS

The FPSC Innovation Forum held in June 2019 identified several issues with the current food compliance system in Australia and New Zealand:

- Whilst not broken, there are numerous weaknesses in the current system.
- The current process may be perceived to lack a degree of transparency, which can undermine confidence that food is always safe.
- The weaknesses can be overcome through the introduction of a mix of technology and the way people in the supply chain view food safety.
- There is the opportunity to do something different.
- Auditing – a stake in the ground to understand the "at risk" points.
- Any change to the current process needs to result in a more effective and efficient system at a lower cost to the value chain.
- Any change to the process needs to assist (not hinder) growers, packers, processors, logistics companies, wholesalers and retailers to collectively own the problem of food safety as part of their business integrity.
- Data-driven evidence needs improving. There is data but what questions do we need answered to improve the system?
- There is likely to be resistance to changing the current system.[13]

The Innovation Forum pointed to a number of issues with the current compliance system. These include the time and cost of audits, the auditor demographic, the technology and process of audits and the opportunity to move the culture of auditing from a 'one-day-a-year' process to endure, to an opportunity to improve food safety culture.

Time and cost of audits, managing multiple audits

The cost burden of multiple audit and compliance schemes in Australia and New Zealand is well recognised. In 2015, the Australian Food and Grocery Council (AFGC) undertook research as part of the Food Innovation Australia Limited (FIAL) and AusIndustry-supported Food Safety Auditing Project. It was identified that "there is appreciable overlap between audits – that is individual companies may be audited multiple times over short time periods on behalf on different customers."[14]

The auditing project aimed to identify the overall cost-burden to business of the audit system, plus the associated value the system provides. The research included a survey and discussions with food businesses in Australia and New Zealand. It found that the cost of audits on food businesses was substantial, that the number of audits was higher than needed to provide safe foods, that there was unnecessary duplication across audits, providing unnecessary costs to business, and that auditor availability, scheduling and competencies created difficulties for companies.

While it is important to note that the report was not confined to fresh produce, it found that the average number of days spent per audit was 2.2, the average cost per audit was $4,400 and that the total estimated food system costs (including audit) to businesses who responded to the survey in Australia was AUD$49,700,000 p.a. For New Zealand, the total estimated food safety system costs for companies responding to the survey was NZD$5,800,000.[15] The costs calculated included staff time (salaries and wages), contractor fees, preparation for mock recalls, audit costs, registration fees, compliance testing (analytical testing) and the costs of support programs (e.g. pest control).

This information (not limited to fresh produce) is presented in the AFGC's report in the following table:

13 FPSC. 2019. "Innovation Forum 2019 'Food safety compliance beyond 2025' Outcomes and Actions"
14 Annison, Geoffrey and Fleming, Fiona. 2015. Food Safety Auditing Project Report. AFGC, FIAL, AusIndustry. p4
15 Ibid. p7.

Table 1. The Cost Estimate of Food Safety Audits			
#	Parameter	Number	Note
1	Total number of audits	1399 (n=95 companies)	
2	Days per audit (average)	2.2 days	
3	Cost per day (average)	$2,000 AUD	
4	Average cost per audit	$4,400	2 X 3
	Total cost estimate	$4,616,700	4 X 1 X 0.75(1)

(1) Allowance for economies where multiple audits are conducted over the same time period

Source: Annison, Geoffrey and Fleming, Fiona. 2015. *Food Safety Auditing Project Report*. AFGC, FIAL, AusIndustry. p7

In another study conducted under a Hort Innovation-funded project, TQA Australia determined that QA systems/compliance costs ranged from an average of $4,800 per year for small vegetable growing businesses (operating costs plus starting/capital investment plus labour costs) through to an average of $60,000 per year for large produce businesses (operating, starting/capital, labour costs).[16]

The issue of harmonisation of schemes has been partially addressed in Australia through the introduction of HARPS, the Harmonised Australian Retailer Produce Scheme. "HARPS is a retailer-led scheme designed to assist with compliance to food safety, legal and trade legislation for suppliers to the major grocery retailers in Australia. Established with the goal of providing a more practical and comprehensive approach, HARPS has the ability to streamline the amount of work undertaken during the audit process. While the amount will differ between businesses, for those currently audited to multiple schemes for multiple customers, one base scheme plus HARPS means the audit duration will reduce, hence overall audit costs should also reduce."[17]

Auditors

An issue has been identified in Australia and internationally regarding the limited auditor pool, auditor demographic, the attractiveness of the work, auditor competency and retention. It is important to note that these issues are not just limited to the fresh produce industry – they are across industries globally. On the auditor demographic, several issues are at play here. To become an auditor, the person must have had a significant amount of industry experience, thus attracting a mid-career or towards the end-of-career worker. Auditors may need to support themselves (if contractors/consultants) through the process of auditor training, observing and other requirements to become an accredited auditor – this process may take up to 12 months. If they are employed by the certification bodies (CBs), then the CBs need to absorb this cost.

The competencies required to become an auditor are complex and detailed (e.g. SQF has 35 auditor competency codes and BRCGS has 18[18]).

For example, for initial registration as an SQF food safety auditor, in summary, a person must have a degree in a relevant discipline or equivalent, have completed each of the Auditing SQF Systems training course of forty hours, HACCP training, the SQF Auditor online examination, and the GFSI Auditor Knowledge examination, have at least five years' full-time work experience in a food related technical, professional or supervisory position involving accountability and the exercise of judgment, including submitting a detailed work log, and have 160 hours food safety audit experience.[19] These requirements are likely to exclude those at the beginning of their careers and those with major interruptions for family/carer responsibilities.

The attractiveness of the work is also an issue. It is thought that the majority of auditors in Australia are men, in their late 40s or 50s through to their 70s, and this is in part attributed to the demands of the work and the requirements to be away from home. In Australia, auditors often have to be away from home for five days a week, on a flight on Sunday night and not returning home until the following Friday. On-farm audits are conducted only during harvest so the work may be 'lumpy'. Due to the requirements to demonstrate significant experience working in management roles in

16 Hazell, Belinda. 2014. Evaluation of quality assurance software for the vegetable industry. HIA Project Number: VG13082. Hort Innovation, Sydney. p22

17 https://harpsonline.com.au/

18 These codes are not only in fresh produce.

19 SQFI. 2019. Criteria for SQF Food Safety Auditors, Quality Auditors and Technical Reviewers. SQFI. Arlington, USA

produce businesses, auditors tend to be those who are mid- to late-career or may have already raised a family.

In addition, in Australia the distances travelled by auditors may lead to auditors being away weeks at a time. Also, auditors tend to be based in the capital cities (predominately Melbourne, Brisbane, Perth, Sydney), adding travel costs (directly as a line item, or indirectly) to the overall cost of the audit. It also creates issues with the scheduling and availability of auditors.

There is a need to make auditing a more viable prospect for younger professionals, globally.

Auditor competencies, retention and attraction of a new generation of auditors is a global issue. According to Kristian Moeller, CEO of GLOBALG.A.P, in summarising a session of the GFSI 2019 Conference "Auditor competence seems to be a really challenging issue, because it's the trust element in the situation of standards and certification. How do we find new auditors, and then retain them, keep them excited about auditing as such?"[20]

Technology

Most on-farm audits in fresh produce in Australia are conducted with old technology. Data is generally collected in the field, or in the farm office, at the time of the audit. Most times, email, Microsoft Word and Microsoft Excel are the tools of trade. There has been limited experience with using new technology in Australia and NZ. The effectiveness of internet connectivity on-farm is an issue that must be considered when looking at new technology in the audit process.

Another issue that has impacted the use of technology is the requirement under GFSI that on-farm food safety audits are conducted on-farm: until very recently, any form of remote audit was not allowed. Under the International Accreditation Forum Inc (IAF) rules, remote auditing is permitted for management systems[21], but not for product certification.

As a result of the COVID-19 pandemic in 2020, and restrictions on travel, GFSI has allowed for audit certificates to be extended, using a risk-based approach, for up to six months without an on-site audit. In late April 2020, GFSI and GLOBAG.A.P, both initiated separate consultations on the use of information and communications technology (ICT) in remote auditing. "GLOBALG.A.P. Remote" is under consideration by GLOBALG.A.P (https://www.globalgap.org/uk_en/media-events/news/corona-virus-updates/) and and the GFSI Benchmarking Requirements have been updated to allow for part of the annual audit to be carried out remotely, in line with the IAF Mandatory Document 4 (IAFMD4) for the Use of ICT for Auditing/Assessment Purposes.[22] Further detail on GFSI's consultation on ICT and remote audits is here: https://mygfsi.com/news_updates/stakeholder-consultation-new-gfsi-benchmarking-requirements-on-ICT.

Audits seen as a one-off event to 'pass' rather than an opportunity for improvement

The FPSC Innovation Forum held in June 2019 included discussion on opportunities to move the audit from being a one-day-per-year event tolerated primarily for market access, to an opportunity to improve businesses' food safety culture year-round. This issue was recognised in a 2016 Victorian Government report investigating the on-farm food safety processes of leafy greens. The report found that that "the value of audits is limited if they are treated as administrative formalities".[23] The report noted:

> Audits can be useful to highlight areas for improvement and confirm good practice. External audit against a food safety program is also often a threshold requirement for market access. Compliance with food safety standards is typically assessed through a combination of self-assessment and regular external audit and inspection. There is very limited use of ad hoc 'unannounced' monitoring as part of external audit and self-assessment. Because the audits are annual one-off planned events and closely linked to market access, sometimes producers treat them as administrative formalities. Growers may place a higher value on 'passing' than 'learning' from the audit.[24]

This is not just an issue in Australia. Lucy MacLennan, a veteran of the fresh produce compliance industry in the UK, argues that the one-day-per-year approach is not serving food businesses well. For a webinar that Lucy presented for the FPSC and Freshcare in March 2020, as part of a Nuffield Scholarship, she wrote:

> [My] perception is that food safety audits are currently viewed as something of a necessary evil within supply chains - certification is a market

20 https://mygfsi.com/news_updates/the-connected-future-of-certification-globalg-a-p-ceo-kristian-moeller-predicts-the-future-of-cpos/
21 https://www.iaf.nu/upFiles/MD1Issue2Jan2018Pub29012018.pdf
22 IAF. 2018. IAFMD4: 2018 https://www.iaf.nu/upFiles/IAF%20MD4%20Issue%202%2003072018.pdf
23 VDEDJTR. 2016. On-farm safety of leafy greens Report September 2016. p3
24 Ibid. p10

entry requirement so the process is tolerated rather than really used by anyone to improve standards on-farm. But auditing on one day of the year can provide a false sense of year-round compliance particularly regarding food safety. [I] believe that there is an opportunity for farm businesses to take more responsibility for their own continuous improvement of agricultural practices and that with improved attitudes, ownership of the challenge and building knowledge, ultimately the need for external audit could be reduced – or even eliminated and instead more emphasis should be placed on internal audit and leadership culture.[25]

25 https://fpsc-anz.com/2020/02/26/webinar-innovation-agenda-opportunities-to-improve-the-audit-process/

7. SCHEMES/CERTIFICATION BODIES

As part of the study, FPSC reviewed what schemes and certification bodies are doing globally in terms of innovation and transformational change. The following section presents the results of the investigation into a number of schemes and certification bodies:

7.1 AMAG.A.P. – Austria

AMAG.A.P. is a scheme owned by the Austrian Marketing Board, Agrarmarkt Austria Marketing GesmbH. The Austrian Marketing Board for agricultural products was established in 1995 when Austria joined the EU. One part of the company is focused on quality management, and the AMA has created a quality seal, Red-White-Red with the Austrian flag. This seal was created as the consumer facing brand. The AMA quality seal indicates the product, and all steps to produce it, are all Austrian. AMAG.A.P. is a benchmarked GLOBALG.A.P. scheme, since 2003, and it is for fruit and vegetables. It is a farm-based standard, including those farms who pack products on-farm. In Austria, approximately 3000 farmers are registered with AMAG.A.P..

On-farm Only or Whole of Supply Chain?
On-farm, plus packing on-farm. included in the AMAG.A.P.-Program. The whole Program is the AMA-Quality-Seal-Program which includes all produce and marketing stages. All steps are contractually integrated (farm, packing house and retailers) and all have a guideline and annual inspection. The benchmarked AMAG.A.P. is the farm base standard. The whole system is a business solution for Austria.

Checklist Approach?
Yes, checklist approach.

Frequency and Duration of Audits
There is an annual inspection. Generally audits take half- to one-day, depending on the commodity. Also, there is 10% additional unannounced inspections, which is in the hands of the CB. CBs do these additional 10% of unannounced inspections based on a risk-based approach, such as those clients with new products, or those with higher rates of non-conformances.

Cost of Audits
Decided by the CB. In general the cost is Euro 300-400. There is a licence fee for the use of the AMA quality seal (for pack houses).

On-site and/or Remote Audits
On-site, however AMAG.A.P. has developed a proposal for off-site inspections (see below).

Certification Bodies
There are four CBs that certify for AMAG.A.P., SLK, SGS, Lacon, AgroVet.

Any Issues with Auditors?
No issues identified.

Technology
AMAG.A.P. has a range of documents, checklists and guidelines available online for its growers to help them prepare for inspections. These guidance documents have been prepared by AMAG.A.P., which helps the growers as many of these are family farms. The AMA indicates approximately 50% of farmers still do their records with pencil. The Ministry of Agriculture is working on the idea of a central database (for all of agriculture, not just fruit and vegetables), centralising all farmer documentation in this database.

Innovation
In 2018, AMAG.A.P. started a project with the Austrian Ministry of Agriculture to simplify the process and reduce the costs of the audit process. The key question was: how can the audit program be optimised, especially in terms of time reduction and cost reduction? AMAG.A.P. prepared a proposal for Risk-based Inspection in the AMAG.A.P program.[26] This involved a proposal to pilot a differentiated approach to inspections, including the strengthening self-inspection/assessment and collecting information static control points (e.g. location of glasshouses, marking of fields etc.) once rather than at every inspection. It also introduced the concept of a risk-based approach to inspections, with less frequent on-site inspections complemented by off-site inspections, as outlined in the diagram below:

26 AMA-Marketing GesmbH. 2018. Concept of a Risk-based Inspection in the AMA G.A.P. Program. Project proposal.

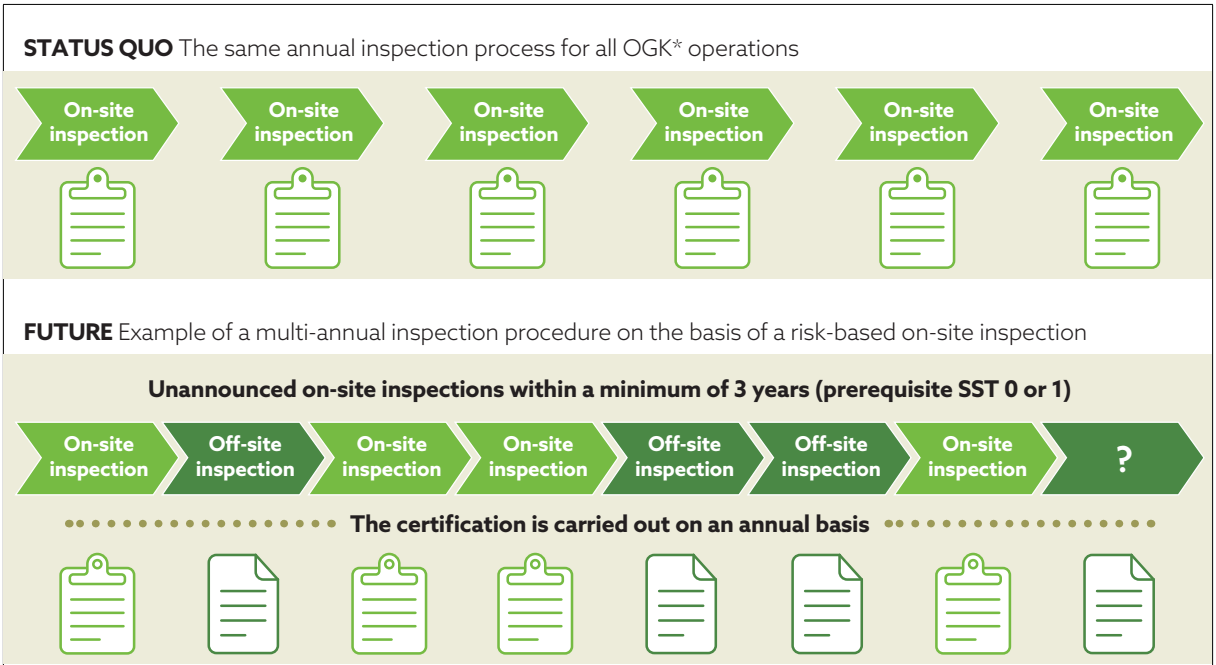


Figure 2. Concept of a Risk-based Inspection Program

OGK* = 'Obst, Gemüse und Speiskartiffel' ('Fruit, Vegetables and Ware Potatoes')
Source: AMA-Marketing GesmbH. 2018. Concept of a Risk-based Inspection in the AMA G.A.P. Program. Project proposal, p3.

To participate in this pilot, companies were planned to have had been in the AMA.G.A.P system for at least three years and have had very good inspection results for at least three years.

In 2019, AMA proposed this to GLOBALG.A.P. but were not able to proceed with the proposal under the current standard. However, with the new version of GLOBALG.A.P due in the next year or so, AMAG.A.P. is hopeful that it will be allowed. GLOBALG.A.P. has also recently introduced GLOBALG.A.P Remote, a remote solution for inspections, audits and assessments in response to the COVID-19 pandemic.

AMAG.A.P have a risk-based residual monitoring system for testing samples. It is risk-based so not all samples are analysed: commodities with lower risk (e.g. potatoes) only 50% of samples are analysed while higher risk commodities may be 80% of samples, to save the costs. The results go from the lab direct to the AMAG.A.P. database, and the farmer pays for just one sample per farm.

More information on AMA.G.A.P.: https://b2b.amainfo.at/landwirte/obst-gemuese-erdaepfel/

Key takeaways:

- AMAG.A.P is keen to introduce a risk-based audit approach that has an off-site inspection component, but only if and when this is allowed under GLOBALG.A.P..
- AMAG.A.P. is also interested in trialling limited reviews of static control points (as opposed to annual reviews), plus strengthened self-assessment components of annual inspections.

7.2 AUS-QUAL

AUS-MEAT and AUS-QUAL are providers of agribusiness auditing, certification and training services, supporting over 70 different programs across Australia and New Zealand. It is a non-profit organisation, owned by agribusiness producers and processors, and serves all Australian states and territories and New Zealand. It provides certification and auditing services across several industry sectors in food safety including: Livestock, Meat, Co-Products, Horticulture, Poultry & Egg production, retail, wholesale, supply chain, food manufacture. Principally in food safety but also Product Integrity, Ethical/Social accountability, Organic and Animal welfare. AUS-QUAL provides accredited and approved certification services to the BRCGS Global Standard for Food Safety, Freshcare (Food

Safety and Quality Standard / Environment / Supply Chain), GLOBALG.A.P., HARPS, Organics, and SQF.[27] Accredited certification is provided through JAS-ANZ accreditation. AUS-QUAL provides the majority of Freshcare certifications. AUS-QUAL also provides many second party audit services for industry, food service and retail customers. AUS-MEAT provides regulatory audit and certification services under MOUs and contracts.

On-farm Only or Whole of Supply Chain?
AUS-QUAL offers certification services for schemes that cover both on-farm and whole of supply chain.

Checklist Approach?
Many program owners previously required audit findings and evidence be captured on detailed checklists (every requirement requiring a finding). Many scheme owners have now moved to open reports with sectional summaries. Common formats for checklists and reports are Microsoft Excel and Word. However, AUS-QUAL notes some programs are now moving to auditors utilising database reporting tools.

Frequency and Duration of Audits
AUS-QUAL provides audit services in compliance with program owners' requirements. Many programs have specified frequency and duration guidance/requirements. Guidance being around variation due to size of operation, number of staff, number of HACCP studies (range of products & processes). The minimum audit duration ranges from six hours to two days on-site for Freshcare, HARPS and GLOBALG.A.P.. BRCGS and SQF (and GLOBALG.A.P. for multisite) are a minimum a day-and-a-half to two days. In addition, AUS-QUAL charges for reporting time but at present does not charge for time taken to reviewing and close non-conformances/CARs issued at audit.

Cost of Audits
Charged on an hourly rate, so the final cost of the audit depends on the time the audit takes, including the reporting time. There are other costs such as airfares, accommodation, hire car expenses passed on at cost to the site.

On-site and/or Remote Audits
AUS-MEAT currently do remote audits for some second party audits. Again, as AUS-QUAL must provide third party certification and audits to GFSI benchmarked program requirements, GFSI does not currently recognise a fully remote audit. Any on-site audit can vary its time on-site *within program requirements:* i.e. if 50% time must be spent on plant, then the other 50% can be spent remotely utilising tools to review policies, procedures, work instructions and records.

Any Issues with Auditors?
AUS-QUAL has both in-house and contract auditors. The balance varies between sectors. AUS-QUAL recognises one challenge is the auditor pool getting older. Previously, auditing may have been seen to be glamorous, with auditors being happier with travel, but this is not necessarily the case today. The job is difficult (needing to have a deep level of knowledge, experience and ability to apply it) and there are heavy travel requirements. Travel for auditors is particularly challenging for those with young families. AUS-QUAL has a policy that auditors don't travel on the weekend (only by exception). With some younger contract auditors, AUS-QUAL is utilising their services to undertake technical reviews, which is work able to be undertaken from home, with less time on the road. AUS-QUAL also notes that older and more experienced auditors offer benefits such as knowledge, experience and some may be available to have a higher travel commitment. Some programs require different auditors after set intervals for auditor rotation.

Technology
All done on email, or sometimes via Dropbox, or through a client's VPN – this is dependent on the clients. The reporting is mostly completed using Microsoft Excel; while BRCGS uses Microsoft Word for reports. For Freshcare, AUS-QUAL has an internal system called AMAT (a database reporting tool). AUS-QUAL can generate reports for program governance and KPIs. AUS-QUAL has remote tools including various tablets. It is noted that some sites may have concerns with privacy issues, particularly around recordings. In addition, AUS-QUAL notes it is important to remember that many workers in produce come from backgrounds with languages other than English and growers may not be as tech-savvy as needed to support remote audit tools, thus limiting the potential efficacy of tech-heavy solutions.

Innovation
Some programs have moved to remote auditing for second party audits for specific industry bodies, this is particularly the case on the AUS-MEAT side of the business. As a company, AUS-QUAL is trying to build more flexibility around calibrations: tending away from relying solely the annual face-to-face calibrations (scheme owners, auditors, technical experts, retailers), to more mini web-based calibrations throughout the year. Annual face-to-face calibrations are a challenge as AUS-QUAL needs to

27 https://www.ausmeat.com.au/

get all auditors out of the field at the same time, so the business is moving towards utilising web-based tools reducing the frequency required for face-to-face meetings.

AUS-QUAL is aware of the GFSI remote auditing changes, as it will dictate the innovations that AUS-QUAL moves forward with in this space.

More information: https://www.ausmeat.com.au/

Key takeaways:
• Remote auditing is currently being undertaken in some second-party audits.
• AUS-QUAL is aware of the perceptions and issues around the ageing auditor workforce and is introducing policies/strategies to address this.
• AUS-QUAL is moving from annual face-to-face calibrations to more frequent and targeted web-based calibrations throughout the year.

7.3 BRCGS

BRCGS was founded in 1996 by retailers who wanted to harmonise food safety standards across the supply chain. The company is owned by the LGC Group. BRCGS is the scheme owner for the world's largest global GFSI-benchmarked manufacturing scheme. First published in 1998, the Global Standard for Food Safety is now in its eighth issue and is well-established globally.[28] BRCGS also has a Packaging Standard, a Consumer Products Standard, Storage and Distribution Standard, Agents and Brokers Standard, Retail Standard, and Ethical Trade and Responsible Sourcing Standard. Each Global Standard is regularly reviewed, revised and updated at least every three years after extensive consultation with a wide range of stakeholders. There are now over 28,000 certificated suppliers in over 130 countries, and a network of more than 76 accredited and BRCGS-recognised certification bodies.[29] The standards for Food Safety, Packaging, Agents and Brokers and Storage and Distribution are benchmarked to GFSI.

On-farm Only or Whole of Supply Chain?
BRCGS focuses on post-farm gate (starting with packhouses), through to retail.

Frequency and Duration of Audits
BRCGS typically offers annual audits. It also operates a grading system, with A, B, C and D grades (excluding the Agents and Brokers standard). The grading is dependent on the number of non-conformances found at assessment and the lower grades (C and D, with higher levels of non-conformance) are audited more frequently, generally six-monthly. The duration of audits is variable depending on the standard: the audits for Food Safety and Packaging are generally two days; Storage and Distribution is one to one-and-a-half days; while the audit for Agents and Brokers is typically a day. For each standard, BRCGS offers a tool for businesses to put in their parameters (number of sites etc.) and it will generate an estimated audit duration.

Cost of Audits
The cost of audits is set by the CBs, based on market forces. BRCGS collects a service fee from CBs. The price varies, depending on the market. A major contributing factor is the salaries of the auditors, and the relative differentials in salaries across the world.

On-site and/or Remote Audits
Until very recently, all of BRCGS standards were on-site audits, except closeout of non-conformances. (More discussion of remote audits below.)

Certification Bodies
There are 76 certification bodies globally, and these can be identified in the BRCGS Directory by country: https://brcdirectory.co.uk/

BRCGS puts heavy emphasis on performance and compliance of the CBs, and their auditors. The company does six-monthly assessments of CBs and publishes a star rating for each. As with most scheme owners, BRCGS has strict rules around auditors – all auditors must be directly registered with BRCGS, including all auditors' credentials – the required knowledge, skills, experience against different areas as outlined in each standard. Each auditor is accepted by BRCGS but only for the category for which they have demonstrated skills/experience – all need at least five years' experience in the product category. There are eighteen categories, and fresh produce is one of these. Auditors must also be trained by BRCGS: whenever a standard is updated (typically every three years) the auditor must do the training for the updated standard; plus, in the interim, BRCGS has calibration webinars that the auditors must attend (delivered by the CBs). This happens at a minimum once per year, but generally it equates to approximately

28 https://www.brcgs.com/brcgs/food-safety/
29 https://www.brcgs.com/brand-owners/

every six months. BRCGS also does site visits and compares its own audit/assessment of that site against a CB's audit. They also do witness audits. All this contributes to the star rating BRCGS gives CBs, every six months. It also provides good information for BRCGS on the areas being misinterpreted by auditors, and these topics and issues become the focus of the calibration webinars.

Any Issues with Auditors?
One of the trends is the difficulty in auditor recruitment, which is dependent on the market. For example, auditor recruitment may be difficult in a market like the US because of the amount of air travel auditors need to do, audits are longer, factories are bigger: all this puts a significant time commitment on auditors. Travel is an issue in these larger markets.

It is also an ongoing challenge achieving consistency across auditors, recognising that they are all individuals with different experiences and backgrounds.

Technology
BRCGS is an active member of GFSI. As part that engagement, BRCGS is a member of the GFSI Stakeholder Advisory Forum looking at new benchmarking requirements on information and communications technologies.[30]

As part of the COVID-19 response in 2020, and the lack of access to sites, BRCGS planned for a process involving a site self-assessment, followed by the CB undertaking a remote assessment (including document review and interviews remotely). This would have also involved, as far as possible, some level of video assessment to also assess factory conditions on-site, plus any social distancing and other measures the site had put in place to deal with COVID-19, bringing this all together for a 'deep dive' remote audit. The proposal was that this would allow the audit certificate to be extended, until such time as an on-site GMP-only review could be undertaken. Those two elements (deep dive remote audit plus a GMP-only on-site audit, i.e. a blended audit) were proposed to then to allow the site to have the certificate extended for a full 12-month period. The logic behind the proposal was it would give the same level of oversight as an on-site annual audit, but allow the certificate extension to be on the same annual cycle, particularly important for sites such as packhouses with defined growing and harvesting periods etc. However, at the time, this proposal was not progressed by BRCGS as it was incompatible with GFSI's then requirements around on-site audits. BRCGS is aligned with GFSI's position of extending the certification for six months and no remote audit.

BRCGS is of the position that there a are a lot of benefits to a blended audit, as described above. A blended audit would involve a document review that could be carried out remotely; then a shorter period on-site looking specifically at GMP issues, and following up on issues which were not resolved through the document review. This has the advantage of less auditor time on-site, less attrition of auditors, the potential to use auditor teams of different skillsets (i.e. generalists for desktop review and specialists [e.g. produce specialist] for the on-site GMP inspection). BRCGS supports GFSI in this area and looks forward to working with GFSI to exploring this potential innovation. BRCGS also notes that GFSI in July 2020 published an extension to their 2020 benchmarking document which now allows for blended audits under particular circumstances, and is available when the CB and the site both agree.

BRCGS also offers BRCGS Participate, the online information platform for BRCGS certificated sites and Delivery Partners. It is available to all sites as part of the service fee. It provides exclusive access to all BRCGS publications, webinars, case studies, white papers and reports.[31]

Innovation
Food safety culture is being rolled out in all the BRCGS standards, which BRCGS regards as critical. For the Food Safety Global Standard, culture was introduced in Issue 8 in August 2018, with auditing against this new standard starting in 2019.[32] Additionally, on culture, BRCGS offers a Food Safety Culture Excellence module, developed in partnership with TSI, which is being increasingly used. It is a commercial product which is a system for remote anonymous employee interviews which provides management with feedback on what employees think and understand about food safety culture, and offers management a way to assess food safety culture, using metrics and benchmarking the business against others in the same product category. More here: https://www.brcgsbookshop.com/bookshop/food-safety-culture-excellence/c-24/c-77

BRCGS also considers unannounced audits as an innovation in improving food safety, and particularly the growth of unannounced audit. In the UK market, audits are almost exclusively unannounced, which is a historical situation that arose out of food scares, including the horsemeat issue

30 https://mygfsi.com/news_updates/stakeholder-consultation-new-gfsi-benchmarking-requirements-on-ICT
31 https://www.brcgs.com/media/1025931/brcgs-combined-qsg-digital-24-may-2019.pdf
32 https://www.foodmanufacture.co.uk/Article/2018/07/11/Auditing-standard-targets-food-safety-culture

in the UK in 2013. Driven by retailers, unannounced audits became the norm in this market.

BRCGS completed a survey of UK businesses that had unannounced audits in 2015. The *Study of BRC Unannounced Audits June 2015*[33], found that approximately half (50.5%) of survey respondents indicated that unannounced audits had a beneficial impact on their facility. This compares with 13% indicating they had a negative impact, and the remainder, 36%, indicated a neutral response. BRCGS prefers unannounced audits to scheduled audits, as they claim that they offer a better alignment between what is actually happening in the factories and the audit process. BRCGS offers both announced and unannounced in all markets, but indicated that unannounced audits are a fairer test of the site, more team-led, and lead to overall improvement of food safety culture and practice.

More information: https://www.brcgs.com/

Key takeaways:
• BRCGS has developed remote auditing options, particularly through a blended audit approach.
• BRCGS has a well-developed suite of technology tools to assist CBs manage the audit process, train auditors and monitor CB and auditor performance.
• Food safety culture is a key area that BRCGS is engaged with and is producing novel tools with partners to help industry measure and improve food safety culture in business.
• BRCGS regards unannounced audits as a key innovation that drives improved food safety in the produce industry.

7.4 Red Tractor

Red Tractor, a major UK scheme initiative, was established in 2000 and has grown to become the UK's largest farm and food standards scheme which includes food safety, traceability and environmental protection.[34] It is a cross-sector scheme, covering produce, combinable crops, livestock (beef and lamb, pigs and poultry). As a market facing brand, the Union Jack flag in the Red Tractor logo indicates to the consumer that the food has been born, grown, prepared and packed in the UK – with traceability back to the original farm, although in principle, it is not an exclusively British scheme. Red Tractor is benchmarked to GLOBALG.A.P.. There is not another directly comparable scheme for fresh produce in the UK. There are other schemes such as LEAF Marque (sustainability focus) and the organic schemes, in practice there is not a direct alternative to Red Tractor (although farms could opt to complete a GLOBALG.A.P. audit in principle).

There are over 2,500 horticultural growers certified to Red Tractor producing loose fruit and vegetables through to Ready-to-Eat packs. Red Tractor's market focus has been around influencing buyer choice and educating the positives of the brand mark. When prompted in surveys, 65% of consumers recognise and trust the Red Tractor label – a direct benefit for certified growers.

On-farm Only or Whole of Supply Chain?
Red Tractor covers primarily on-farm. However, they have licensees who pack with the Red Tractor logo, and this covers more of the supply chain. Livestock covers transport as well, but for fresh produce, the Red Tractor standard covers packhouses (but not to the same level as a BRCGS or similar). So the produce focus is primarily on-farm.

Checklist Approach?
Yes, it is a checklist approach. There is a fresh produce standard, with a series of sections on different topics. It lists how the client will be measured and graded against the standard. There are several key standards and nonconformance against a key standard is a major nonconformance, which requires swifter resolution.

Frequency and Duration of Audits
Yes, annual audit. There is a period of grace – clients can go to 14 months. Audits take a day: if it is a simple operation it could be done in four hours, it almost never exceeds a day.

Cost of Audits
Fresh Produce growers pay a banded annual fee based on size of business in hectares; ranging from £53.20 to £509.50.[35] They pay through their Certification Body and the final fee will also include CB charges and may include supplements if they require a GLOBALG.A.P. number or supply Tesco.

On-site and/or Remote Audits
All on-site. The only aspects that is remote is the logistics of the audit and planning. All of the documentation is reviewed on the day by an assessor.

33 BRCGS. 2015. Study of BRC Unannounced Audits June 2015. BRCGS London https://www.brcgs.com/media/27306/white-paper-study-of-brc-unannounced-audits.pdf
34 https://assurance.redtractor.org.uk/who-we-are
35 See https://assurance.redtractor.org.uk/contentfiles/files/2019-20%20Royalty%20Fees%20%26%20Produce%20updated%20April.pdf

As part of the COVID-19 response, Red Tractor suspended physical inspections on 20 March 2020 and have been working on a methodology for remote inspections. They have completed live trials and have now started to scale this up in a phased way. While there are a suite of options, the most common approach for Fresh Produce is a combination of remote document review (supported by the Red Tractor portal) with a livestream assessment on-farm. This has been recognised by UKAS as equivalent to a physical inspection and Red Tractor continues to work with CBs to roll this out.

Certification Bodies
Red Tractor works with three different CBs: NSF, SAI, Lloyds Register. Each of the CBs use their own approach using their own systems. Mostly it is in the farm office on the day.

Any Issues with Auditors?
As with other countries, a lot of auditors are former agronomists or other professionals, possibly coming to the end of their careers and using auditing as another income stream. There are issues with attracting auditors with the required experience and background: the work level can fluctuate and the pay is variable. Red Tractor have introduced a compliance manager role to focus on the quality and consistency of auditing. CBs are also taking steps to address this issue, by a process of bringing in 'young blood' and people from different backgrounds, particularly from a supply chain background. Red Tractor have put much effort into auditor professional development and training, with a training academy with online training program and assessment, which auditors are required to participate in. There is a parallel program of witnessing. The challenges, according to Red Tractor, are how to get the best people into the profession, and how to retain these people and continually provide skills upgrading and professional development opportunities.

Technology
The CBs design their own systems/software to collect the data, which is usually done via a laptop in the farm office, which is not very portable (i.e. not using tablets). They then feed their data into a system at Red Tractor called Glue, which is primarily used to review the data from individual audits (not looking for trends etc.). At a macro level, Red Tractor relaunched the Fresh Produce Scheme in October 2017 (version 4) and looked at the first two years of data at the most common non-conformances. Supply chain clients can check the current status of a Red Tractor member and current crops, using the Red Tractor Checkers website (but this doesn't allow them to review audit reports or performance data).

Red Tractor recognises that there exists an opportunity to collect more on-farm data to improve and/or benefit farmers and the industry in general. They are introducing an online system, Supplier Portal, for farmers to upload documents to enable a pre-audit assessment. This system is largely operational, but is still in trial. The principle of it is that of an 'online filing cabinet', streamlined assessment and it will be voluntary for members. It is developed by the Map of Ag (software provider). Red Tractor want to promote this future initiative as a free service, making it easier, and allowing more time for the auditor on-farm, but not necessarily reducing compliance costs. The security of the data is an area of particular focus.

Innovation
Red Tractor does risk-based assessments in some of their other sectors i.e. livestock: those who have highest levels of non-conformances have an unannounced, follow-up spot-checks. It is a move away from the old system of pass or fail, of an annual review, making no differentiation between those with no non-conformance and those with many non-conformances. This is moving towards focusing resources on the poorer performers and those for whom Red Tractor receive advice that there may be an issue or risk. This concept had some initial resistance from producers, but in livestock it is now accepted and has been successful. It is not a 'one-size-fits-all' approach: Red Tractor is targeting the poorer performers, which has led to improvements being made by producers. Red Tractor will be introducing risk-based assessment in horticulture in the next 12 months, and have committed to that for poor performers. Longer term they may consider relaxing the auditing regime for high performers.

More information: https://assurance.redtractor.org.uk/

Key takeaways:
• Red Tractor is moving to a risk-based approach, focusing more resources on poor performers, and have already introduced this for their livestock standard. It will be introduced for their fresh produce standard in 2020.
• Red Tractor are introducing a Supplier Portal to increase audit efficiency.
• Red Tractor is planning for a form of remote auditing remote auditing as part of its COVID-19 response.

7.5 Bord Bia

Bord Bia (the Irish Food Board)'s purpose is to promote Irish food, drink and horticulture to the world, enabling the growth and sustainability of producers. Bord Bia was established in 1994, and in 2004 responsibility for horticulture was incorporated into Bord Bia's remit.[36]

"In Ireland there are approximately 365 horticultural growers representing 75% of production. Participation in the Bord Bia Sustainable Horticulture Assurance Scheme (SHAS) ensures membership of the Origin Green program and will be a key communication tool for export markets. In the domestic market Bord Bia will continue to drive preference for products and will move to an enhanced Q Mark + that incorporates sustainability."[37]

"The SHAS was developed with representatives and stakeholders of the Horticultural Industry along with technical experts. The Sustainable Horticulture Assurance Scheme is operated in accordance with ISO17065 and is built upon Bord Bia's pre-existing Quality Assurance infrastructure, which has been in place for over twenty years."[38]

Compliance is determined by a detailed farm audit, and conducted by independent auditors contracted by Bord Bia. Only those Producers who have proven through audit to meet the requirements of the Horticultural scheme are entitled to use the Bord Bia Quality Assurance Mark on produce, packing and/or point of sale materials subject to the conditions which govern the use of the quality mark. Any use of the quality mark must be approved by Bord Bia in advance. Furthermore Producers who are audited against the new Sustainable Horticulture Assurance Scheme are actively taking part in the Origin Green Sustainability Programme. Certification to the SHAS means products carrying the Bord Bia logo not only meet the highest levels of safety and quality, but have been produced on a farm which is embracing sustainable practices.[39]

On-farm Only or Whole of Supply Chain?
Bord Bia has three relevant standards under the SHAS – the producer standard which covers growing, handling and packing, and distribution of fresh produce and the prepared fruit and vegetables standard, which covers those involved in the preparation, packaging and delivery of pre-cut fruit and vegetables for human consumption. The third standard relates to ornamentals.

Checklist Approach?
Bord Bia adopts a checklist approach. There are SHAS Self Assessment Modules that must be completed prior to audit. "Participants must complete a full evaluation of their activities against the requirements of the applicable SHAS modules. A copy of the requirements for each module in a checklist, will made available online (and in hardcopy where required). This must be completed prior to the audit and made available for inspection."[40]

Frequency and Duration of Audits
Audits are either announced or unscheduled audits. Certification is usually for an 18-month period and the renewal of certification usually starts about four months before the end of the period.

Cost of Audits
The cost of audits is included in the membership fee to Bord Bia.

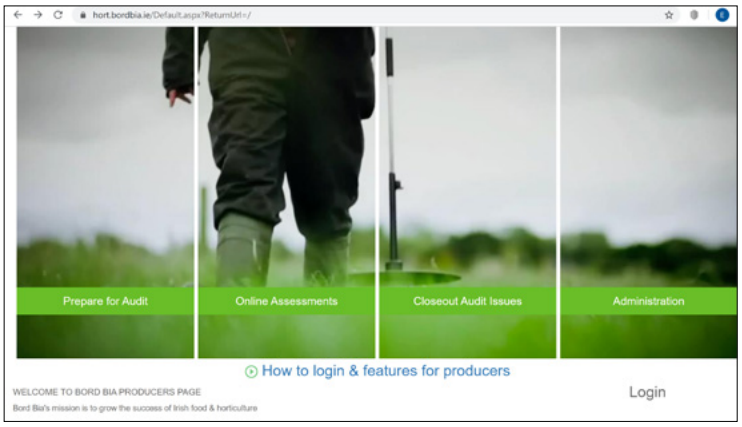
On-site and/or Remote Audits
Bord Bia conducts on-site inspections with some activities pre- and post-inspection are completed online (see below, Technology).

From the Producer Standard for Growing, Packing and Produce Handing: "Bord Bia at its discretion may offer the Participant a split audit. For a split audit the Participant would be requested to submit documentation relevant to the Scheme, to allow the assigned Auditor complete a desk review of these materials. This would be followed by the on-site element by the same Auditor to verify the documentation review and complete the remaining content of the audit checklist. The purpose of a split audit would be to reduce the length of time the Auditor will require on-site with the Participant to complete the audit. When a split audit is offered, the Member can elect to have the entire audit completed on-site (opt out of split audit)."[41]

36 https://www.bordbia.ie/about/about-bord-bia/
37 Hazell, Belinda. 2019. The Hort Innovation Australia Churchill Fellowship: Investigating the use of horticultural QA Standards to stay ahead of social license demands p66.
38 https://www.bordbia.ie/farmers-growers/farmers/quality-assurance-schemes/sustainable-horticulture-assurance-scheme-shas/
39 https://www.bordbia.ie/farmers-growers/farmers/quality-assurance-schemes/sustainable-horticulture-assurance-scheme-shas/
40 https://www.bordbia.ie/globalassets/bordbia.ie/farmers--growers/farmers/qas/document-libraries/shas-pdfs/sustainable-horticulture-assurance-scheme---producer-standard.pdf
41 Bord Bia. 2017. Producer Standard for Growing, Packing and Produce Handing. https://www.bordbia.ie/globalassets/bordbia.ie/farmers--growers/farmers/qas/document-libraries/shas-pdfs/sustainable-horticulture-assurance-scheme---producer-standard.pdf

Technology

Bord Bia has developed an online dashboard for participants of the SHAS to complete and upload a variety of documentation prior to and after inspection. Risk assessments (hygiene, environmental and water risk assessment) and risk pre-assessment may be completed online. Several YouTube videos are available to 'walk' participants through the process of completing this information online.



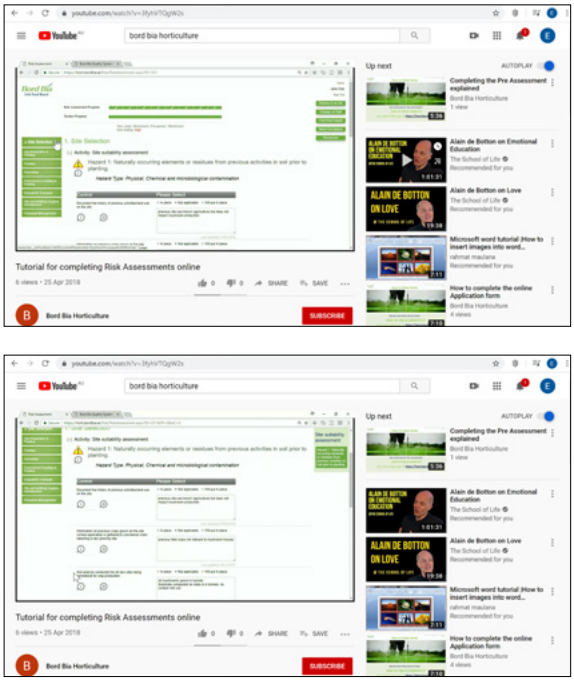
Source: Bord Bia Producer portal landing page[42]

More: https://hort.bordbia.ie/Default.aspx?ReturnUrl=/

"Bord Bia recognises that time reductions to meet compliance requirements will directly benefit growers. Implemented system initiatives puts them at the forefront of measures to address grower compliance costs concerns. Software programs produced by Muddy Boots or Gatekeeper are used for electronic record keeping… In recognising the time taken to close out corrective actions (CAR) using root cause analysis, Bord Bia have developed a smart phone friendly reporting platform so that growers can close out CARs using their mobile phone. Growers can take pictures of completed actions on-site and upload for real time efficient reporting rather than having to use the computer to download / upload information. From their reporting database, Bord Bia can also determine the level of compliance in terms of farm health and safety, pesticide use, fertiliser use, environmental protection controls and on-farm biodiversity activities."[43]

There is an online self-assessment available which provides growers the opportunity to upload documents in readiness for audit – enabling an innovative remote desk top audit to occur prior to an on-farm SHAS audit, which is conducted every 18 months. This provides the opportunity for an auditor to visit at different stages across the production cycle. Bord Bia are considering moving to 5-year certification with annual surveillance audits (covers core requirements re GFSI benchmarking with random questions from full checklist completed each year).

Bord Bia has an extensive suite of online tools including checklists (downloadable in Excel, PDF and online versions), how-to videos, templates and much more. The SHAS online tools are located here: https://hort.bordbia.ie/Prepare.aspx



Source: Bord Bia You Tube video screenshots on completing risk assessments online[44]

More: https://www.youtube.com/watch?v=3fyhVTQgW2s

More information: https://www.bordbia.ie/

Key takeaways:
• Bord Bia is introducing online systems to facilitate the audit/inspection process, including self-assessment checklists.
• Bord Bia has developed a dashboard, mobile app and checklist system for producers to conduct pre-assessment, risk assessments and address close-outs.
• Bord Bia has the opportunity for a split audit (on- and off-site).
• Bord Bia's frequency of audits is lower than GFSI-benchmarked schemes.

42 https://hort.bordbia.ie/Default.aspx?ReturnUrl=/

43 Hazell, Belinda. 2019. The Hort Innovation Australia Churchill Fellowship: Investigating the use of horticultural QA Standards to stay ahead of social license demands pp66-67.

44 https://www.youtube.com/watch?v=3fyhVTQgW2s

7.6 BSI

BSI is the world's first Standards Body and founding member of ISO. "Since 1901, BSI has been helping organizations across the globe improve and capture best practice."[45] "BSI offers a broad range of food safety certification and risk management services to help all organizations in the food supply chain achieve compliance and industry best practice. We're a leading food safety and certification provider with extensive auditing capacity and the capability to conduct integrated audits for a wide range of food safety standards across the entire food and beverage supply chain – including GFSI (Global Food Safety Initiative) – recognized standards. Our services for food safety include certification, training, assessment and supply chain software, assuring you and your customers, and enabling you to manage risk more effectively."[46]

On-farm Only or Whole of System/Supply Chain?
All.

Checklist Approach?
Checklist, process and management system approach.

Frequency and Duration of Audits
Frequency – six-monthly or annual depending on scheme requirements. Duration – from ½ day to 5 days depending on scheme requirements.

Cost of Audits
Approx. US$1,500 per day plus reporting.

On-site and/or Remote Audits
Both.

Auditors
Registered auditors conduct audits. Different schemes have different personnel competency accreditation methods. Some are by the certification body, some by the scheme owner and some by an external 3rd party personnel certification body. Re-accreditation every 2-3 years. Ageing population of auditors, complexity of industry specific knowledge and scheme requirements make identifying appropriate auditors convoluted. Minimal contact from pre-audit planning to post audit non-conformance closure.

Innovation
- Introduction of remote auditing, unannounced audits, introduction of scheme owner databases.
- Introduction of drone technology for aerial surveillance of perimeters and land impact.
- Blockchain.
- Emersion and continuous auditing leading to predictive analytics of data.
- Consortium auditing – sharing of audit results with multiple interested stakeholders.

More information: https://www.bsigroup.com/en-AU/

Key takeaways:
• BSI is using new technology such as blockchain and predictive analytics of data.
• BSI is seeing developments in some schemes in remote auditing and unannounced audits.
• Sharing of auditing results with multiple interested stakeholders is being adopted.

7.7 California Leafy Greens Marketing Agreement (LGMA)

LGMA's overall approach to food safety is focused on preventative good agricultural and handling practices addressing major microbiological food safety hazards that may occur or be encountered during planting, growing, and harvesting of leafy greens.

"The California Leafy Green Products Handler Marketing Agreement operates with oversight from the California Department of Food and Agriculture (CDFA) and is a mechanism for verifying through mandatory government audits that farmers follow accepted food safety practices for lettuce, spinach and other leafy greens."[47]

On-farm Only or Whole of Supply Chain?
The LGMA is an on-farm focused food safety auditing scheme that addresses growing through shipping supply chain operations. At the farm level, the scheme primarily focuses on seven categories: water, soil amendments, worker hygiene and harvesting practices, environmental assessment, field observations, equipment, and production locations.

45 https://www.bsigroup.com/en-AU/About-BSI/
46 https://www.bsigroup.com/en-AU/Industry-Sectors/Food-and-drink/Retailer-standards/
47 https://lgma.org/about-us/faq/

Checklist Approach?
Yes, the LGMA publishes an audit checklist that contains details on the seven categories and other key audit elements.

Frequency and Duration of Audits
Members complete an average of five audits per year; an announced and unannounced audit occurs at least once annually. In addition, members also complete buyer specific audits.

Cost of Audits
Audit costs are covered by LGMA members' fees.

On-site and/or Remote Audits
Until late May 2020, audits were conducted on-site. Records may be kept electronically, but reviews today all occur on-site.

However, in late May 2020, as part of the Western Growers' response to COVID-19, the LGMA approved the verification of all documents and date for online review. The process, developed with iFoodDecisionSciences, will allow the execution of remote audits and has been approved by the California Department of Agriculture.[48]

Auditors
Audits are conducted by trained auditors from the Arizona and California Departments of Food and Agriculture, government regulatory agencies. Auditor retention has been an issue in the past. After completing an audit, auditors file a written audit report. Audit reports are reviewed by the LGMA compliance officer who decides if the audited company needs additional training or corrective actions based on the audit results. No other contact occurs during audits. LGMA auditors are very strict and avoid making recommendations or establishing ongoing relationships.

Technology
Auditors record data on paper. Paper-based recorded data is then entered into a computer program for recordkeeping and analysis. The current data storage and associated reporting software was developed by a software company under a government procurement process. The data is stored in the LGMA system and available to members as part of member annual dues. An online database is available to members containing report details, observations and corrective actions. The company being audited can examine the reports and respond to missing information or provide details on corrective actions.

Testing Systems
Members are required to have their agricultural water tested and if they use soil amendments, then certificates of analysis demonstrating soil amendments (SA) are tested for microbial endpoints are required. If SA are processed on-site, then SA are required to be tested. Crop testing is an option if agricultural water tests do not meet the microbial water quality standards.

Common Food Safety Practices
- Some companies use outside vendors / consultants to help them develop and implement their food safety program, setup their water treatment systems, train their workers, etc.
- Some fresh produce businesses use software to log their food safety and/or product tracing data and analyse it to better assess areas needing to be addressed or improved.
- Some growers have their food safety personnel attend workshops to learn methods and practices to better help them meet LGMA requirements.
- Most of these are being implemented at a company level – across all commodities. Since the Produce Rule includes many LGMA practices, current government regulation is also driving adoption across other commodity groups and companies not currently subject to the LGMA.

More information: https://lgma.org/

Key takeaways:
• LGMA has a higher auditing frequency than other schemes surveyed here.
• An announced and unannounced audit occurs at least once annually, and an average of five audits annually, for LGMA members.

7.8 CanadaGAP

CanadaGAP is a food safety program operating in Canada, and is owned and operated by CanAgPlus, a not-for-profit corporation established in 2012.[49] CanadaGAP has been developed in Canada as a voluntary food safety program for fruit and vegetable businesses. The CanadaGAP standard is benchmarked to GFSI for the BI and D scopes related to farming of plant products and pre-processing of plant products. It launched in 2008 with 500 potato growers. It focusses on good

48 https://www.wga.com/press-releases/lgma-partners-western-growers-offer-remote-food-safety-audits-during-pandemic
49 https://www.canadagap.ca/history/governance/

agricultural practices, GMP and HACCP programs (commodity specific HACCP plans) and was GFSI benchmarked in 2010. The program is designed to be realistic, cost effective, voluntary and market driven; based on industry input and needs; technically sound and credible; created through a transparent process; founded on the published, peer-reviewed science; consistent between regions and commodities and buyer recognition.[50]

CanadaGAP is fully recognised by Canadian federal and provincial authorities under the Canadian Government Food Safety Recognition Program. CanadaGAP requirements are 100% aligned with federal regulations for food safety.

CanadaGAP comprises of two manuals: one specifically for greenhouse operations and a second for other fruit and vegetable operations. The program is developed in conjunction with a stakeholder advisory committee, who, as a volunteer committee, serves a technical advisory role to the CanAgPlus Board of Directors, to review the standard and related matters as well as other technical matters, and has Canada Food Inspection Agency (CFIA) approval. Independent certification bodies (2) are approved, and the CanadaGAP trained auditors (who must meet the pre-requisite and training requirements) conduct the annual audit to the specified criteria, under the GFSI, CFIA and other accreditation rules.

The structure, operation and intent of the standard, is very closely aligned to the Australian Freshcare model.

On-farm Only or Whole of Supply Chain?
CanadaGAP has participating companies from across the industry: those that produce, pack, repack, store, wholesale and broker fruits and vegetables. CanadaGAP has nearly 3200 participating companies across the Canadian and US fresh produce industry. "Audit and certification services for the program are delivered by third party, accredited Certification Bodies. Since 2010, the program has been benchmarked and officially recognized by the Global Food Safety Initiative (GFSI) for certification options B, C and D. It is also fully recognized by the Canadian Government and has been benchmarked to the Safe Food for Canadians Regulations to ensure 100% alignment with regulatory requirements for food safety."[51]

Checklist Approach?
Yes, CanadaGAP has a manual for program participants, and the audit is based on a checklist that reflects the CanadaGAP standards. Auditors use the checklists to ensure that the participating businesses are meeting program requirements. The audit checklist is updated regularly.

Frequency and Duration of Audits
The length of time for an audit varies with the size of the operation. The majority of on-farm audits can be completed in a half a day. Packing and repacking facilities and more complex operations usually take longer (e.g., minimum one day). Audits can be announced or unannounced. Annually, 10%[52] of certification bodies' clients will have an unannounced audit so over time, all clients will have an unannounced audit.

Cost of Audits
CAD$1000-2000 annually.[53] Group fees are also available.[54]

On-site and/or Remote Audits
Audits take place on-site. Audits must be scheduled to occur when the activities relevant to the business' certification are happening – during harvest, product handling, packing/repacking season, shipping, storage period, etc. This is important for the auditor to properly assess the implementation of the business' safety program. Activities that are not occurring cannot be included in the scope of the audit. Multi-commodity operations may find, depending on the activities and crops involved, that a number of audits over several years are required before certification reflects the full scope of the operation's business.[55]

CanadaGAP has a random audit program and a self-assessment system for non-GSFI benchmarked options. "CanadaGAP offers certification on a four-year cycle to companies participating in Option A1 and A2. These certification options are not GFSI-recognized as they do not entail an annual on-site audit. To become certified, companies undergo a scheduled audit in the first year of the four-year cycle. To be recertified in the subsequent three years, they may be randomly chosen for an audit in any or all of the three years. If they are not randomly selected, they must complete a self-declaration and self-assessment and submit it to the certification body to demonstrate their ongoing adherence to program requirements."[56] In addition, "the number of program participants moving to an

50 Ibid
51 CanadaGAP. 2019. Annual Report 2019 p1.
52 Increased from 5% to 10% effective April 1/20 to meet GFSI v2020 requirements.
53 https://www.canadagap.ca/media/media-faqs/
54 https://www.canadagap.ca/certification/certification-costs/
55 https://www.canadagap.ca/program/faq/audit-process/
56 CanadaGAP. 2019. Annual Report 2019. p10

Table 2. Certification Options for Individual Operations under CanadaGAP			
Option	**Recognized by**	**Audit Frequency**	**Features**
A1	Canadian Government Food Safety Recognition Program	Every 4 years – audit on-site Could also be selected for random audit in Years 2, 3 and 4 of the cycle	Year 1 on-site audit by 3rd party Certification Body (CB) Annually – if not selected for random audit, must complete sworn declaration and self-assessment Annually – 3rd party CB reviews declarations & self-assessment More affordable to industry while still providing annual oversight
A2	Canadian Government Food Safety Recognition Program	Every 4 years – audit on-site No more than 4 years between on-site audits. If selected for a random audit, scheduled audit date will be extended to four years from the random audit date	Year 1 on-site audit by 3rd party Certification Body (CB) Annually – if not selected for random audit, must complete sworn declaration and self-assessment Annually – 3rd party CB reviews declarations & self-assessment
C	GFSI-recognized* Canadian Government Food Safety Recognition Program	Annual	On-site audit by 3rd party CB Meets international benchmarking requirements Higher cost than A options due to higher audit frequency
D	GFSI-recognized* for repacking and wholesaling components Canadian Government Food Safety Recognition Program	Annual	On-site audit by 3rd party CB Repacking and wholesaling components meet international benchmarking requirements
Source: https://www.canadagap.ca/certification/certification-options/			

annual audit under Option C is increasing, representing 53% of participants in 2019."[57]

A summary of the certification options for individual businesses is presented in Table 2.[58]

Auditors
CanadaGAP's auditor requirements cover six areas:

1. Education Requirements

2. Training Requirements

3. Experience Requirements

4. Other Skills Required

5. Requirements for Auditor On-boarding by Certification Bodies

6. Maintenance of Auditor Competencies and Ongoing Monitoring by Certification Bodies.

Full details for auditor requirements are available here: https://www.canadagap.ca/wp-content/uploads/English/CanadaGAP-Program/Auditors/CanadaGAP-Auditor-Requirements-2020_EN.pdf

In addition, CanadaGAP has been facing similar issues to other schemes regarding the auditor workforce, heavy travel requirements, limited auditor pool and developing the auditor profession to be more attractive to younger entrants.

Certification Bodies
Bureau de Normalisation de Quebec and NSF Canada Ag (SGS departed as a CanadaGAP certification body in 2019). A third CB is expected to be added in the near future.

57 CanadaGAP. 2019. Annual Report 2019. p9
58 https://www.canadagap.ca/certification/certification-options/

Innovation
As a response to the COVID-19 pandemic, CanadaGAP, under GFSI's COVID-19 response, will extend audit certificates for up to a maximum six months, if the audit certificate is due to expire while an auditor cannot access the site due to COVID-19 restrictions. CBs will request evidence from the business prior to the extension and a risk assessment will be undertaken. The site must have an audit prior to the extended certificate expiring. Effective 1 July 2020 CanadaGAP has introduced the option of a partial remote audit during the coronavirus pandemic.

More information: https://www.canadagap.ca/

Key takeaways:
• CanadaGAP operates similarly to Freshcare for its GFSI-benchmarked options.
• CanadaGAP offers four-year on-site audits for non-GFSI benchmarked options, with a self-assessment checklist to be completed in the remaining three years. A percentage of these companies are chosen for random audits over these three years.
• CanadaGAP is fully recognized by Canadian federal and provincial authorities under the Canadian Government Food Safety Recognition Program. CanadaGAP requirements are 100% aligned with federal regulations for food safety.
• CanadaGAP is prioritising on-site audits during periods of activity relevant to the certification scope, which is a notable difference to some other schemes. CanadaGAP maintains that the best quality audits occur on-site when real-time activities relevant to the certification are in process.

7.9 Freshcare

Freshcare started in 2000 as an on-farm food safety program developed by fresh produce industry experts, in response to the need for a practical, cost effective, industry focussed food safety program.[59] Freshcare is Australia's largest fresh produce assurance program and is owned by 28 Peak Industry Bodies. Freshcare has a suite of assurance programs including Freshcare Food Safety & Quality – On-farm Standard – Edition 4.1 (FSQ4.1) (which achieved GFSI benchmarking in February 2020) and Freshcare Food Safety & Quality – Supply Chain Standard – Edition 1 (FSQSC1) (which is aimed for GFSI benchmarking during 2020). These standards are approved by JAS-ANZ (Joint Accreditation System of Australia and New Zealand) to operate as accredited standards under ISO/IEC17065:2012. Freshcare standard FSQ4.1 is approved as a base standard under HARPS.

On-farm Only or Whole of Supply Chain?
Freshcare maintains two standards for produce safety: one for on-farm (grower and packers) as well as FSQ-SC which covers the supply chain from standalone packers through to warehouses and transport and agents/brokers. A site is considered anywhere that fresh produce is produced, handled or stored (including but not limited to fields, paddocks, orchards, greenhouses, shadehouses and growth rooms/chambers, packing facilities, ripening facilities, off site storage etc.).

Checklist Approach?
Freshcare CBs have a tendency to use a checklist approach/methodology. However, it is not a stipulated requirement under the Freshcare Program. Freshcare allows the CBs to develop their own tools to suit their systems as long as the outcome of the audit meets the standard requirement and delivers the audit outcome with sufficient objective evidence.

Frequency and Duration of Audits
To maintain Freshcare certification for Freshcare FSQ4.1, FSQ-SC and ENV, annual audits must be conducted. The only exception is that if the producer has crops of different seasonality, they may need to be audited different times in the year. For the duration of the audits, the grower-packer FSQ4.1 audits are averaging 5-6 hours.

Cost of Audits
The cost of the audit varies per business depending on size of operation and number of sites, travel and accommodation charges and the standard(s) being audited. Businesses should source quotes for their annual audit from a number of Freshcare CBs to ensure they are getting the best rate available for their business.[60] There is a Freshcare fee for certification, and this is collected by the CB at time of audit, and passed onto Freshcare. Freshcare is transparent in the fees it charges, and the information is available on its website.

On-site and/or Remote Audits
Currently audits for Freshcare are conducted wholly on-site, using checklists, and must be during harvest or the operational period of the business. Freshcare

59 https://www.freshcare.com.au/about/
60 https://www.freshcare.com.au/contact-us/faq/

is developing a framework for remoting auditing, following guidance released by GFSI in June 2020 on the use of Information Communication Technology (ICT), for GFSI benchmarked certification audits.

Certification Bodies
There are seven CBs for Freshcare: AUS-QUAL, ACO Certification, BSI Group ANZ Pty Ltd, Merieux NutriSciences Certification LLC, SAI Global, Sci Qual International Pty Ltd, SGS Australia Pty Ltd.

Any Issues with Auditors?
Freshcare reports that there are several issues with auditors, similar to that outlined in section 6. These issues include the time and cost to auditors (personally) or to CBs of getting auditors up to speed and to meet the training and competency requirements, the issues surrounding the ageing demographic of auditors, challenges attracting younger auditors to the industry. All of these issues lead to a limited auditor pool. There needs to be changes to make auditing a more viable prospect for younger professionals.

Other Issues?
There are also issues relating to the operational efficiency of running a CB or a scheme. While harmonisation of standards is progressing well, there are additional costs and opportunities to streamline the process in running a scheme/CB. Those working within the administration of CBs, still require training and support to effectively manage and run schemes.

Technology
Freshcare provides FreshcareOnline, "a web based operating system used by all Freshcare trainers, certification bodies and the Freshcare office to ensure a smooth and accurate flow of information between program stakeholders."[61] FreshcareOnline allows participating businesses to update their contact details; view their certification status; view any issues (CAR) raised at audit; view and print certificates (once certified); see any customers that have linked them as a supplier; access training materials (resources and record keeping docu- ments); and access participating business news and updates. One of the CBs for Freshcare has developed an audit tool iPad/laptop friendly, but is still using the checklist approach. Most of the other CBs are using a combination of Microsoft Excel or Word documents.

In addition, Freshcare provides an online suite of e-learning modules. For FSQ4.1 this is an additional option to allow trainees to complete their training, with the traditional face-to-face option still available for those that prefer to learn in that manner.

For FSQ-SC the only option for training is the e-Learning module. Environment training is still run as a face-to-face model.

Innovation
Freshcare participates in industry R&D, working groups and projects to provide support pathways for new initiatives that can better support compliance outcomes in areas such as food safety, biosecurity, traceability, regulatory requirements and sustainability.

As a response to the COVID-19 pandemic, Freshcare, under GFSI's COVID-19 response, will extend audit certificates for up to a maximum six months, if the audit certificate is due to expire while an auditor cannot access the site due to COVID-19 restrictions. CBs will request evidence from the business prior to the extension and a risk assessment will be undertaken. The site must have an audit prior to the extended certificate expiring. Once restrictions are eased, under the GFSI Coronavirus position, CBs will determine via a risk-assessment approach the order in which audits will be rescheduled.

More information: https://www.freshcare.com.au/

Key takeaways:
• Freshcare is the largest produce assurance program in Australia.
• Freshcare Standards are accompanied by a required training component to support consistency in application and outcomes.
• Freshcare is prioritising GFSI-benchmarking, and has achieved this for its on-farm standard, and is applying for GFSI-benchmarking for the supply chain standard.
• While harmonisation has improved, there are opportunities for further improvement around improving the operational efficiencies of schemes and CBs.

7.10 NZGAP

New Zealand Good Agricultural Practice (NZGAP) is one of the primary quality assurance schemes in New Zealand. Owned by Horticulture New Zealand on behalf of growers, NZGAP certification provides assurance for the safe and sustainable production of fruit and vegetables in New Zealand.[62] The NZGAP is approved under the NZ Food Act

61 https://www.freshcare.com.au/resources/freshcareonline/
62 https://www.newzealandgap.co.nz/

2014, although it has been in operation for over 20 years. NZGAP is benchmarked to GLOBALG.A.P. Equivalent to Version 5.2. NZGAP is seeking a pathway for GFSI recognition.

On-farm Only or Whole of Supply Chain?
NZGAP certification is primarily pre-farm gate (1490 growers) but it also certifies contractors, packhouses, transporters, and wholesalers (130 across the supply chain). NZGAP also has a fully benchmarked GLOBALG.A.P. programme to which 80 growers are certified. NZGAP certifies individuals, multi-sites and producer groups.

Checklist Approach?
The checklist follows a similar pattern to GLOBALG.A.P. where assurance is provided through a process of risk assessment, implementation of GAP, and monitoring of performance (e.g. testing). The checklist is structured by management area (e.g. Nutrient Management, Agrichemical Management) and topic (e.g. training, records). The checklist is developed for an inspection based-approach to verification, rather than an audit-based approach.

Frequency and Duration of Audits
1650 audits were reported in 2019. Audits for NZGAP generally take 3-4 hours, and are annual in years 1-2 for individuals, then 1 in 3 years from year 3 onwards. Non-compliances trigger targeted, and/or annual audits. Internal inspections for producer group members are annual, with the square root * 1.5 audited by a 3rd party in year 1 and the square root audited by a 3rd party in year 2 plus. Audits for NZGAP GLOBALG.A.P. Equivalent are annual, in alignment with GLOBALG.A.P. requirements.

Cost of Audits
NZGAP audits cost $600-800 NZD. NZGAP GLOBALG.A.P. Equivalent audits costs approximately $1,500-3,000 NZD.

On-site and/or Remote Audits
Records are beginning to be checked off-site (e.g. spray diaries, Growsafe certification) but it is not widespread. The NZ MPI have recently proposed rules to provide for remote verification using technology like GoogleGlass. HortNZ will continue to work with technology providers, GLOBALG.A.P. and MPI through the development and adoption of remote verification services.

NZGAP has migrated all registration and certification processes online and have also established temporary rules during COVID-19 to enable off-site audit (remote check of documents/records) and remote audit (remote interview and visual implementation via video link). The remote audit option enables the continued provision of credible certification of safe and sustainable horticulture produce, while complementing growers' adoption of new health and safety measures to reduce the risk of COVID-19 spread. NZGAP's first grower was remotely audited in mid-April and HortNZ, with the following from a HortNZ media release dated 5 May 2020:

> Papakura based tomato grower, Anthony Tringham was the first grower to be remotely audited. He said that the process went incredibly smoothly.
>
> "The auditor interview was quicker than a regular audit while covering all the necessary checks," says Anthony. "What would typically be a three-hour face-to-face meeting, took less than an hour virtually. Plus, in the context of COVID-19, there's a massive reduction in risk by not having someone visit.
>
> "It was the same work as a regular NZGAP audit, but much more efficient. When doing an audit, I have to compile records of spray diaries and the likes into a Word document anyway. Uploading all these documents to the filesharing platform rather than showing the auditor in person makes a lot of sense to me and could even be part of a future process."
>
> Aside from showing records, the integral parts of an NZGAP audit are the grower interview and checking the implementation of measures on-site. Jennifer Reaney, an AsureQuality auditor, says that she was able to do these checks in a virtual site tour via Zoom video meeting.
>
> "The audit went well with no problems. I was able to look through Anthony's chemical shed and packhouse and pick up on a few points to improve like replacing some faded signs. Anthony was also able to show me some additional documentation that wasn't uploaded yet."
>
> Before the audit, Anthony was sent a checklist with everything that needed to be audited. "I was able to review the documentation that he'd uploaded before the meeting," Jennifer says. "When we had the Zoom meeting, it went faster than a regular visit. It was the same amount of work for me, but we were able to complete the meeting in under an hour." [63]

63 HortNZ. 2020. Keeping fruit, vegetables, growers and the public safe with remote audits for NZGAP certification. https://www.hortnz.co.nz/news-events-and-media/media-releases/remote-audits-for-nzgap-certification

Certification Bodies
AsureQuality and SGS NZ Ltd are the two certification bodies who complete NZGAP and GLOBLAG.A.P. audits in NZ. Both verification agencies are JAS-ANZ accredited.

Any Issues with Auditors?
There is an issue with ageing auditors, but both certification bodies are managing to attain growth in auditor numbers to meet the growing needs for GAP audits by increasing grower numbers (drivers like growth of the horticulture industry in NZ, and the Food Act). The capability and capacity building is as much of a problem for NZGAP and growers to enable them to meet ever increasing regulatory and market requirements.

Technology/Innovation
In its objectives for 2019/20, NZGAP plans to work with key stakeholders to:

- Facilitate reporting of audit data to stakeholders where required and permitted to do so
- Develop online audit and self-assessment tools for NZGAP standards
- Develop a platform for the management of grower groups
- Develop a certification dashboard for buyers of NZGAP certified produce
- Collaborate with stakeholders on the development of on-farm tools (e.g. mapping).[64]

Supermarkets are increasingly requiring more transparency in certification and are seeking permissioned access to the NZGAP database for supplier registration, certification and compliance data. GLOBALG.A.P. already provides this functionality for many retailers. Audit reports are completed in Word, Excel and database formats and generally emailed to growers. Technology has played a part also with checklists moving form paper to tablets. NZGAP is doing a pilot with technology providers who are already used by producers in NZ and have conducted a pilot with GLOBALG.A.P in Cologne on a solution to get their checklists out of spreadsheets and into the cloud.

NZGAP is careful about not reinventing the wheel or replacing what the CBs are already doing – NZGAP wants to make the process more efficient without overlapping the work the CBs area already doing. NZGAP analyses the data and produces high level metrics, which enables the scheme to identify areas for improvement, demonstrate progress made on key issues, and to enable auditors to target areas identified to have high levels of non-compliance across industry.

More information: https://www.nzgap.co.nz/

Key takeaways:
• NZGAP is working with suppliers on moving the assurance system and audit data into the cloud.
• MPI have just launched proposed rules to provide for remote verification using technology like Google Glass.
• NZGAP has trialled remote audits during the COVID-19 crisis.
• NZGAP analyses the audit data at a macro level and produces data on high levels of non-compliance, and uses this information to direct education initiatives and making progress on key issues.
• Food safety culture is increasingly a focus in NZ horticulture.

7.11 SQF

The SQF Institute is a Division of the Food Marketing Institute in USA and manages the SQF supplier assurance programs that are used by food retailers, manufacturers and primary producers internationally to assure the safety and quality of their food supply. The SQF food safety codes are internationally accredited and benchmarked by the Global Food Safety Initiative.

SQF started in Australia in 1994. It was initially a project by the Department of Agriculture in Western Australia to develop quality management systems for local farmers. It was researched with livestock and produce industries in 1994, 1995, and Carnarvon table grape growers John & Ros Boulter were the first certified to SQF with #1 Certificate, late in 1995. It was launched nationally at the First Australian HACCP Conference in Sydney in September 1995.

However it quickly outgrew its initial objective and was eventually sold to the Food Marketing Institute (FMI) in 2003. SQF was one of the first food safety programs to be recognised by GFSI and continues to be so.

64 NZGAP. 2019. Activity Report 2019. NZGAP. Wellington, New Zealand

SQF provides a continuum of food safety codes designed for all parts of the food supply chain from primary production through manufacturing, to storage, retail and food service. The current version is edition 8.1:

- SQF Food Safety Fundamentals (for small farm businesses)
- The SQF Food Safety Code for Primary Production
- The SQF Food Safety Code for Manufacturing
- The SQF Food Safety Code for Storage and Distribution
- The SQF Food Safety Code for Manufacture of Food Packaging
- The SQF Food Safety Code for Retail
- The SQF Food Safety Code for Foodservice
- The SQF Quality Code

On-farm Only or Whole of Supply Chain?
Whole of supply chain. However SQF has individual codes specific to the needs of individual industry sectors. The applicable SQF Food Safety Code is the Primary Production Code. It is available free of charge as a PDF from the SQF website.[65]

It provides the scheme management requirements (Part A) and the auditable modules for animal, plant, grains and aquaculture primary industry sectors (Part B). All primary producers are required to implement the Primary Production System Elements plus the applicable Good Agricultural/ Aquaculture Practices (GAP) Module. The applicable food sector category for growing of fruit and vegetables is FSC 3: Growing and Production of Fresh Produce and Nuts. The GAP module that applies is Module 7: GAP for farming of plant products (fruit, vegetables and nuts). In the current edition 8.1, pre-processing (packhouses) of produce is in the SQF Food Safety Code for Manufacturing under FSC4: Fresh Produce and Nuts Pack-house Operations. The GMP module that applies is Module 10: GMP for pre-processing of plant products.

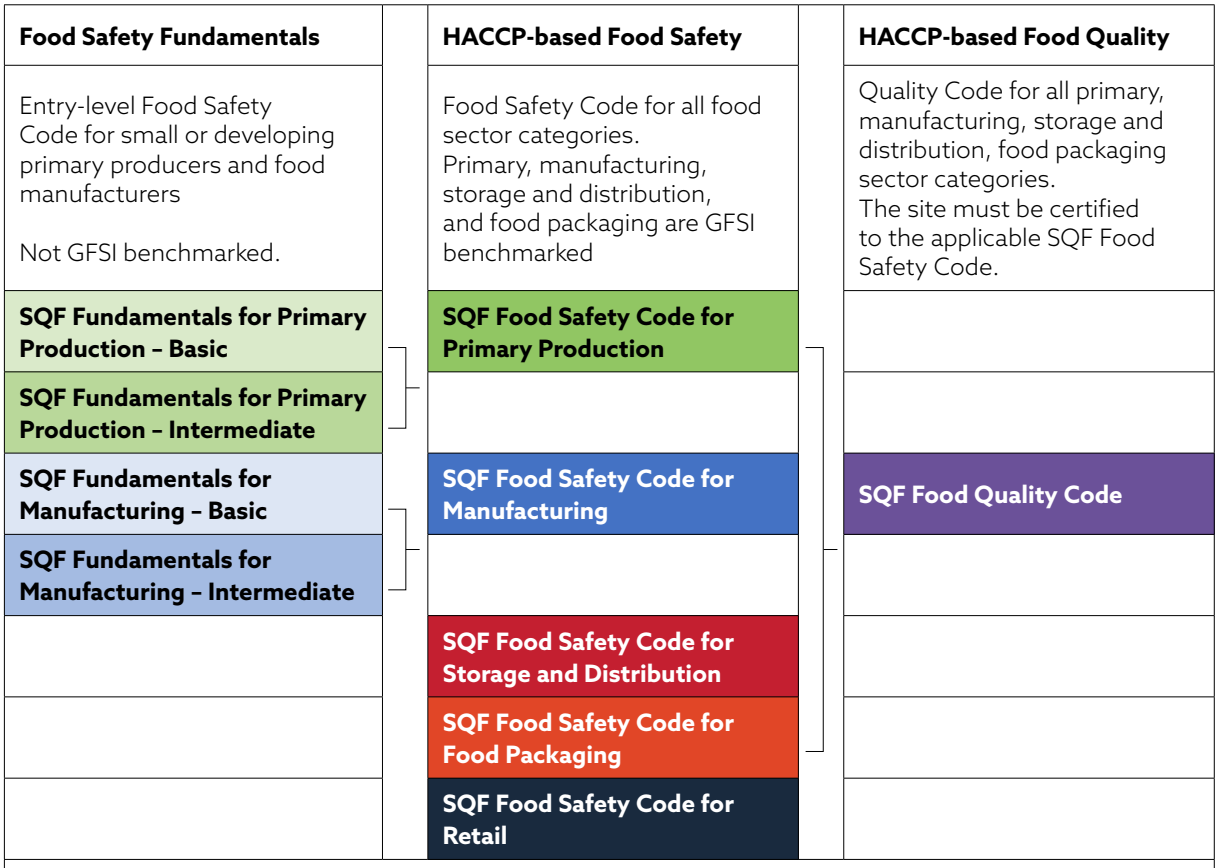


Figure 3. The SQF Quality Code

65 https://www.sqfi.com/wp-content/uploads/2019/07/SQF-Code_Primary-Ed-8.1-FINAL-1.pdf

SQF is currently drafting edition 9, for publication in Q3 2020. Edition 9 will break down primary production into the individual industry sectors and have one standard for growing and pre-processing of plant products. It will cover the requirements for the following FSCs:

- FSC 2 Growing and Harvesting of Sprouted Seed Crops
- FSC 3 Growing and Production of Fresh Produce and Nuts
- FSC 4 Fresh Produce and Nuts Pack house Operations
- FSC 5 Extensive Broad Acre Agricultural Operations

Checklist Approach?
The audit approach is based on the technical requirements in the standards identified above. Checklists are provided for each Code as tools to assist the auditor and to ensure that all requirements are covered.

Frequency and Duration of Audits
Recertification audits are annual, within a 30-day window either side of the anniversary date. Six-monthly surveillance audits are only required for sites that fail to meet all requirements in the annual certification/recertification audit.

Audit duration varies depending on the size and complexity of the site operations. For small farms, the minimum duration is 0.5 day, and for larger operations, the minimum duration is 1.5 days.

Cost of Audits
SQF does not set audit fees. That is entirely up to market forces and part of the contract between the site and the CB. SQF charges each primary site US$150 per year for registration and administration.

On-site and/or Remote Audits
For initial certification audits only, a desk audit is required and can be conducted on-site or off-site. However every implementation audit for certification and recertification must be conducted at the site – no exceptions.

Any Issues with Auditors?
Auditors must be trained lead auditors, HACCP trained, and with experience in the industry sector. They are registered by SQFI by their approved industry sector and must be employed by, or contracted to, an SQF licenced CB. Registration is annual, and the auditor must fulfil the reregistration requirements and re-register annually. Responsibility for the audit is with the CB, not the auditor (under accreditation guidelines) and the CB is responsible for ensuring that auditors maintain their training and that their competency is assessed.

GFSI and all benchmarked Certification Programme Owners (CPOs) recognise the difficulty in attracting competent auditors, in all categories and in all countries. It is more than just the 'ageing cohort of existing auditors.' It is also the type of work, the travel, the workload, and the lack of career progression.

The FMI conducts a successful scholarship program to attract new young auditors. So far it has been only in North America but FMI hopes to expand it internationally. However the problem is industry-wide and needs to involve all CPOs, accreditation bodies and certification bodies. Suggestions have been made about sharing resources with suitably qualified technicians from industry, but discussions are only in their infancy.

The responsibility for the audit rests with the CB, not the individual auditor. In the event of a recall or food safety event, the site is required to notify their CB and SQFI within 24 hours of the event. The CB is required to notify the SQFI within a further 48 hours of any action it intends to take to ensure the integrity of the certification.

Technology and Reporting
Audit reports are uploaded by the CB to the SQF assessment database for each audit scheduled and undertaken and are stored there. The completed and reviewed report is issued to the site by the CB within ten calendar days of the last day of the audit. The audit report is not issued to any other organisation or individual without the written permission of the certified site.

- Non-conformances are reported to the site at the end of the audit.
- The technically reviewed audit report (reviewed by a trained and registered reviewer within the CB) is uploaded to SQFI and issued to the site within ten days of the audit.
- Corrective actions for all non-conformances (NCRs) must be closed out by the CB within 30 days.
- Assuming all NCRs are closed out, certification is granted within 45 days of the audit.
- If NCRs are not closed out, the site will be suspended, and may eventually be withdrawn. Withdrawn sites cannot re-apply for twelve months.

It varies across produce sectors and regions, but many growers are successfully using technology for water management, land management, chemical application and crop management

Innovation

- The SQF standards have become much more sector-specific over the past decade based on GFSI requirements, retailer and industry feedback, new information on industry pathogens and chemical risks and published information on industry recalls (globally).
- Auditor requirements and registration processes are much more detailed.
- All food safety standards now include requirements on allergen management, food defence and food fraud.
- Food safety and regulatory compliance information is much more widely shared internationally.
- The HARPS scheme has successfully harmonised food safety requirements for the produce sector.
- Sustainability and social compliance are now recognised as integrated with food safety requirements.
- Supply chain safety is now applied rather than just individual farm/site safety.

More information: https://www.sqfi.com/

Key takeaways:
• FMI conducts a successful scholarship program to attract new young auditors.
• Food safety and regulatory compliance information is shared widely
• Sustainability and social compliance are now recognised as integrated with food safety requirements

7.12 GLOBALG.A.P

GLOBALG.A.P is a trademark and set of standards for good agricultural practices.[66] GLOBALG.A.P. offers one core product: GLOBALG.A.P. Certification , available for three scopes of production: Crops, Livestock, Aquaculture and consisting of a total of more than 40 standards.[67] With nearly 200,000 certified producers in more than 125 countries, GLOBALG.A.P. is the most widely accepted private sector food safety certification in the world.[68]

On-farm Only or Whole of Supply Chain?
GLOBALG.A.P maintains standards primarily on farm but also along the supply chain. This includes (relevant to fresh produce) the GLOBALG.A.P. Integrated Farm Assurance (IFA) Standard V5 (which is under revision towards V6 in 2020, ready for publication in 2021).

It is built on a system of modules that enables producers to get certified for several sub-scopes in one audit. It consists of:

- General Regulations: These map out the criteria for successful CPCC implementation as well as set guidelines for the verification and the regulation of the standard.
- Control Points and Compliance Criteria (CPCC): These clearly define the requirements for achieving the quality standard required by GLOBALG.A.P.

The CPCC are also modular-based consisting of:

- The All Farm Base Module: This is the foundation of all standards, and consists of all the requirements that all producers must first comply with to gain certification.
- The Scope Module: This defines clear criteria based on the different food production sectors. GLOBALG.A.P. covers three scopes: Crops, Livestock and Aquaculture.
- The Sub-scope Module: These CPCC cover all the requirements for a particular product or different aspect of the food production and supply chain.

In addition, GLOBALG.A.P maintains standards for chain of custody (GLOBALG.A.P. Chain of Custody) and produce handling (GLOBALG.A.P. Produce Handling Assurance).

Checklist Approach?
Yes, GLOBALG.A.P operates using a checklist approach.

66 https://www.globalgap.org/uk_en/who-we-are/about-us/
67 https://www.globalgap.org/uk_en/what-we-do/globalg.a.p.-certification/
68 https://www.globalgap.org/uk_en/media-events/news/articles/GLOBALG.A.P.-Chain-of-Custody-Guardian-of-Food-Safety-Sustainability-Social-Responsibility-Claims/

Cost of Audits
The costs for GLOBALG.A.P. certification consist of the following:

- Costs for implementing the standard: Each farm is unique, so depending on their specific situation, some farms may need to implement new policies, processes, and installations to comply with the standard.

- GLOBALG.A.P. registration fee: Charged by the GLOBALG.A.P. Secretariat via the certification bodies. Fees are listed here: https://www.globalgap.org/.content/.galleries/documents/200221_General-GG-Fee-Table_2020_V5_en.pdf

For producers farming crops, the GLOBALG.A.P. producer registration fee is charged per area (hectares) under production. GLOBALG.A.P. distinguishes between covered (glass house) and non-covered production.

Service fees to the certification body: Costs for the audits (time, travel costs) and services provided by the independent certification body are negotiated directly between the producer and the certification body and depend on individual price policies, duration of the audit, travel costs, time needed for preparation, and follow-up.[69]

On-site and/or Remote Audits
GLOBALG.A.P.'s audits have been on-site. However, as a result of the COVID-19 pandemic, GLOBALG.A.P. offers, from 15 May 2020, remote certification through GLOBALG.A.P. Remote.

> GLOBALG.A.P. Remote is a response to the COVID-19 crisis and utilizes the established GLOBALG.A.P. system. It builds on the current rules for the standards and add-ons by providing guidelines on conducting remote inspections, audits, and assessments.
>
> In many regions, inspectors and auditors cannot access production sites due to travel restrictions imposed as a result of the COVID-19 pandemic. Because of this, annual inspections, audits, and assessments can be postponed by up to six months, as published in the GLOBALG.A.P. emergency procedure on 26 March 2020. This will continue to be the case. As a result, demands for inspections, audits, and assessments are expected to increase in the second half of 2020 to an extent that there will likely be a shortage of available inspectors and auditors. In addition, there has not been a solution for those certificates for which the six-month extension has already expired.
>
> Now, GLOBALG.A.P. Remote presents an alternative solution during this crisis period:
>
> - Initial certification, re-certification, certificate scope extension, transfer, etc. may be granted based on fully remote inspections, audits, or assessments.
>
> - The solution is applicable to all GLOBALG.A.P. standards and add-ons, including localg.a.p./Primary Farm Assurance for each scope and sub-scope, but not to the Integrated Farm Assurance standard v5.3-GFS and the Produce Handling Assurance standard.
>
> - GLOBALG.A.P. Remote is applicable to all GLOBALG.A.P. add-ons as per approval by the add-on owner. A list of all the approved add-ons is published in ANNEX I. of the procedure.
>
> - Unless otherwise specified, the respective rules of the given standard and/or add-on apply.
>
> - Initial certifications based solely on GLOBALG.A.P. Remote shall not be considered accredited until the first on-site follow-up inspection/audit has been successfully completed (cf. section 4.4).
>
> - GLOBAG.A.P. Remote is to be implemented for all control points in the same way as an on-site inspection/audit and is valid during the COVID-19 pandemic until further notice. If travel restrictions are not in place, it cannot be used.[70]

Certification Bodies
In August 2020, GLOBALG.A.P. had 155 approved CBs listed. There are 170 in total listed on its website database of CBs, which include those CBs provisionally certified, those CBs approved, those with sanctions imposed (yellow card) and those suspended (red card). It also has a five star rating system for CBs.

Technology
In January 2020, GLOBALG.A.P and AgriPlace Chain became connected. "Together with GLOBALG.A.P., AgriPlace Chain provides insight, time savings, and security for every link in the agricultural food chain. AgriPlace Chain is a new digital platform developed

69 https://www.globalgap.org/uk_en/what-we-do/general-faqs/
70 https://www.globalgap.org/uk_en/media-events/news/articles/GLOBALG.A.P.-Remote-Certification-Now-Available/

together with European importers, exporters, and growers in the agricultural sector. It provides an integrated solution to the growing importance of securing compliance data in agriculture. The GLOBALG.A.P. database holds actual certification data of all farms in the GLOBALG.A.P. system including expiration dates or the status of add-ons and standards. AgriPlace Chain automatically retrieves all required compliance information from suppliers such as certificates, residue analyses, and supplier declarations. This provides insight into the status of each link in the supply chain. AgriPlace Chain does this in different ways. Suppliers can easily share documents in a secure portal via a link without additional work."[71]

Innovation
GLOBALG.A.P. has introduced GRASP – GLOBALG.A.P Risk Assessment on Social Practice. GRASPis a GLOBALG.A.P.+ Add-on product. GRASP stands is a voluntary ready-to-use module developed to assess social practices on the farm, addressing specific aspects of workers' health, safety and welfare.

Designed to complement GLOBALG.A.P. Certification towards social aspects, GRASP measures can be assessed together with the GLOBALG.A.P. audit. A GLOBALG.A.P. CB approved for GRASP conducts the GRASP assessment of production facilities. The assessment results are then uploaded to the GLOBALG.A.P. Database, showing the level of compliance, and are then visible to industry supply chain partners and buyers who have been granted access.[72]

From 1 July 2020, "GRASP will adopt the concept of "country risk level classification" as the core system for determining evidence requirements for its control points."[73]

More information: https://www.globalgap.org/uk_en/

Key takeaways:
• GLOBALG.A.P. Remote is a major innovation introduced by GLOBALG.A.P. in response to COVID-19.
• GLOBALG.A.P. is working with other database managers to integrate compliance information across the supply chain.

7.13 GS1

"GS1 is a not-for-profit organisation. We are driven and governed by our members, and all our services are provided on a cost recovery basis.

We collaborate with our local stakeholder communities to develop and implement a robust system of standards which enable the unique identification, accurate capture and automatic sharing of authentic information about products, locations and events.

We are at the forefront of eCommerce and supply chain management initiatives, and are committed to helping Australian businesses adopt the world's best practice supply chain management techniques and streamline their processes."[74]

The GS1 Global Traceability Compliance Criteria for Food Application Standard describes the audit criteria for full chain traceability, providing a single process of meeting regulatory & industrial requirements using the GS1 standards.

The GS1 Global Traceability Checklist-Control Points and Compliance Criteria is a tool developed for continuous improvement of traceability systems using global standards. This process-based tool helps to build compliance for mandatory traceability requirements within quality management systems and benchmarks them against global standards and other key traceability regulations.

The application standard is the basis for checking the key traceability components to design a traceability system framework of identifying, capturing and sharing traceability information between trading partners across the extended supply chain. The following referenced traceability and codification standard documents are the basis of the Standard. For undated references, the latest edition of the referenced document (including any amendments) is applicable.

- GS1 Global Traceability Standard (GTS) – Business Process and System Requirements for Full Chain Traceability Issue
- GS1 General Specifications
- ISO 22005:2007, Traceability in feed and food chain – General principles and basic requirements for system design and implementation.

71 https://www.globalgap.org/uk_en/media-events/news/articles/GLOBALG.A.P.-and-AgriPlace-Chain-are-now-connected/#:~:text=A.P.%20and%20AgriPlace%20Chain%20are%20now%20connected,-28%20January%202020&text=Together%20with%20GLOBALG.,growers%20in%20the%20agricultural%20sector.
72 https://www.globalgap.org/uk_en/for-producers/globalg.a.p.-add-on/grasp/
73 https://www.globalgap.org/it/gap-news/GRASP-Takes-Account-of-Country-Risk-Level-Classification/
74 https://www.gs1au.org/what-we-do/about-us/our-mission-and-vision

There are several Control Points in the GS1 GTC Checklist that fulfil the traceability requirements of other main standards. There is a cross reference between the Control Points of GS1 standards and the Traceability requirements of the following standards.

- ISO 22005
- ISO 9001
- HACCP (ISO 22000:2005)
- BRCGS – Food
- IFS (International Featured Standard) – Food
- SQF (Safe Quality Food)
- GLOBALG.A.P.

Important: The cross references between the GS1 GTC Checklist and the standards has been prepared by GS1 and do NOT in any case imply compliance with the traceability requirements of such standards. This cross reference has not been validated by the Standard Bodies that own the standards.

On-farm Only or Whole of Supply Chain?
The GS1 Global Traceability Checklist-Control Points and Compliance Criteria has been designed with the objective to implement and/or review existing Traceability Systems in manufacturing Organisations, producers/handlers and providers of product supplies and services to the food supply chain.

It applies specifically for the whole of food supply chain. It defines essential elements for the development of best-practices for the global production and distribution of trade items by the food industry.

Checklist Approach?
Key control points must be fulfilled to comply with the traceability framework based on the GS1 GTS. The document is divided into 12 sections. It contains a total of 72 Control Points, divided into the following levels:

- **Mandatory Musts:** There are 26 "Mandatory" Control Points in the GS1 Global Traceability Checklist. These Control Points address the most important Business Requirements present in the GS1 GTS and/or ISO 22005. These control points cannot be indicated as NOT Applicable (N/A) by the auditor.
- **Mandatory Conditional Musts:** There are 21 "Mandatory Conditional" Control Points in the GS1 Global Traceability Checklist. These Control Points address the most important Business Requirements present in the GS1 GTS and/or ISO 22005 that could be indicated as NOT Applicable (N/A) by the auditor, according to specific realities or situations practiced in every organisation.
- **Optionals:** There are 11 "Optional" Control Points in the GS1 Global Traceability Checklist. These Control Points address the Business Requirements present in the GS1 GTS that are under the responsibility of the trading partner of the trade items received by the audited organisation. It is to be noted that these control points are centred on GS1 standards.
- **Recommendations:** There are 14 "Recommended" Control Points in the GS1 Global Traceability Checklist. These Control Points address Traceability Requirements of other Standards, Best Manufacturing Practices or International Traceability Guidelines

The following information is from GS1 in Panama for traceability.

Frequency and Duration of Audits
1 or 2 per year / 1 week each one (GS1 Panama)

Cost of Audits
Without cost in the most cases (GS1 Panama). Each GS1 member organisation offers this service within their own country and have their own fee schedule.

On-site and/or Remote Audits
On-site only

Any Issues with Auditors?
Auditor leaves GS1 and moves to another other company.

Technology and Data Storage
- Photos.
- Mail
- USB if it necessary
- All data is saved on digital files and print files.

More information: https://www.gs1au.org/

Key takeaways:

- The GS1 standard defines a minimum set of traceability requirements within business processes to achieve full chain traceability.

8. TECHNOLOGY

Technology has the capacity to transform the audit process. In this section, we touch on some significant technological advances impacting auditing. Mentions of specific companies in this section does not imply an endorsement, nor does it imply that these are the only companies active in each of the areas listed. There are many more businesses and services available in the technology space other than what is listed here, and these are listed in various industry guides to technology trending in digital agriculture and ag tech, including:

- PMA A&NZ has produced a guide on Digital Ag Tech, for its members: https://www.pma.com/global-pma/anz/news/2019/digital-platform-solutions-list

- KPMG's 2019 report *Agri 4.0 – Connectivity at our fingertips*, outlining many advances in digital agriculture: https://assets.kpmg/content/dam/kpmg/au/pdf/2019/agri-4-0-connectivity-digital-innovation-australian-farming.pdf

8.1 Blockchain, IoT, sensors, predictive modelling

Blockchain is a distributed ledger technology that has applications for agriculture. Blockchain, simply stated, "consists of a linked chain that stores auditable data in units called blocks".[75] Blockchain stores the information across a network of users in a virtual open space, allowing for users to simultaneously look at transactions in real time. Additionally, "since transactions are not stored in any single location, it is almost impossible to hack the information".[76]

Blockchain has an incredible potential to revolutionise traceability and food safety. According to Professor Sylvian Charlebois, Professor in Food Distribution and Policy at Dalhousie University in Canada:

> Walmart, which sells 20 per cent of all food in the U.S., has just completed two blockchain pilot projects. Prior to using blockchain, Walmart conducted a traceback test on mangoes in one of its stores. It took six days, 18 hours, and 26 minutes to trace mangoes back to its original farm.
>
> By using blockchain, Walmart can provide all the information the consumer wants in 2.2 seconds. During an outbreak of disease or contamination, six days is an eternity. A company can save lives by using blockchain technologies.[77]

Blockchain is being used by some certification bodies in audits (see BSI above). Many companies are using blockchain (and AI, IoT, machine learning) in traceability solutions, underpinned by GS1 standards.[78] "GS1, the global business communications standards organisation, recently announced a collaboration with IBM and Microsoft to leverage GS1 standards in their enterprise blockchain applications for supply chain clients. GS1's global standards for identification and structured data enable blockchain network users to scale enterprise adoption and maintain a single, shared version of the truth about supply chain and logistics events—increasing data integrity and trust between parties, and reducing data duplication and reconciliation."[79] In Australia, Freshchain is using blockchain and artificial intelligence to improve traceability throughout the supply chain.

Sensors along the supply chain can assist with decision making around issues such as quality and safety. **IoT** enabled sensors monitor temperature, such as those developed by Melbourne-based CCP Technologies.[80] Companies such as Linkfresh are providing solutions using the IoT.

Predictive modelling is another emerging area for audit innovation. In financial auditing, predictive modelling is a growing area of inquiry and focus – whereby auditors are provided with early warning indicators in real time (throughout the audit year) prior to the year-end annual audit.[81] In food safety, NSF is piloting predictive modelling. According to the company, the new approach would schedule audits to "maximise risk reduction, rather than

75 FAO. 2019. E-Agriculture in Action: Blockchain for Agriculture: Opportunities and Challenges
76 Charlebois, Sylvian. 2017. How Blockchain Technology Could Transform the Food Industry, The Conversation, 20 December
77 Ibid
78 See for example Ripe.io ("blockchain of food") ripe.io ; IBM Food Trust www.ibm.com/blockchain/solutions/food-trust; Transparent Path xparent.io/; Greenfence greenfence.com/
79 https://www.gs1au.org/resources/media-centre/business-link/2017-06/in-the-news/gs1-ibm-and-microsoft-collaborate-to-leverage-gs1
80 Cotton, Imelda. 2019. CCP Technologies receives largest US purchase order to date for IoT temperature monitoring solution. Small Caps. May 20. https://smallcaps.com.au/ccp-technologies-largest-us-purchase-order-iot-temperature-monitoring-solution/
81 Herron, Martin. 2018. 'Is predictive analytics the end of the annual audit?' Accountancy Age. 21 May https://www.accountancyage.com/2018/05/21/is-predictive-analytics-the-end-of-the-annual-audit/

relying on the standard model of interval-based audits followed by remedial intervention."[82]

However, a note of caution is necessary for how much new digital technologies such as block-chain are influencing food safety now. In a survey conducted in late 2018 by DNV-GL, "new digital technologies are still to be explored and exploited. Only 9% [of businesses surveyed] indicate to a "great extent" that they think new digital technologies (such as big data analytics, IoT, sensors, Blockchain, smart tags) will enhance food safety in their company short term. However, the outlook is interesting. The figure almost doubles to 15% in only 1 year and jumps to 37% in 3 years, perhaps indicating that the industry intends to take advantage to further advance their commitment and work on food safety."[83]

8.2 Smart glasses technology and wearables

There has been discussion around the role of new 'smart glasses' technology or wearables, such as Google Glass, over recent years. Smart glasses have capacity to reduce travel time for shadow auditors, and, longer-term, to reduce the auditor's requirement to be on-site during the audit. NSF has successfully used smart glass technology in training auditors and conducting shadow audits (thus not requiring the trainee auditors to be at the corporate headquarters for training).

In the United States, NSF has also begun to trial smart glasses in actual food safety audits of food service operations, to augment auditor knowledge and access to data. "For NSF, this brings greater accuracy and efficiency when executing over 150,000 food safety and quality audits around the globe each year. And at a time when there is much greater need for specialized expertise, and an ageing workforce that is no longer willing to be "road warriors," smart glasses technology introduces the capability to bring these experts to the audit without them ever having to leave their home or office."[84]

In Australia and New Zealand, JAS-ANZ is conducting a trial on using smart glasses. The trial is aiming to evaluate smart glass technology for effectiveness by comparison with having JAS-ANZ staff, technical experts or mentors on-site, including evaluating the costs of the glasses (including associated costs such as couriering, mobile phone costs etc.) compared to the costs of having JAS-ANZ staff on-site. The trial will also consider applications for office assessment and witnessing. The trial will not examine the use of smart glasses for certification bodies and their auditors. Considerations, apart from cost, include intellectual property, clarity of sound/vision, ease of use, access to WiFi and privacy/security.[85] The trial started late in 2019.

8.3 ID and Traceability

GS1

GS1 standards create a common foundation for business by uniquely identifying, accurately capturing and automatically sharing vital information about products, locations (such as farms, packhouses and businesses), assets and events across the entire chain. GS1 also maintains the GS1 Global Traceability Standard (GTS2) and local implementation services in 114 countries to ensure that traceability systems are interoperable and scalable, where trading partners can easily collaborate.[86] Recent developments in traceability include 2DBarcodes, these small barcodes have the ability to include enormous amounts of product information at the Point-Of-Sale, for example batch number, lot number, best-before date, use-by date, pack date, product weight, product price and more.[87]

iFoodDecisionSciences

iFoodDecisionSciences delivers an integrated, end-to-end supply chain platform for food safety, traceability and quality management for the food industry and its customers, by integrating quality inspection information with real-time food safety and traceability data. The platform is blockchain ready and can recall any affected products from a supermarket's shelves by matching specific batch#, farm, lot#, region, food safety status, and etc. with the iFoodDecisionSciences recall portal, and by managing communication across the supply chain from the farm to the consumer.[88]

82 Pendrous, Rick. 2017. Predictive risk-based hygiene audits set for roll-out by NSF. Food Manufacture. 11 April. https://www.foodmanufacture.co.uk/Article/2017/04/12/Food-hygiene-predictive-risk-based-audits-on-way
83 DNV-GL. 2019. Viewpoint Report: Food safety: what's next to assure its future? DNV-GL & GFSI. p37
84 Chesnut, Tom. No date. Augmented Intelligence and Smart Glasses Technology, NSF/EyeSucceed. https://www.nsf.org/newsroom_pdf/es_ar_auditing.pdf
85 JAS-ANZ. 2019. Smart Glasses Webinar 2019. https://www.youtube.com/watch?v=kRfWjpnf_Dc&feature=youtu.be
86 https://www.gs1au.org/what-we-do/standards/traceability
87 https://www.gs1au.org/data-embedded-barcodes
88 https://www.idsfoodsafety.com/

National Food Traceability Program
The industry-led program, co-designed by Deakin University's Centre for Supply Chain and Logistics and GS1 Australia, includes an Implementing Food Traceability Guide, product-specific guides and industry demonstrations to enable greater visibility along the entire food supply chain. GS1 Australia will apply the global data standard and support solution providers.

The program will help supply chains achieve end-to-end traceability and lift capability across the sector from small producers and manufacturers to large-scale enterprises.[89]

8.4 DNA testing/whole genome sequencing

New technology to identify the entire DNA content of food has been developed and has applications for food safety. The Food Safety Authority of Ireland announced in February 2019 that it has a new DNA scanning tool to "proactively identify all the ingredients and their biological sources in a food, which will aid regulators in protecting consumers in relation to potential food fraud and/or misleading labelling".[90] The presence of undeclared ingredients can pose a food safety risk, and can also be examples of food fraud. Using next generation sequencing (NGS), the Food Safety Authority of Ireland was able to demonstrate practical application of large-scale, non-targeted parallel sequencing – particularly useful when prior knowledge of the target species is unavailable. The NGS project aim "was to determine if NGS could be useful as a non-targeted screening technique in order to challenge the authenticity of various plant-based food products on the Irish market."[91] They found that NGS can be a "can be a proactive screening tool with which to detect, identify and tentatively quantify undeclared plant and animal species in a food"[92], recognising that it was primarily a screening technique and that any results of interest should be subjected to verification through established analytical methods.

Whole genome sequencing (WGS) and associated technologies has revolutionised the food safety landscape, in terms of tracking and outbreak investigations.[93] "In WGS, individual bacteria isolated from products have their entire genetic code mapped and digitised. This is in contrast to traditional methods, which involve the identification of bacterial cultures based on specific traits (i.e., growth on differential media or production of a toxin). This electronic fingerprint provides not just the identity of bacteria, but also the entire genetic code."[94] The NSW Food Authority referred to WGS as "a significant breakthrough that could help revolutionise how food-borne illnesses are identified, understood, tracked and managed".[95] More work is needed on functional inference of data, as well as real-time detection and tracking.[96] Work is continuing on this in the FPSC-supported ARC Training Centre on Food Safety in the Fresh Produce Industry, based at the University of Sydney.

8.5 Auditing software solutions

There are many auditing software solutions – what is presented below is a very small sample of these solutions:

Muddy Boots Greenlight
Greenlight Assessments is a cloud-based platform that allows users to centrally manage and schedule audits and site assessments, capture data against industry standards or KPI's and report on performance, across sustainability, food safety, responsible sourcing and other supply chain programmes.[97]

greenfence
According to greenfence and GLOBALG.A.P., which has partnered with the technology provider:

> greenfence is the world's first free platform economy eco-system developed to serve the global food industry and optimise trust throughout supply chains, from farm to fork. greenfence is solving the industry's problems, such as connecting the world's fragmented, end-to-end supply chain; enabling transparency across the supply chain providing access to

89 Deakin University. 2020. New traceability program to build trust in Australia's food supply chains. Media Release. 30 June. https://www.deakin.edu.au/about-deakin/media-releases/articles/new-traceability-program-to-build-trust-in-australias-food-supply-chains
90 https://www.fsai.ie/news_centre/press_releases/DNA_based_food_scanning_tool_18022019.html
91 Food Safety Authority of Ireland. 2019. New DNA-based Food Scanning Tool. p2.
92 Ibid. p4.
93 Kovac, Jasna. 2019. Precision Food Safety: a Paradigm Shift in Detection and Control of Foodborne Pathogens.
94 Bradbury, Mark. 2017. Blog: Fresh produce food safety in the post-genomic era. https://www.freshfoodsafety.org/news/tag/whole+genome+sequencing
95 https://www.smh.com.au/healthcare/whole-genome-sequencing-now-being-used-to-reduce-food-poisoning-outbreaks-in-nsw-20170824-gy2z1y.html
96 Kovac, Jasna. 2019. Precision Food Safety: a Paradigm Shift in Detection and Control of Foodborne Pathogens.
97 http://en.muddyboots.com/products/assessments

global resources; tracing transactions, money and products; and eliminating data fragmentation, information silos by enabling intelligent interoperability.[98]

QLBS (Quantum Leap Beyond Spreadsheets)
From QLBS:

> Using spreadsheets and paper are a thing of the past. Our digital platform enable everything to be accessible and interconnected.
>
> - Unlimited visibility across your entire supply chain
> - Everyone works together, online and offline
> - Everyone has one easy-to-use system
> - Deliver significantly more assessments with the same people
> - Outstanding performance benchmarking
> - Easy data aggregation.[99]

Key takeaways:
• There are many other approaches, apps and software available on the market. However from the above examples, it is extremely likely that food safety in fresh produce will be able to adopt one or more of these (and other) technologies.
• There is no clear trend at present on which technologies will be most useful for the industry to pursue and further research is required.

98 https://www.globalgap.org/ja/news/GLOBALG.A.P.-Announces-Adoption-of-greenfence-Platform-Technology/
99 https://www.qlbs.com/

9. CONCLUSIONS

The following conclusions can be drawn from the review:

- The key to improved food safety is a robust food safety culture across the business and from top to bottom. The Australian and New Zealand fresh produce industries may be able to be more proactive on food safety culture and should consider additional industry-wide responses to map, measure and improve food safety culture in produce businesses throughout the year. As food safety culture strengthens, a move towards a differentiated approach to audits may be warranted.

- Australia and New Zealand could focus on incentivising food businesses to move from a compliance/market access mindset, to embracing a strong and robust food safety culture.

- Remote auditing or blended (mix of on-site and remote) auditing is a trend on the global audit horizon, brought into sharp focus through the COVID-19 pandemic. GFSI provides the benchmark for food safety schemes, and until recently has mandated on-site annual audits: GFSI recently published an extension to their 2020 benchmarking document which now allows for blended audits under particular circumstances.

- Risk-based auditing is developing as a trend, with variations including a more frequent audit regime for poor performers/higher risk crops, and, very occasionally, a less frequent regime for good performers/lower-risk crops, although this is not currently an option for GFSI-benchmarked schemes.

- Strengthened self-assessments are also growing in prevalence, with self-assessments forming part of some schemes' processes.

- Unscheduled or unannounced audits are being used as a tool for ensuring year-round compliance. Stakeholders in the Australian and New Zealand fresh produce industries should consider the longer-term value and costs of unannounced audits.

- Regulatory requirements can necessitate more frequent audits, however the cost to businesses is a key factor for consideration.

- Auditor professional development, travel requirements, and attractiveness of the job are key issues that need to be addressed through training and development and other means, which may include blended audits. More frequent and targeted calibrations throughout the year (through web-based calibration sessions and other means) could be considered to achieve more consistency across auditors.

- Sharing of audit data across key stakeholders is becoming more common.

- Australian and New Zealand schemes could immediately improve their technology platforms for hosting and engaging with audit data, and the interface between key stakeholders in the audit process, based on the experiences in other countries, such as Ireland and the UK.

- Schemes and certification bodies are currently investigating the use of new technologies and there would be significant benefit in global collaboration on potential technologies.

- New technology is likely to be taken up as the business case plays out and demonstrates the viability of the technology; it will play a greater role with the approval by key stakeholders of technology use for audit purposes.

10. RECOMMENDATIONS

- FPSC to distribute this report and seek responses from all industry stakeholders on the priorities for the next stage of the project. Following feedback from industry, FPSC to identify the top five areas that the industry can collectively work on to improve the audit outcomes.
- For industry to consider all findings from this report that are not necessarily transformational but have the opportunity to improve the existing situation, for example the work being done overseas on food safety culture and recruitment and training of auditors.
- For FPSC to engage with key organisations (such as GFSI) to ensure that global changes can be communicated back to the Australian and New Zealand industries and any suggestions or recommendations from Australia and New Zealand can be channelled to GFSI.
- For FPSC to work closely with the retailers (through the HARPS management team) to act on priorities that may be identified from this report that have the achievable potential to significantly improve the audit process.
- For FPSC to work closely with grower organisations to identify (i) areas that growers consider need improvement and (ii) impediments to the adoption of new technologies.
- For FPSC to facilitate the building of a network of like-minded organisations and individuals, such as a community of food safety practice, to influence change in the audit process and other areas for transformational change in produce safety in Australia and New Zealand.

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