

ST22009 Developing a RegTech framework and applications across horticultural value chains.

Improving Compliance in Australian Horticulture through RegTech

This two-year project, funded by Department Agriculture, Fisheries and Forestry (DAFF) and delivered by Freshcare in partnership with Hort Innovation under ST22009, explored how Regulatory Technology (RegTech) could reduce duplication in compliance requirements for horticultural growers. The project set out to better understand growers' compliance challenges and identify practical solutions that could streamline obligations across standards and regulations.



Final Report

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Developing a RegTech Framework and its applications across horticultural value chains

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Public Summary

This project set out to understand and address the challenge of duplicated compliance requirements in the Australian horticulture sector. Many growers face multiple audits and paperwork across similar standards, creating unnecessary costs, confusion, and inefficiency.

To investigate this, the project team mapped key compliance programs and conducted a national grower survey. The findings confirmed that overlapping requirements are a significant concern for growers, with strong interest in using technology to simplify compliance.

A detailed analysis of five major compliance programs revealed that while some true duplication exists, much of the burden stems from perceived duplication, where similar language or evidence is required across programs with different scopes or intent. Inconsistent terminology and formats further contribute to this confusion.

To guide this work, two key groups were established:

- **The Horticulture Community of Practice (Hort-CoP)** – which provided sector-wide input to ensure the research stayed relevant and grounded in grower priorities.
- **The Volunteer Technologist Working Group (VTWG)** – which recommended developing a common language framework to reduce inconsistency and improve interoperability.

The project delivered a practical framework for RegTech providers, government, and industry to collaborate on streamlining compliance. It also proposed the development of a proof-of-concept “data cube” – a model showing how data based on standardised language can be collected once and used many times, across different programs.

What was delivered:

- A national grower survey highlighting real-world compliance burdens.
- A map of overlapping programs across regulatory and industry standards.
- A comparative analysis of five key programs to assess duplication.
- A framework (combining research and VTWG recommendations) to guide RegTech solutions.
- Practical recommendations for better stakeholder alignment and reduced complexity.

Why it matters:

- Growers now have a stronger voice in shaping how compliance is managed.
- Industry and regulators have clearer insight into where duplication exists, where it doesn't exist and why it's hard to define.
- Technology providers have a foundation to develop practical RegTech solutions.
- The project lays the groundwork for a more efficient, streamlined compliance system in horticulture.

Technical Summary

This project investigated systemic inefficiencies within the horticulture sector's compliance ecosystem, with a particular focus on the duplication of audit, reporting, and data requirements across regulatory and certification programs. The goal was to evaluate whether regulatory technology (RegTech) could help reduce these burdens and enable more streamlined, interoperable compliance systems.

A detailed desktop review of over 220 programs was undertaken to map regulatory and certification requirements by sector, geography, program type, and obligation status. The review identified significant complexity, particularly in programs with overlapping yet non-aligned scopes and objectives.

Complementing this, a national grower survey captured industry-wide perceptions of compliance burdens. Key findings included:

- 84% of respondents reported duplication as a moderate or significant concern.
- Many growers undertake similar documentation tasks multiple times across programs with different audit expectations.
- There is strong openness (91% comfortable) to adopting digital tools to manage compliance more efficiently.

To investigate the extent of duplication, five representative programs were selected and analysed using a structured comparison framework. The Freshcare Food Safety and Quality Standard - Edition 4.2 (FSQ4.2) was used as a reference point to map audit-based compliance criteria across other programs. This comparison revealed:

- True duplication (overlap in both compliance criteria and intent) is limited.
- Perceived duplication is more prevalent and often driven by inconsistencies in language, format, and evidence requirements.
- Over 250 instances of overlap were identified, many of which stem from similar data types being used for different regulatory purposes.

Two working groups supported the project:

- The **Horticulture Community of Practice** contributed industry perspectives and tested concepts to ensure alignment with grower needs.
- The **Technology Working Group** proposed a common language framework and the use of a data model (or "data cube") to integrate cross-program compliance information.

Key deliverables include:

- A multi-dimensional compliance mapping dataset.
- A survey capturing stakeholder insights on system duplication and digital readiness.
- An open-source framework with recommendations for RegTech solution design.

- Strategic guidance on governance, stakeholder coordination, and implementation pathways.

This work establishes a foundation for targeted RegTech development, stakeholder harmonisation, and improved compliance efficiency. It also supports the broader national agenda to reduce red tape and improve traceability across agriculture.

Keywords

Regulatory Technology (RegTech); horticulture; compliance duplication; certification programs; audit harmonisation; standard equivalence; grower survey; traceability; compliance burden; stakeholder collaboration; compliance governance; community of practice; common language framework; digital compliance solutions; RegTech framework; AgTech adoption.

List of Figures and Tables

Note: The titles of figures and tables presented in this report reflect the nature of the data or analysis they accompany and may vary slightly throughout the document. The following is a consolidated reference list of key figures and tables included in the main body of the report. Please note that figures and tables contained in the appendices are not included in this list.

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Introduction

1.1 Industry overview

The Australian horticultural industry is a key pillar of the nation's agricultural sector, supplying fresh produce to both domestic and global markets. Recent studies estimate that the total value of the Australian agriculture sector is worth \$88 billion, contributing significantly to employment and driving both export and local supply. Horticulture alone employs approximately one-third of Australia's total agriculture workforce. The sector comprises around 30,000 businesses and generates a farm gate annual value of \$16.3 billion ([Australian Horticulture Statistics Handbook 2022/23](#); [Department of Agriculture, Fisheries and Forestry, 2022](#); [National Agriculture Traceability Strategy 2023 to 2033](#)).

1.2 Compliance/Regulatory challenges

Compliance delivers value to the horticulture industry when it is designed and implemented effectively to meet economic, social, and environmental objectives. However, when compliance requirements become excessive, complex, or duplicative, the benefits are outweighed by rising costs, operational inefficiencies, and regulatory fatigue. This can reduce business viability, limit trade opportunities, and undermine industry productivity ([Regulation of Australian Agriculture Inquiry, Productivity Commission 2016](#); [NFF Issues Paper - Red Tape in Australian Agriculture, 2016](#); [Review of Selected Regulatory Burdens on Agriculture and Forestry Businesses. Similarly, in 2014](#)).

The cumulative regulatory burden on farm businesses is significant, driven by the number and complexity of rules they must comply with. This burden falls particularly hard on small businesses, which make up the majority of Australian farms. These businesses often lack the resources: staff; time; or funding; to navigate overlapping obligations efficiently ([Australian Bureau of Statistics, Catalogue 8165.0 – Counts of Australian Business, including Entries and Exits, June 2015-2019](#); [Productivity Commission, 2013, 'Regulator Engagement with Small Business'](#); [Regulatory Burden for Smaller Businesses in Tasmania: Report from the 2011 Baselines Survey, Australian Innovation Research Centre, University of Tasmania](#)).

The *Measuring Red Tape* report (2013) estimated that businesses in the agriculture, forestry, and fishing sectors spend a combined \$130 million annually in internal business time, and an additional \$186 million in external service costs, to meet regulatory requirements. Businesses with employees reported spending approximately 19.9 hours per week on compliance, while sole operators averaged around 3.2 hours ([Measuring Red Tape: Understanding compliance burdens on Tasmanian business \(January 2013\) report, Appendix 8](#)).

A 2011 study by the University of Tasmania found that nearly half (46.3%) of businesses in the agriculture sector interacted with regulators 20 or more times in a single year. This high frequency underscores the time and resource implications for growers navigating regulatory systems ([Regulatory Burden for Smaller Businesses in Tasmania: Report from the 2011 Baselines Survey, Australian Innovation Research Centre, University of Tasmania](#)).

Further highlighting the financial strain, the National Farmers' Federation estimated that the average farm incurs \$34,367 annually in regulatory costs. These costs are not unique to agriculture; regulatory complexity is a challenge across numerous sectors, including financial services, mining, construction,

and education (Ai Group National CEO Survey Burden of Government Regulation, 2 March 2014, Adams et al., 2006, Jacob et al., 2025; Wilding et al., 2022).

1.3 Specific grower challenges

Growers continue to face significant challenges in meeting the rising and complex demands of compliance across both industry and regulatory programs. These challenges have been well-documented in various reports and grower surveys (Australian Competition and Consumer Commission (ACCC) supermarkets inquiry, 2024; Robb et al., 2014; National Agricultural Traceability Strategy 2023 to 2033; Productivity Commission (PC); Regulation of Australian Agriculture Inquiry 2016, PwC).

Key reports have highlighted some of the challenges to be lack of clear guidelines and consistency in standard interpretations, audit procedures and/or compliance requirements and presence of duplication of requirements (Regulation of Australian Agriculture Inquiry 2016 PwC; Food Regulation Standing Committee (FRSC), Key areas of inconsistency in food regulation, 2021).

This complexity is further intensified by differences between state and national jurisdictions. Each state operates its own regulatory frameworks governing areas such as pesticide use, water management, plant health, and labour practices. For businesses operating across multiple states, this fragmentation can create confusion and uncertainty, requiring them to navigate overlapping or conflicting obligations (Food Regulation Standing Committee (FRSC), Key areas of inconsistency in food regulation, 2021).

The extent of regulation affecting growers is substantial. For instance, a 2016 Productivity Commission inquiry reported that the former Department of Agriculture and Water Resources (now the Department of Agriculture, Fisheries and Forestry) administered approximately 90 non-fisheries Acts which is only a small proportion of regulations affecting farm businesses given there are numerous other areas where regulations apply such as land use, transport, food safety, biosecurity, chemicals, water management etc. Additionally, the report highlighted that, the agriculture industry in Queensland alone is affected by over 75 Acts and regulations covering 17,590 pages as per the peak organisation, AgForce.

The regulatory burden in Australian agriculture is essentially cumulative. While individual regulations may not appear overly burdensome in isolation, the combined impact of numerous overlapping requirements imposed by all levels of government results in significant compliance strain. This cumulative effect disproportionately affects small businesses, which make up the majority of Australian farm enterprises (Productivity Commission 2016, *Regulation of Australian Agriculture*, Report no. 79, Canberra; National Farmers Federation Issues Paper: Red Tape in Australian Agriculture, September 2013, overview section).

1.4 Influencing factors that drive non-compliant behaviour

A recent international academic study investigating growers' reasons for non-compliance identified several challenges as '*influencing factors*' that act as barriers to compliance. Importantly, the study indicated that these issues are not unique to Australia. Influencing factors are based on intrinsic motivators, social compliance forces and in case of regulatory compliance, the enforcement decisions. Examples of these factors are knowledge and familiarity with compliance rules; costs and benefits to

compliance versus non-compliance; extent of acceptance of the policy or regulations; and the likelihood of being reported, inspected and penalised (Mack et al., 2024).

For example, a lack of knowledge and familiarity (an intrinsic motivator) with the rules such as record keeping obligations or information of inspection measures can increase the likelihood of receiving penalties due to errors (Elffers et al., 2003). Private individuals and business operators, including farmers, may occasionally experience regulatory breaches due to varying levels of familiarity with the applicable rules (Lynch-Wood & Williamson, 2013).

According to Winter and May (2001), awareness of regulations plays a crucial role in determining the environmental compliance of Danish farmers. The lack of knowledge and unfamiliarity with the rules can arise due to unclear guidelines and lack of consistency in standard interpretation as outlined above. Therefore, future compliance policy design should focus on addressing inconsistencies to prevent non-compliance, to increase operational efficiency, and to create a more sustainable and reliable business environment.

A study by Ritzel et al. (2020) categorised the costs growers face in complying with regulations into three areas: learning costs (e.g. time spent understanding program requirements), compliance costs (e.g. administrative and financial expenses), and psychological costs (e.g. stress, burnout, or perceived loss of autonomy).

The scale of this burden is evident in a survey by the Australian Chamber of Commerce and Industry (ACCI 2015), which reported that approximately 25% of small and medium-sized businesses spend more than 11 hours per week on compliance, and over 20% incur between \$10,000 and \$50,000 in annual compliance-related costs. Hence, understanding the reasons for grower challenges and associated costs in depth can help inform policymakers for developing targeted measures to reduce the compliance burden costs.

Additionally, non-compliance may be driven by inadequate enforcement mechanisms. For example, a study using the Table-of-Eleven (T11) framework investigated why water users in two coastal irrigation areas in Queensland, Australia, may be exceeding their water license conditions. The study found that while most users comply due to a belief in the necessity of rules for resource protection, some intentionally overuse water to increase profitability, driven by low prosecution risks and minimal penalties. These findings emphasise the need for ongoing education, stronger deterrents, and improved administrative processes to enhance compliance (Greiner et al., 2016). Regulatory requirements that are clear, accessible, and easily understood significantly improve the likelihood of positive compliance outcomes (Parker et al., 2017).

1.5 Resource constraints

Small-scale businesses are often disproportionately impacted by the cost of compliance, with resource constraints being a key limiting factor. These businesses typically lack the staff, time, and capital available to larger organisations, and are therefore less able to access specialist assistance to navigate complex regulatory requirements.

For example, studies conducted for the NSW Better Regulation Office highlighted the disproportionate impact that regulatory costs have on small businesses. Findings indicated that compliance costs represented approximately 5.1% of their total business expenses. In contrast, medium-sized

businesses experience a much lower regulatory cost, representing 1.3% of their expenses at the time of the respective study ([Cost to business – regulatory burden case studies Report](#), June 2013, NSW Better Regulation Office; [DISCUSSION PAPER: Review of small business experiences with regulatory policymaking](#) June 2024).

Supporting this, a survey by the Council of Small Business Organisations of Australia (COSBOA) involving 87 Small to Medium-sized Enterprises (SMEs), revealed that 82% of respondents believe SMEs bear disproportionately high compliance costs. Additionally, 44% of respondents stated that they lack the skills or resources to fully understand their compliance obligations.

Regulations should be implemented in a way that focuses on the underlying intent, as this can significantly reduce the complexities, especially for small businesses. Consistent, professional, and supportive engagement from regulators is crucial. This was emphasised in Ai Group consultations and noted by the Productivity Commission in 2013 review of regulator and small business interactions. A behavioural shift from regulators can result in reduction of psychological cost that growers face when navigating the complexities of compliance.

Nevertheless, in some instances, businesses of all scales are equally affected if not more or less by compliance costs arising due to the complexities of cumulative requirements. For example, the Ai Group consultations revealed that in 2014, businesses (not limiting to agriculture sector) that employ 100 staff or more (i.e. large businesses), the area of industrial relations, employment, Workcover and Occupational Health and Safety (OH&S) are imposing the biggest burden on their operations. This result may be expected considering that larger businesses are more likely to have additional regulatory compliance and costs due to the larger size of their workforce. Larger firms also tend to experience greater compliance pressure in areas such as safety standards, infrastructure and planning, and competition and fair trading. These obligations, while necessary, increase in scale and complexity alongside business growth, further contributing to compliance burden.

1.6 Duplicative compliance requirements

One major grower challenge is the duplication of compliance requirements which can lead to multiple negative consequences such as system and operational inconsistencies (e.g. in language, audit procedures etc.), and increase in compliance costs and time ([Robb et al., 2014](#)). In the context of Australia's horticulture industry, *duplicative requirements* typically refer to regulatory processes or industry-specific compliance measures that overlap or are unnecessarily repeated. These lead to inefficiencies, additional costs, and time burdens for businesses due to the duplicated efforts and requirements. Such duplication can occur across various stages of the horticultural supply chain, including import/export procedures, food safety regulations, biosecurity standards, and certifications, environmental management regulations, water management, and retail requirements ([Regulation of Australian Agriculture Inquiry 2016 PwC](#); [Hamman et al., 2021](#)).

For example, duplication has been observed in labour-related regulations, including industrial relations and Occupational Health & Safety (OH&S) laws. These have long been identified as priority areas for policy reform. Specific examples at the time of publication of the referenced reports, include duplication of effort and requirement in gaining approved employer status and labour market testing requirements for overseas workers. Similarly, under the Modern Award, growers must verify that contract labour firms pay workers the correct Horticulture Award wage. This creates duplication, as

labour hire firms are already responsible for ensuring wage compliance, adding unnecessary administrative burden for growers ([Regulation of Australian Agriculture Inquiry 2016 PwC; Ai Group National CEO Survey Burden of Government Regulation, 4 March 2014](#)).

Environmental regulation, or ‘green tape’, is another area identified as imposing significant regulatory burden. Reports have highlighted regulations in these areas to be burdensome, citing issues like unclear, duplicative, and inconsistent requirements across different agencies. For example, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) contributes to duplication in vegetation clearing laws, with rules existing at federal, state, and local levels. This requires compliance with multiple overlapping frameworks. In *Fairmont Group Pty Ltd. v Moreton Bay Regional Council [2019]*, the Queensland court confirmed that both state and local controls must be followed, even for the same parcel of vegetation. The subsequent denial of an appeal to the High Court in late 2019 reportedly added to farmers’ frustration with this layered regulation ([Hamman et al., 2021](#)).

Retailer requirements also contribute to duplication and complexity for growers. For instance, the supermarket duopoly of Coles and Woolworths each require different fresh produce crates. As a result, growers supplying to both must maintain two separate crate accounts. A recent AUSVEG survey found that 71% of growers believed that standardising crates would have a positive or very positive impact on their business ([AUSVEG, ACCC Supermarkets Inquiry, 2024](#)).

A significant policy overhaul has been repeatedly recommended to address these challenges ([Ai Group National CEO Survey Burden of Government Regulation, 4 March 2014](#), [Streamlining environmental legislation, The Parliament of Commonwealth of Australia, December 2014, Canberra](#)). A literature review also highlighted similar issues in the financial services sector, where overregulation has led to inefficiencies and regulatory fatigue among compliance and governance professionals. Concerns have been raised about the overlapping responsibilities of multiple regulatory bodies, including APRA (Australian Prudential Regulation Authority), ASIC (Australian Securities and Investments Commission), the RBA (Reserve Bank of Australia), the ATO (Australian Taxation Office), FIRB (Foreign Investment Review Board), and the ACCC (Australian Competition and Consumer Commission). This has prompted questions about whether such regulatory complexity is necessary, or whether consolidation could improve efficiency and reduce compliance costs. These issues have been further discussed in the context of financial deregulation and reconfiguration as potential solutions ([Adams et al., 2006](#)).

1.7 Previously recommended compliance burden reduction opportunities

Previous inquiry and industry reports have identified several opportunities to reduce burdens, including improving consultation processes for new regulations, streamlining and minimising requirements, and providing clearer guidance on regulatory obligations ([PwC Compliance burden review – Agriculture sector 2013](#)).

It has been proposed that the stakeholder consultation and transparency be enhanced by creating best-practice guidelines to encourage departments and agencies to engage with impacted businesses; specifically, those moderately to significantly affected by proposed regulations; during the policy development stage.

Agriculture sector businesses have noted that the growing regulatory burden, due to new and revised requirements, makes it challenging to track changes and their start dates. The introduction of new regulations often leads to transitional costs and disruptions as businesses adapt. To mitigate these

effects, businesses have suggested adopting common start dates for new regulations. This would allow for coordinated training, improved compliance outcomes, and help avoid clashes between regulatory changes and peak business periods.

In addition, several reports have recommended opportunities to streamline and reduce regulatory requirements. These include eliminating certain obligations, reducing the frequency of compliance activities (such as licence or permit renewals), and simplifying reporting processes. Such recommendations span a broad range of operational areas, including transport, pest control, and development approvals.

Other strategies aim to reduce the regulatory burden without changing the underlying regulations. These include improving access to regulatory information and ensuring more consistent administrative decision-making to reduce uncertainty and the time and cost associated with approvals (e.g. licence and permit applications).

Furthermore, it has been recommended that a comprehensive checklist be developed to help agriculture businesses manage the various regulatory requirements they must comply with. This checklist should summarise key regulations, making it easier for farmers to save time by reduced business search costs and improve compliance by providing clear, accessible information. Additionally, the checklist should be updated in conjunction with common start dates for new regulations, ensuring businesses remain informed and can take advantage of any regulatory reductions, ultimately lowering costs and improving operational efficiency ([PwC Compliance burden review – Agriculture sector 2013](#); [Ai Group National CEO Survey Burden of Government Regulation, 2 March 2014](#)).

1.8 Streamlining of duplicative compliance requirements

To address the issues arising from duplicative requirements, industry stakeholders often advocate for better coordination of compliance efforts through the streamlining of requirements, national and international harmonisation, industry-government collaboration and promotion of improved and innovative digital systems ([National Agriculture Traceability Strategy 2023 to 2033](#); [Future Fields Report Queensland Fruit and Vegetable Growers](#)).

For example, Australia has implemented laws to harmonise occupational health and safety (OHS) regulations across the country, ensuring consistent protection and standards for workers in all jurisdictions ([Report 1 of the National review into Model Occupational Health and Safety laws 2008/2009](#); [Report 2 of the National review into Model Occupational Health and Safety laws 2008/2009](#)). These laws form part of a broader national reform agenda aimed at improving OHS practices and were developed through extensive stakeholder consultation and a thorough national review.

An example of successful industry–government collaboration to reduce duplication is the recent recognition by the Western Australian government of an industry food safety and quality certification standard as meeting the Primary Production and Processing (PPP) requirements for handlers of berries, leafy greens, and melons. This approach reduces the need for multiple certifications, easing compliance for growers while maintaining regulatory integrity ([Freshcare Berry, Leafy Greens & Melon Producers Recognised For Certification Achievement - Freshcare](#)).

1.9 Regulatory Technology (RegTech) – Potential and benefits

It has been recommended in various industry and government reports to explore the use of online applications, automated reporting systems, such as reliable electronic and web-based reporting, as well as data sharing platforms and a single centralised website for all compliance information and announcements across regulatory agencies. These tools can help reduce the burden of over-compliance and streamline associated complexities (Ai Group National CEO Survey Burden of Government Regulation, 4 March 2014).

Regulatory technology (RegTech) refers to technology that enables regulatory requirements to be met more efficiently and/or effectively (Wang et al., 2019). These technologies may include artificial intelligence, natural language processing, data reporting, regulatory codification, and big data analytics (ASIC December 2019 | REP 653 ASIC's Regtech Initiatives 2018–19).

A Productivity Commission study highlighted that Australia well-positioned internationally and ranked among the top 10 RegTech markets for the development and adoption of RegTech solutions due to its relatively stable and sophisticated regulatory systems (Productivity Commission 2020, *Regulatory Technology, Information Paper, Canberra*). The Commission's review of recent initiatives suggests that RegTech can be particularly valuable where regulated entities face complex or burdensome requirements. It is also beneficial where risk-based regulatory approaches are possible, where monitoring is limited by physical constraints, and where technology can securely facilitate greater data use to achieve compliance objectives.

The increased adoption of RegTech to assist with regulatory compliance has been supported by declining technology costs and the increasing availability of data. However, limited awareness of RegTech innovations and practical barriers to adoption suggest there remains significant untapped potential to lower compliance costs and improve regulatory outcomes (Teichmann et al., 2023; Productivity Commission 2020, *Regulatory Technology, Information Paper, Canberra*).

Both national and international experts broadly agree that there is an expanding opportunity for both regulators and regulated entities to leverage technology to improve compliance (e.g., CSIRO 2019; Schizas et al. 2019; Wang 2019; Teichmann et al., 2023). This shift is mainly driven by the following factors:

- The increasing complexity and volume of regulatory requirements, which raises the overall burden of compliance.
- The growing capability of technology to address areas of significant non-compliance risk, such as financial loss or reputational damage.

RegTech has the potential to enable businesses to redirect resources toward more productive uses. It can reduce the time required to identify and understand regulatory requirements, thereby lowering both compliance costs and the risk of breaches. Additionally, RegTech can reduce the time and financial effort involved in gathering information, completing forms, maintaining records, and providing the data necessary to demonstrate compliance or support regulatory objectives.

RegTech offers a variety of other business benefits, including improved efficiency, enhanced accuracy of reporting, and better integration of compliance processes into everyday operations.

Current use cases

The horticulture industry has also explored digital solutions and technology integration and is beginning to realise the use of RegTech as a tool for automating, streamlining, and improving the management of regulatory processes, reporting and compliance tasks. The areas where RegTech is being explored include traceability and food supply chain monitoring, environmental compliance, labour compliance, quality assurance and standards compliance, pest and disease management, customs and export compliance, compliance management platforms, and consumer engagement and transparency.

Some of the core technologies used in RegTech solutions within the Australian horticulture sector are Internet of Things (IoT) devices and sensors for compliance with environmental regulations, water management, and food safety standards; blockchain technology for traceability of product along the supply chain; Artificial Intelligence (AI) and Machine Learning (ML); cloud computing and data analytics for real-time data collection and automated reporting; Geographic Information Systems (GIS) and remote sensing for land and water mapping; and satellite and drone imaging, as well as mobile applications and digital platforms, which often integrate with technologies like IoT, cloud computing, and AI.

Some of the examples below demonstrate how RegTech tools are directly applied to horticultural compliance in real-world settings, offering efficiency and ease in managing complex regulations.

- ***Traceability and supply chain monitoring/export compliance/consumer engagement and transparency***

Blockchain and other technologies have been utilised to ensure transparency in the supply chain. Examples include platforms such as FoodAgility, FreshChain, and Trust Provenance, which provide traceability solutions that support compliance with markets requiring food safety and quality standards. A recent initiative involves electronic certification systems for trade and market access, allowing businesses to track, manage, and submit documentation online, reducing time, errors, and duplicated administrative tasks ([eCert \(electronic certification\) for Australia - DAFF](#)). *CargoWise is another software platform used by exporters and government agencies (Department of Agriculture, Fisheries and Forestry) to automate export documentation processes* ([EXDOC software suppliers contact details - DAFF](#); [EXDOC - Export Documentation System - DAFF](#)).

- ***Pest and disease control***

RegTech solutions are used to monitor pest outbreaks and disease risks in crops, ensuring compliance with biosecurity and pest management regulations. Technologies such as The Yield and AgriWebb incorporate IoT sensors and AI-powered algorithms to manage risks and support compliance ([The Yield | AgFunder](#); [AgriWebb | Livestock Management Software](#)).

- ***Environmental compliance (including water)***

RegTech has been implemented to monitor and manage environmental impacts, ensuring that horticultural businesses adhere to environmental standards and regulations regarding water use, chemical applications, and sustainability practices. These tools typically involve using IoT (Internet of Things) sensors, data analytics, and cloud-based platforms to monitor various environmental parameters in real-time. An example is FarmBot, an automated farming solution that provides real-

time feedback to farmers about the environmental conditions of their crops. This telemetry real-time data is used by the growers to stay compliant with the environmental and water standards and regulations to ensure effective energy consumption and water usage.

- ***Labour compliance (including labour laws and Worker Health and Safety/Occupational Health and Safety)***

Labour compliance in horticulture is critical, especially regarding the Fair Work regulations, minimum wage laws, National Employment Standards (NES), laws around casual workers, seasonal employees, and workers under the Working Holiday Visa program and workplace safety regulations. Some of the RegTech solutions absorbed into the mainstream in this area are workforce management software such as Deputy and Tanda that help businesses be in the best position to stay compliant with the labour laws. In addition, there are various technologies that are utilised for compliance with health and safety laws. Some examples include iAuditor by Safety Culture, Safety Champion, EnviroSoft, Softex Safety Management System, Pro-Visual Safety.

General considerations for RegTech – challenges, costs, risks, hurdles, adoption and uptake

Despite the rapid growth of RegTech and current use cases in horticulture, the industry continues to face significant challenges (Teichmann et al., 2023). The challenges that many firms encounter when implementing new RegTech initiatives are outlined below.

Inconsistent regulation

The regulatory landscape remains complex and is constantly evolving, with differences between countries and even conflicts among regulators within the same jurisdiction. Any RegTech solution must consider the navigation of the varying compliance requirements across different regions, making regulatory management challenging. While RegTech can help address these issues, successful adoption requires the right software selection and strong engagement among stakeholders, including regulators, auditors, developers, and risk managers.

Cybersecurity risks

Increased reliance on the internet and information technology has exposed many vulnerabilities, leading to a rise in cybercrime. In recent years, both public and private companies have fallen victim to cyber-attacks. To prevent cyber-security risks, companies must implement strong security measures. RegTech providers must implement robust security protocols and continuously adapt their software to stay ahead of evolving threats and maintain consumer trust. Without sufficient protection, firms risk data breaches that can have severe consequences and erode trust.

Legacy systems

Many companies are hesitant to adopt RegTech solutions despite their advantages. This is largely due to legacy systems that are difficult to integrate with new technologies or require costly modifications. Replacing these systems can be a long and expensive process, leading to delays in migration. Additionally, historical data must be transferred, and employees need training on the new software. Resistance to change is also a challenge, as some businesses and employees are unsure about the return on investment or the long-term viability of the technology.

Management of technology

There are several management challenges related to RegTech implementation, including training, ongoing maintenance, governance, and legal accountability. Technologies such as AI introduce new questions around decision-making, liability, and the fairness of automated decisions. Errors in coding can lead to systemic failures, prompting a need for regulatory endorsement or validation of machine-readable rules.

Regulation of technology

Overregulation of technology can create hurdles for growers in adopting regulatory technology (RegTech). If compliance becomes too complex, duplicative, costly, or time-consuming, it may deter growers from leveraging technology meant to ease compliance burdens in the first place. A balanced approach is key. Regulations should ensure technology is safe, transparent, and fair without creating unnecessary barriers for users. For example, a recent study on the topic highlights how overlapping and inconsistent technology regulations in Australia constrain the adoption of cloud services (Manwaring, K., 2023).

Stakeholder collaboration

The growth of RegTech relies on collaboration between regulators, regulated entities, and RegTech developers for collective gain (Bolton et al., 2023; Hugé (2018; Humphries and Flax 2019). Opportunities for end-to-end testing of RegTech solutions also as a trial and error and without the fear of failure need to be created for RegTech providers in Australia. According to Silverberg et al. (2016), these environments provide assurance processes, uphold operational integrity, and enable potential RegTech adopters to explore and experience various solutions. The need for a shared understanding of how to comply requires engagement of regulators with businesses, individuals and RegTech providers (Eyers 2018; Silverberg et al. 2016). For example, regulators can provide guidance on the design of new RegTech solutions to help ensure compliance without explicitly endorsing any specific technology (Verifier 2019). Providing clear expectations to businesses and RegTech providers remains a challenge and can be circumvented through strong government support.

Strategic challenges in creating public value

The increasing use of RegTech can create public value, however, some key strategic challenges in the regulatory space if not addressed properly can jeopardise the public value creation and impact RegTech adoption (Bolton and Mintrom 2023). The efforts need to centre around addressing the misperceptions of ‘what and how’ a RegTech solution can achieve. These misperceptions arise due to poor communication about the technology and its intended goal.

Advocates for increased adoption of RegTech must clearly communicate its benefits, limitations, and what the implementation process will involve. A strategic challenge is to address the lack of readiness to adopt RegTech. This reluctance at an organisation level stems from unclearly communicated processes, and roles and responsibilities in adopting RegTech. Additionally, the oversight of technical and regulatory subject matter experts needs to be ensured to avoid the potential issue of discounting the contributions of the subject matter expertise and human involvement in the process that can be accompanied with the introduction of RegTech.

Another strategic challenge is to avoid human biases that can be reflected in technology processes especially in those processes that are designed as decision support. To reduce the risk of such unintended problems, sufficient human resources possessing specialist knowledge are required to be able to review recommendations arising from automated decision-making and to anticipate where biases could emerge and seek to ensure that they do not. In addition, strategic approaches are required to bolster risk management and accountability to safeguard data security and trust from issues such as cybersecurity, data hacking breaches. While companies implement RegTech solutions to streamline compliance and risk management, government accountability remains central to regulatory enforcement, policy clarity, and systemic risk mitigation. This challenge underscores the need for robust governance, transparency, and accountability mechanisms in RegTech adoption. A well-designed system should instill confidence in both the RegTech users and governing body by ensuring security, reliability, and fair oversight.

General barriers to innovation and technology adoption

Although Australia is well-positioned for RegTech adoption, its use outside the financial sector remains limited ([Productivity Commission, Regulatory Technology, Information Paper, October 2020](#)). Broader adoption in agriculture and horticulture will require stronger support from regulators, targeted investment in innovation, and a shared understanding of how technology can reduce, not increase, compliance burden.

Gap Analysis

Following an extensive background review of published reports and consultations with industry stakeholders before and during the project, including growers and the Horticulture Community of Practice (Hort-CoP), four key knowledge gaps have been identified:

1. **There exists a lack of a measurable understanding of the cumulative compliance burden** faced by the horticulture industry, and how it impacts operations at scale.
2. **There exists a lack of clear and consistent definition of ‘duplication’** when comparing and mapping multiple standards with varying scopes.
3. **There is lack of understanding of how and whether RegTech can be leveraged** to streamline overlapping compliance requirements across industry-led and government regulations.
4. **There is lack of insight into growers’ perceptions and experiences** regarding both the scale and impact of compliance duplication on their business operations, and the perceived usefulness of RegTech as a solution to address this issue.

Project Objectives

The overarching goals of the ST22009 project were:

1. To develop a framework that identifies and highlights duplicative requirements across certification schemes and regulatory compliance obligations affecting horticultural growers.
2. To identify and assess RegTech solutions with the potential to streamline overlapping compliance requirements, reduce administrative burden, and support more efficient regulatory engagement for the horticulture sector.

While the initial project objectives focused primarily on identifying duplication, the scope evolved as the research progressed. Through desktop reviews, gap analysis, and ongoing consultation with the Horticulture Community of Practice (Hort-CoP), it became necessary to break down the overarching objectives into more specific, targeted research aims and objectives. This refinement allowed the project to respond to emerging insights as the research progressed and practical stakeholder input, while still ensuring alignment with, and achievement of, the overarching objectives as originally intended.

Aim

This research aims to:

1. **Develop a measurable understanding of the cumulative compliance burden experienced by the horticulture industry**, and to assess the challenges for growers when navigating the complex web of compliance requirements.
2. **Examine the nature and extent of duplication** across horticultural standards and regulatory frameworks, particularly where inconsistencies in language or scope create confusion for growers.

3. **Explore the potential of regulatory technology (RegTech)** as a tool to streamline compliance and reduce unnecessary overlap between industry and government requirements.
4. **Understand grower perspectives** on the burden of compliance and their openness to adopting RegTech solutions.
5. **Generate actionable insights and recommendations** to support the development of more coordinated, efficient, and user-friendly compliance systems in the horticulture sector.

Research Objectives

1. **Quantify the cumulative compliance burden** faced by the horticulture industry and assess associated grower challenges.
2. **Develop a clear and consistent definition of ‘duplication’** to enable accurate comparison and mapping of overlapping standards and regulatory requirements.
3. **Identify and evaluate tangible solution options**, including the use of RegTech, to address key challenges related to compliance overlap and complexity.
4. **Provide evidence-based recommendations** to guide industry and government in streamlining compliance processes and improving compliance alignment.

Together, these objectives underpin the development of an open-source framework designed to guide the industry and RegTech providers. The framework highlights the complexity involved in defining 'duplication', as well as the multiple levels of overlap across regulatory and certification programs. It captures the associated challenges faced by growers that were uncovered as the research progressed. The framework provides a practical foundation for potential solution design, enabling RegTech developers to align their tools with the most demanding needs of the horticulture industry.

Methodology

The methodology included in this research report is based on data collected over the life of the project.

1.0 Scope

The scope of the project encompasses activities related to the production and packing of fresh produce on-farm, focusing on the grower's perspective.

1.1 Compliance landscape

A systematic and detailed desktop review of compliance requirements relevant to the horticulture industry was undertaken to develop a comprehensive compliance landscape. The review encompassed industry-specific standards and mandatory regulatory schemes/programs, primarily covering domestic requirements across state, federal, and territory governments. In addition, selected international export requirements, particularly those mandated by key trading partners such as the United States and Japan, were included to provide broader context.

The sectors examined in the compliance landscape included:

- Food Safety
- Biosecurity
- Environment
- Trade
- Social and Ethical Standards
- Fair Work and Worker Health & Safety
- Organic Production

For each program or standard identified, where applicable, the levels of compliance (e.g., self-assessed or globally benchmarked) and audit regimes were mapped to reflect the complexity and variability across the sector.

The analytical approach employed a framework methodology designed to organise qualitative data collected from desktop research. This involved creating structured categories to summarise and analyse the reporting requirements in a way that could support addressing the research questions.

During the analysis, compliance requirements were grouped into clusters based on interrelated themes. The categories developed included:

- **Sectors:** as described above.
- **Types of Requirements:** Government legislation vs. market-driven schemes
- **Levels of Assessment:** Self-assessed, third-party verified, or globally benchmarked
- **Accreditation:** Accreditation status of certifying bodies
- **Supply Chain Level:** Grower, packer, processor, distributor, wholesaler, retailer

- **Audit Regime:** Distinctions between audits for government requirements and industry standards
- **Market Access Group:** Domestic vs. international

Where information could not be sourced or verified through available resources, it was marked as "NA" (Not Applicable).

In alignment with the Australian legal framework (as illustrated in Figure 1), the analysis was limited to the level of **primary legislation (Acts)**. This approach provides an indication of the overall complexity of legal requirements, recognising that these Acts often have extensive subordinate legislation (e.g., regulations, codes of conduct, and standards). In cases where relevant subordinate legislation was mandatory and clearly identifiable, it was included in the mapping.

The full compliance landscape, illustrating the complexity and breadth of reporting requirements identified through this process, is provided in the appendices as **Appendix Supplementary Data Set 1** to this report.

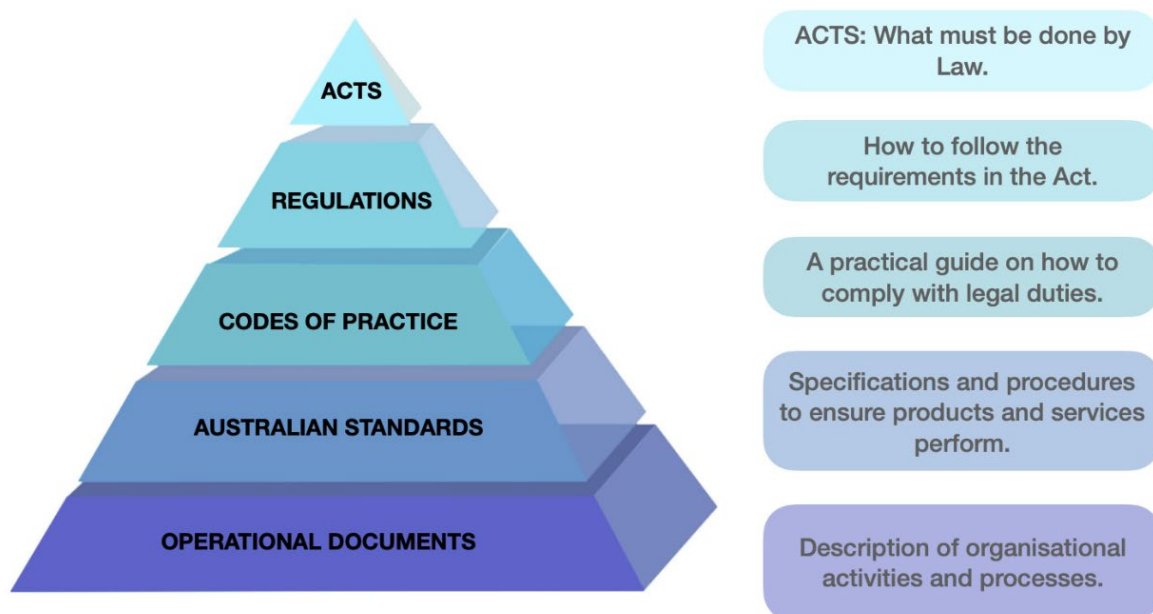


Figure 1: Hierarchy of the Australian Legal and Compliance Framework.

This diagram presents the hierarchical structure of legal and compliance instruments within the regulatory system. It demonstrates the relationship between legally binding requirements and supporting voluntary guidance. These are:-

- *Acts (Mandatory):* Primary legislation passed by Parliament. These laws set out what must be done by law and carry legal force.
- *Regulations (Mandatory):* Subsidiary legislation made under the authority of an Act. They detail how to comply with the Act's requirements.

- Codes of Practice (*Often Mandatory / Sometimes Voluntary*): Provide practical guidance on how to comply with legal duties. Some codes are legally enforceable when referenced in legislation or regulations, while others may be voluntary best practice guides.
- Australian Standards (*Voluntary but can become Mandatory*): Technical documents that set out specifications to ensure products, systems, and services perform as intended. While voluntary, they may become mandatory if referenced in legislation, regulations, or contracts.
- Operational Documents (*Voluntary*): Internal organisational procedures and documentation designed to ensure day-to-day compliance with relevant standards and legal obligations. These are typically voluntary but essential for demonstrating due diligence.

This framework helps clarify the difference between legal obligations and supporting tools for compliance and best practice. *Figure sourced from the publicly available resource "Understanding our Duty of Care and Legal Responsibilities" by the Western Australian Health Alliance (WAHA)* [Understanding our Duty of Care and Legal Responsibilities - WAHA](#).

1.2 RegTech Impact Grower Survey Design and Platform

The survey was administered using SurveyMonkey, an established online survey platform. The instrument was designed to capture both quantitative and qualitative data through a combination of open-ended and close-ended questions, enabling a comprehensive understanding of the compliance challenges faced by growers.

Participant Engagement

An engagement strategy was developed to maximise survey reach and participation. This involved distributing e-newsletters to:

- Freshcare program participants
- Members of the RegTech Project CoP
- Broader stakeholders within the horticulture sector

These newsletters included a direct link to the online survey to facilitate easy access and encourage completion.

Survey Duration

The survey was live for a period of two months, ensuring sufficient time for stakeholders to respond at their convenience.

Data Collection and Response Tracking

A total of 99 responses were received. Each response was assigned a unique Respondent ID (1–99) in the order of submission. Metadata associated with each response including submission date and time, duration of survey completion, and IP address was collected and securely stored within the SurveyMonkey system. These additional data points are available in the raw data files for deeper analysis if required.

Data Confidentiality

All responses were treated with strict confidentiality, adhering to the Freshcare Privacy Policy. Participation in the survey was voluntary, and respondents were informed that their input would contribute to a broader understanding of compliance system duplication and the potential for RegTech solutions.

This methodology ensured a transparent and inclusive approach to data collection, aligning with the project's objectives to assess system duplication, financial burdens, and the value of RegTech in streamlining compliance for grower businesses.

1.3 Formation of the Horticulture Community of Practice (Hort-CoP)

The Hort-CoP was established to foster collaboration and knowledge exchange across sectors, providing input throughout the research process. Prospective members were invited via email and phone based on prior interest, subject-matter expertise, and sector representation.

A total of 20 members were initially appointed, ensuring diverse perspectives and sectoral engagement. Membership was updated over time to reflect changes, maintaining a dynamic and representative composition.

A Terms of Reference (ToR) was developed to outline the group's purpose, roles, and responsibilities. Members formally joined by signing the agreement, which confirmed their commitment to participate.

Five workshops were conducted using a mix of virtual and face-to-face formats. These sessions supported engagement, knowledge sharing, and collaborative problem-solving. A 75% attendance rate was recorded, serving as a key indicator of Hort-CoP engagement.

A complete list of contributing members is provided in Appendix Table 1.

Evaluation of the Hort-CoP and project

Effectiveness was assessed through both internal and external evaluation. External review was conducted by the Monitoring & Evaluation team; internal review by the project team and steering committee. Surveys and interviews complemented participation metrics and assessed alignment with Hort-CoP objectives.

1.4 Formation of the Volunteer Technologist Working Group (VTWG)

A nomination and selection process was used to form the Volunteer Technologist Working Group (VTWG) with diverse representation. Selection criteria were informed by Hort-CoP workshop insights. Expressions of Interest were distributed via social media, the Freshcare newsletter, and direct invites.

The VTWG was formed with 11 members confirming participation. The group was tasked with assessing compliance landscape findings, identifying duplication, and contributing to proposed solutions and business case development. Member details are provided in Appendix Table 2

1.5 Investigation of overlaps across 5 compliance programs

Five programs were selected for further review, informed by survey findings and designed to reflect the diverse compliance challenges faced by growers. These programs varied in scope and intent to mirror the real-world context where growers often must comply with multiple overlapping schemes.

The Freshcare Food Safety and Quality (FSQ4.2) standard was used as the reference framework for mapping the compliance criteria of the other four programs.

Rationale for Using FSQ4.2

FSQ4.2 was selected as the reference point for this research due to its structured and widely recognised approach to compliance within the horticulture industry. The Freshcare FSQ4.2 standard is widely adopted and used and therefore provides a well-defined framework for food safety and quality compliance, including clear compliance criteria and associated record-keeping requirements. These elements were essential in enabling a systematic comparison across multiple certification programs.

Key Reasons for Selecting FSQ4.2

1. **Standardised Structure:** FSQ4.2 follows a structured format that clearly outlines compliance criteria, making it a suitable baseline for mapping and identifying overlaps across programs.
2. **Regulatory Alignment:** The standard aligns with key food safety regulations, ensuring that mapped overlaps are relevant within both industry and regulatory contexts.
3. **Comprehensive Compliance Coverage:** FSQ4.2 encompasses fundamental food safety principles, including risk management, record-keeping, and auditability, which are common across various certification programs.
4. **Industry Recognition:** Freshcare FSQ4.2 is widely adopted within the horticulture sector, making it a relevant benchmark for comparing compliance requirements across different certification schemes.
5. **Focus on Auditable Compliance Criteria:** The research aimed to investigate duplications in auditable compliance criteria rather than program-specific rules. FSQ4.2 provided a foundation that allowed for a detailed examination of certification requirements in a structured and logical manner.

Ensuring Objectivity

Using a single reference point improves consistency, validity, and reproducibility in comparative analysis. Program-specific rules were excluded; the focus remained on auditable compliance criteria relevant to assessment or certification.

FSQ4.2 as the Independent Variable: FSQ4.2 serves as the constant reference, providing a fixed framework for comparison. This ensures that all mapped programs are assessed against the same benchmark, eliminating variability caused by differing structures.

- **Other Certification Programs as Dependent Variables:** The compliance criteria of other certification programs are mapped relative to FSQ4.2, allowing for the identification of similarities, overlaps, and gaps. These programs are considered dependent variables because their alignment or deviation from FSQ4.2 is what is being analysed.
- **Ensuring Objectivity and Reproducibility:** Using a standard reference ensures that the research remains objective and can be reproduced, as the same independent variable (FSQ4.2) would yield comparable results when applied in future studies.

- **Logical Basis for Comparison:** Without a reference point, mapping multiple programs simultaneously would lead to inconsistencies. FSQ4.2 provides a structured and logical foundation for aligning compliance elements across different schemes.

Using FSQ4.2 as the independent variable, the compliance criteria of other programs were mapped as dependent variables to identify duplication or gaps.

The data was collected and organised in Microsoft Excel for structured analysis.

Table 1: Presents the five programs selected for duplication analysis, including their applicable states and intended purpose of the programs.

Program name	State applicable	Intent of Programs
Freshcare Food Safety and Quality (FSQ)	National	Good agricultural practice (GAP), best management criteria, and specific food safety requirements (HACCP)
Harmonised Australian Retailer Produce Scheme (HARPS)	National	A retailer-led scheme designed to assist with compliance to Food safety, legal and trade legislation for supplier to the major grocery retailers in Australia.
Interstate Certificate Assurance (ICA) Scheme New South Wales (NSW) underpinned by the federal <i>Biosecurity Act 2015</i>	New South Wales (NSW)	Accreditation scheme covering biosecurity principles for market access within Australia
Agricultural ERA (Environmentally Relevant Activities) Standard for Banana Cultivation (created in accordance with the Queensland <i>Environment Protection Act 1994</i>).	Great Barrier Reef Catchment, Queensland (QLD)	Standard banana cultivation conditions for nitrogen and phosphorus application, erosion and sediment control and specific record keeping requirements around these.
Fair Farms	National	Fair employment practices including work health and safety

Information for the programs was sourced from publicly available resources, where available. The Freshcare industry standard manuals and interpretive guides were accessed via the program official website <https://www.freshcare.com.au/>. The versions used are: FRESHCARE FOOD SAFETY & QUALITY STANDARD EDITION version no. 4.2 JAN 2021, FRESHCARE FOOD SAFETY & QUALITY STANDARD EDITION version no. 4.2 INTERPRETIVE GUIDE NOV 2020. The additional Freshcare resources were accessed from internal team business management system shared drive. These forms are referenced as records in the standard manual.

The HARPS industry standard manuals and interpretive guides were accessed via the program official website <https://harpsonline.com.au/>. The versions used are HARPS STANDARD VERSION no. 2.0, HARPS STANDARD-GUIDANCE VERSION no. 2.0, and HARPS SUMMARY OF CHANGES VERSION no. 2.0. The additional HARPS resources referenced in the standard manual are the forms and templates for record keeping and were accessed from the program official website in which these documents are publicly available.

The official website for ICA (<https://interstatequarantine.org.au/producers/>) was accessed to download the available ICA NSW Procedures. Project scoping was applied and only procedures for NSW were selected for research. In addition, the ICA procedures that fell within the scope of the project i.e. fresh produce as commodity were chosen. The ICA NSW procedures that were chosen for research are indicated in **Table 2**.

Table 2: The details of 13 ICA NSW procedures selected for research.

Procedure number	Effective Date of Procedure	Scope of Procedure
ICA01	6/03/2019	This Procedure covers all certification of dipping with Dimethoate of eligible QFF fruit fly host produce by a Business operating under an ICA arrangement in New South Wales.
ICA02	10/04/2019	This Procedure covers all certification of post-harvest flood spraying with Dimethoate of eligible QFF host produce by a Business operating under an ICA arrangement in NSW.
ICA04	08/11/2024	This Procedure covers all certification of methyl bromide fumigation by a Business operating under an ICA arrangement in New South Wales.
ICA07	1/07/2017	This Procedure covers all certification of Cold Treatment of host produce from a Business operating under an ICA arrangement in New South Wales.

ICA08	10/06/2011	This procedure covers all certification of mature green condition and immature green condition of papaw and babaco from a Business operating under an ICA arrangement in New South Wales.
ICA15	1/07/2017	This Procedure covers all certification of mature green condition of passionfruit, Tahitian limes and black sapotes from Businesses operating under an ICA arrangement in New South Wales.
ICA16	1/07/2017	This Procedure covers all certification of mature green condition of bananas by a Business operating under an ICA arrangement in New South Wales.
ICA18	1/07/2017	This Procedure covers all certification of treatment and inspection of custard apples and other Annona spp. from Businesses operating under an ICA arrangement in New South Wales.
ICA20	04/10/2018	This Procedure covers all certification of pre-harvest treatment and post-harvest inspection of table grapes from a Business operating under an ICA arrangement in New South Wales.
ICA21	1/04/2022	This Procedure covers all certification of pre-harvest treatment and inspection of approved host produce from a Business operating under an ICA arrangement in New South Wales.
ICA26	13/09/2019	This Procedure covers all certification of pre-harvest treatment and inspection of tomatoes, capsicums, chillies and eggplants from a Business operating under an ICA arrangement in New South Wales.
ICA30	1/07/2017	This procedure covers all certification of hard condition of avocados by a business operating under an ICA arrangement in South Australia.
ICA 31	17/01/2021	This Procedure covers all certification of blueberries from a Business operating under an ICA arrangement.

The Fair Farms industry standard manuals were accessed via the program official website <https://www.fairfarms.com.au/resources/>. The version used is FAIR FARMS STANDARD VERSION no. 3.0 (December 2023). The additional resources wherever referenced in the standard manual were accessed from the program training resources tab in the program official website in which these documents are publicly available.

The ERA standard for banana cultivation manual was accessed via the program official website https://www.desi.qld.gov.au/policies?a=272936:policy_registry/pr-es-banana.pdf. The version accessed was version no. 2.0, and the effective version date was 17/03/2022.

The framework methodology involved organising qualitative data (in textual form) that was obtained through desktop research findings into creating categories to manage and organise the data. The framework created a new structure for the data that would be useful to summarise the data in a way

that could support answering the research questions. During the analysis process, the data was grouped into clusters around interrelated concepts. Precisely, the categories created as an initial framework base (i.e. Freshcare) comprised **program name**, **version number**, **section name (abbreviation or initials)** e.g. F for food safety and M for management, **section description** e.g. hazard analysis, **element number** i.e. within each section, **element description**, **compliance criteria number** i.e. within each element number, **compliance criteria description**, **description of record requirement**, **resources**, and **examples of evidence**.

The overlaps identified were documented in the **overlap extent** column for each cross comparison e.g. **(Freshcare vs Fair Farms) etc.** There were different levels of overlaps that were identified. These levels of overlap were assessed on a scale from 0 – 5. A breakdown of the number, type, level interpretation and scoring interpretation is provided in **Table 3**.

Table 3: Compliance Criteria Overlap Scoring Matrix

Type	Scoring	Interpretation
No overlap	0	Compliance criteria do not exist in the standard manual (potentially due to being out of scope or not being an auditable criteria).
Potential overlap	0.5	Appears as an overlap with the wordings, intent, elements of evidence, records, resources but not specific details relating to the specific criteria to draw a concrete score.
Partially overlapping with different intent	1	Some of the requirements within the compliance criteria and associated documentation overlap either in wording or practice, however the differences in intent exist.
Fully overlapping with different intent	2	Majority of the requirements within the compliance criteria and associated documentation overlap either in wording or practice, however, the differences in intent exist.
Partially overlapping with same intent	3	Some of the requirements within the compliance criteria and associated documentation overlap either in wording or practice, with the same intent.
Fully overlapping with same intent	4	Majority of the requirements within the compliance criteria and associated documentation overlap either in wording or practice, with same intent.

Results and Discussion

Compliance landscape in horticulture and challenges associated with navigating the landscape

The desktop review aimed to provide an overview of the current compliance landscape within the horticulture industry across multiple sectors.

A total of 228 compliance programs were identified, spanning various sectors, states, and program types. Of these, 154 were classified as mandatory, underscoring the significant regulatory burden placed on stakeholders. A comprehensive table was developed to quantify and categorise this diverse range of regulatory and certification programs.

Programs are classified by type (e.g. regulation, industry standard, accreditation scheme), obligation status (mandatory, voluntary, or conditionally mandatory), geographic applicability (ranging from state-level to national and international), and industry sector focus (e.g. food safety, biosecurity, environment, social and ethical compliance, trade). This classification breakdown highlights the complex and layered compliance landscape, with over 150 regulatory programs alone and numerous overlapping schemes across jurisdictions and sectors. The diversity in obligation types and thematic coverage illustrates the challenge of navigating intersecting requirements that vary not only by geographic scope but also by market access needs, supply chain demands, and sector-specific risks (Table 4).

Several influencing factors were identified as challenges that lead to barriers in complying to these programs in the context of a grower. Several other challenges are also detailed. Overall, the primary challenge lies in navigating a complex, constantly evolving, and high-volume set of compliance requirements, which as identified through the grower survey, results in significant compliance, learning, and psychological costs for growers.

Table 4: Multidimensional Classification Summary of 228 Compliance Programs

Program Type	Number
Regulation	150
Industry Supplier Program	10
Industry Standard	66
Accreditation Scheme	2
Geographic Applicability	Number
National	111
ACT	7
NSW	11
NT	8
QLD	10
SA	10
TAS	11
VIC	8
WA	13
International and National	35
International Agreements	4
Industry Sector	Number
Biosecurity	11
Biosecurity, Biosecurity market access	3
Chemical., chemical management	4
Environment, Environment; Chemical	37
Environment, Chemical, Food Safety	1
Environment, Chemical, Worker Health and Safety	9
Environment; Health and Safety	7
Environment, Social and Ethical, Governance	1
FairWork	3

Industry Sector (continued)	Number
Food Safety	66
Food Safety, Worker Health and Safety, Environment	1
Health and Safety	1
Import and Export, Trade	1
Organics	10
Retail, Food Safety	6
Retail, Food Safety and Quality	1
Retail, Food Safety, Trade	1
Retail, Social and Ethical	3
Social and Ethical	11
Social and Ethical, FairWork	3
Social and Ethical, Governance	1
Social and Ethical, Health and Safety, Environment, Business ethics	1
Social and Ethical, Trade	1
Traceability	2
Trade	16
Trade, Environment	2
Worker Health and Safety	20
Worker Health and Safety, Social and Ethical	2
Worker Health and Safety, Social and Ethical, Fair Work	2
Worker Health and Safety; Social and Ethical	1
Obligation Type (Mandatory/Voluntary)	Number
Mandatory	154
Conditional Mandatory (e.g. if required for international export or e.g. if called up in a legislation)	24
Voluntary	50

1.1 Complex Compliance Landscape

Horticultural growers operate within a highly complex compliance environment. They are subject to multiple layers of regulatory requirements at the local, state, and federal levels, which vary depending on their geographic location, type of crop, and nature of operations.

In addition to government regulations, growers must often comply with industry-led programs and certification schemes to demonstrate best practice to consumers, meet retailer expectations, and gain access to domestic and international markets.

These requirements span diverse areas including:

- Environmental management
- Worker health and safety
- Organic certification
- Food safety
- Biosecurity
- Quality assurance
- Retail and trade

Managing compliance across these overlapping regimes requires growers to continually track and interpret changes in requirements over time and adjust their business practices accordingly. The variation in requirements by crop type adds an additional layer of complexity, particularly for diversified operations or businesses operating across multiple regions.

1.2 Volume and variety of requirements

The large number of requirements may range from data recording (such as temperature and humidity), documentation (such as pesticide use logs), reporting obligations, compliance with industry standards (like organic certifications), to meeting environmental and social responsibilities.

Extensive documentation is required in many industries to prove compliance, such as product traceability records or sustainability certifications. Preparing for audits or inspections requires meticulous record-keeping and can become time-consuming and prone to errors if not handled systematically.

1.3 Dynamic and evolving standards

Compliance requirements may change frequently due to evolving government regulations, industry standards, or best practices. Keeping up with these changes and ensuring that current operations remain compliant can also be a major hurdle for growers.

1.4 Resource Constraints

Growers, particularly small-scale operations, often face resource limitations in terms of time, personnel, and capital. As a result, dedicating enough attention to tracking and meeting compliance

requirements can be difficult, especially when coupled with operational challenges such as labour shortages or fluctuations in market demand.

1.5 Integration with Industry Partners

Growers may need to comply with requirements that extend to their supply chain or require coordination with distributors, processors, or certification bodies. For example, it is mandatory to comply with an otherwise voluntary compliance program if it is required by a retailer or importer. As an example, the internationally recognised certification standard, GLOBAL GAP, may be required by some of the retailers such as Woolworths, Coles, Costco Australia, ALDI and independent retailers and wholesalers. Managing compliance across multiple stakeholders adds an additional layer of complexity.

1.6 Lack of clear guidance on regulatory requirements

Government websites may sometimes present regulations or compliance requirements in a legal or technical language, making it difficult for businesses, especially smaller ones with limited resources, to comprehend what they need to do. This can result in:

- Ambiguity about the steps required to comply.
- Misinterpretation of regulatory obligations.
- A lack of clear, step-by-step processes for certification or compliance.

An integral part of the legal and regulatory system at both the federal, and state/territory levels is the act, regulation, code of practice, and standard framework that contains information which enables compliance across various industries including horticulture (Figure 1).

The individual elements in the framework and how they interact can be understood through an example of the national **Work Health and Safety Act 2011 (Cth)**. This is the primary piece of legislation that sets the legal framework and overarching rules for the management of workplace health and safety across Australia. Each state and territory have its own version of this law that is tailored to local circumstances but based on the same national model. Under the **Work Health and Safety Act 2011**, regulations such as the **Work Health and Safety Regulation 2017** provide detailed requirements on issues like the safe handling of hazardous chemicals, personal protective equipment, and emergency procedures. Specifically, the Work Health and Safety Regulation 2017 provide specific guidance on how the principles in Acts should be followed and operationalised. The **Model Code of Practice: Work Health and Safety Consultation, Cooperation, and Coordination** provides guidance on how businesses should consult with workers about health and safety matters. These practical advice are not legally binding unless referenced by regulations or Acts. The Australian Standard AS/NZS 4801:2001 relates to the establishment of an occupational health and safety management system. The Australian Standard are also not legally binding unless referenced by regulations or Acts.

As a result, the **following two challenges** were identified while mapping the legal framework within the compliance landscape:

1.7 Challenges in Identifying Mandatory vs. Voluntary Compliance Requirements

In the compliance landscape, several legal requirements that are otherwise voluntary were identified to be mandatory as they have been referenced in their respective primary pieces of legislation. Some examples are detailed below:

- The requirements in the *Code of Practice for the Use of Agricultural and Veterinary Chemicals in Western Australia* are mandatory as the code is underpinned by the *Medicines and Poisons Act 2014* Western Australia [<https://ablis.business.gov.au>].
- The requirements in the standard *Australian Standard AS 3780 – Storage and Handling of Corrosive Substances* are mandatory as the standard is underpinned by the *Dangerous Goods Safety Act 2004* of Western Australia [<https://ablis.business.gov.au>].

The information identified in the compliance landscape was obtained through navigating multiple webpages of multiple programs which is time-consuming and not a feasible option for growers. Moreover, the webpages do not provide quick links to the required information. Additionally, not all programs have this information included in their official program website. The standard document for an Act can contain multiple pages which can be even more time-consuming to navigate especially when the compliance programs that a grower needs to adhere to are multiple. For example, the **Work Health and Safety Act 2011 (Cth)** document alone comprises of over 250 pages [[Work Health and Safety Act 2011 - Federal Register of Legislation](#)].

1.8 Lack of Clear Guidance on Regulatory Compliance Steps and Audit Preparation

Insufficient information on the steps to be undertaken for regulatory compliance is a common and significant problem. While mapping the compliance landscape, it was identified that the government compliance procedures, unlike industry certification programs, operate on a proportionate risk-based approach. The loophole identified was that there exists ambiguity in the process. For example, as per the compliance and enforcement policy by FairWork Ombudsmann [] their compliance and enforcement approach vary depending on specific circumstances and contexts. However, there is a lack of examples, templates, or case studies on the website that illustrate how businesses can meet their specific compliance requirements. When government or regulatory bodies do not provide clear, detailed, actionable steps for compliance and a clear explanation of what constitutes a breach and a clear definition of a risk scale, businesses may face difficulties in meeting legal requirements, risking fines, penalties, or even legal action. Another example of regulatory complexity and ambiguity exists in the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) that governs the environmental management at national level. Under the EPBC Act, landholders must predict whether their activities will have a "significant" impact on MNES, such as threatened species or ecological communities. A particular challenge for farmers in this regard is determining what actions constitute a 'significant impact' on a Matters of National Environmental Significance (MNES) in terms of their proposed agricultural operations. An exhaustive definition of the term 'significant impact' is still not described in departmental guidance and in the true legislative document despite some efforts made by the court to expand the interpretation of the term in the s527E chapter of the Act (Hamman et al., 2021). A research report highlighted that this is a significant point of concern for farmers due to the lack of transparency associated with the terms' meaning and intention (Productivity Commission.

Industries, Land Use and Water Quality in the Great Barrier Reef Catchment: Research Report; Report, Australian Government: Melbourne, Australia, 2003).

1.9 Absence of a Centralised Source of Truth (SSoT) and Gaps in Industry-wide Knowledge Sharing

A significant barrier to compliance identified in the research is the absence of a centralized, reliable source of information on regulatory requirements. Growers face the challenge of navigating multiple websites to gather relevant information, often leading to information overload that results in wasted time, increased effort, and potential compliance errors.

Through desktop research, the Australian Business Licence and Information Service (ABLIS) was identified as a valuable tool consolidating regulatory requirements, licenses, permits, and registrations for Australian businesses. While ABLIS serves as a potential Single Source of Truth (SSoT), it has limitations. Notably, it does not fully address user-defined criteria, such as the needs of businesses operating internationally or those subject to industry-specific certification programs.

Another key issue is the lack of an efficient knowledge management system for knowledge transfer within the horticulture industry. For example, knowledge of the ABLIS database was only uncovered through extensive, time-consuming research as part of this project, an approach that is not feasible for growers. Moreover, the lack of discussion around ABLIS during Hort-CoP workshops suggests that industry stakeholders including growers may be unaware of this resource, further widening the knowledge-sharing gap.

1.10 Benchmarked versus non-benchmarked certifications

Compliance challenges emerge due to the differences between benchmarked certifications and non-benchmarked certifications. Achieving benchmarked certifications can be resource-intensive, primarily due to the rigidity of these standards, which often require detailed assessments, audits, and specific operational adjustments.

For organizations, particularly those operating on a small scale, these rigid benchmarks may not fully accommodate their unique needs, leading to costly adjustments to meet the certification requirements. This can be especially financially burdensome for resource-constrained organizations. Moreover, the ongoing maintenance of benchmarked certifications demands continuous resource commitment, adding a further layer of complexity and cost to businesses that are already operating with limited capacity.

RegTech Impact Grower Survey

To better understand the compliance challenges faced by grower businesses, the survey was designed to capture firsthand insights into the barriers experienced by growers, ranging from time constraints and financial pressures to training needs and the complexities of managing multiple compliance systems. The primary objectives of the survey were to assess the extent of system duplication across regulatory and industry standards, evaluate the financial burden of compliance on grower operations, and explore the grower sentiments on the potential of Regulatory Technology (RegTech) to streamline processes and reduce redundancy. The findings from the Grower Survey played a key role in guiding the selection of compliance programs used for cross-mapping, with the aim of identifying duplication across regulatory and industry systems.

General Findings

- The survey successfully captured responses from a broad cross-section of the fresh produce supply chain, with the highest participation from growing, packing, and distribution sectors. A comprehensive breakdown of respondent distribution across all industry segments is presented in **Appendix Figure 1**.
- A diverse range of crops are grown by respondents, with Citrus, Pineapple, and Avocado among the most frequently mentioned. This broad representation of crop types reflects a well-targeted and inclusive survey sample, supporting the overall quality and relevance of the data collected. Full details are provided in **Appendix Table 1**.
- The findings demonstrate that the survey achieved broad national coverage, with responses from grower businesses operating across all Australian states and territories, most prominently from Queensland (56.7%), followed by South Australia (24.7%) and New South Wales (22.7%). This strong geographic representation reflects a well-executed outreach strategy and reinforces the quality and inclusiveness of the survey. The detailed percentages are provided in **Appendix Figure 2**.

Key findings

Complexities (time and cost pressures) of managing multiple compliance systems

1. Hours per week businesses spend on compliance related activities

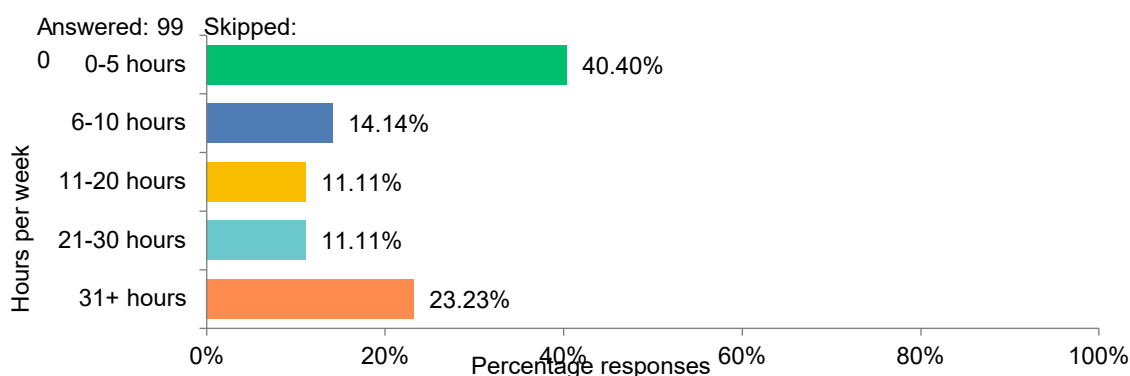


Figure 2: The businesses spend a significant amount of time (with varying time range identified from 5 hours to more than 31 hours per week) on compliance related activities.

2. The estimated total annual cost to businesses for compliance-related activities

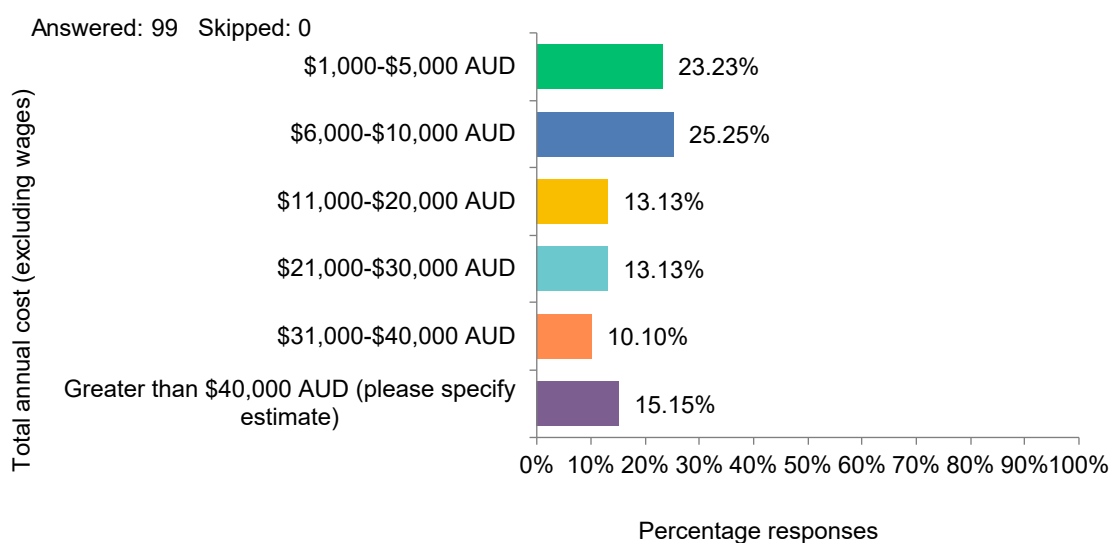


Figure 3: A significant proportion of grower businesses reported substantial annual expenditures on compliance-related activities, with costs ranging from AUD 5,000 to over AUD 40,000. Notably, 15% of respondents indicated that their total annual compliance costs exceeded AUD 40,000, with detailed estimates for this group presented in **Appendix Table 2**.

3. Frequency of System or Regulatory Compliance Audits

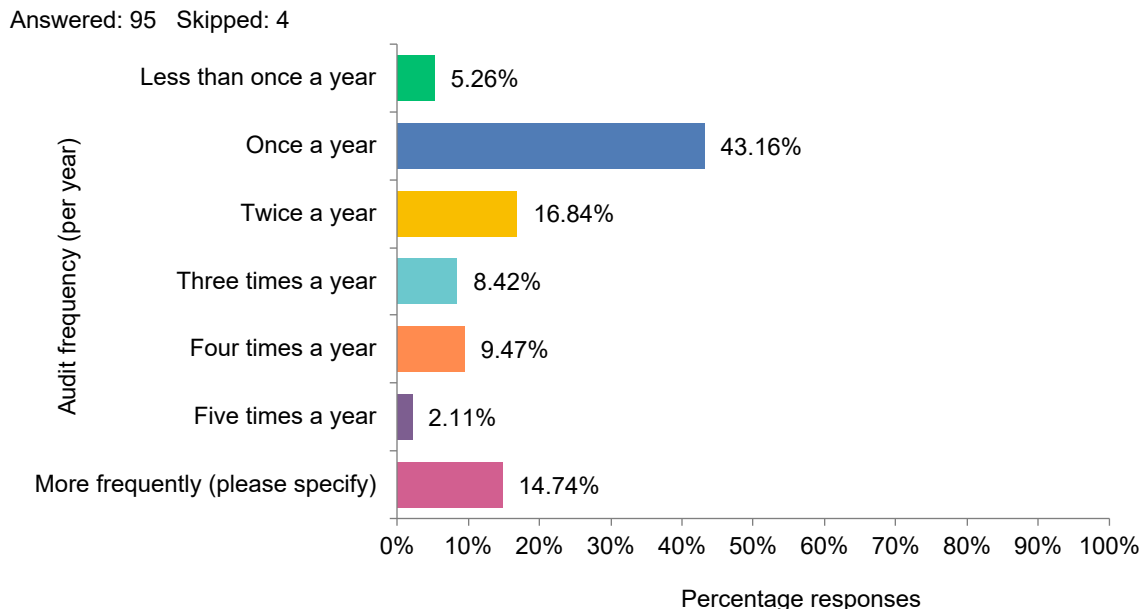


Figure 4: The majority of businesses (43.16%) reported being audited once per year for system or regulatory compliance. However, a significant portion undergo audits more frequently, with 14.74% indicating they are audited more than five times annually. These findings highlight that while annual audits are the norm, a significant minority experience more frequent compliance check. This variability may be reflective of differing regulatory environments such as high-risk operation or businesses operating at multiple sites. Further qualitative responses, provided by this significant minority group

(14.74%), offer insight into the scale and complexity of the issue faced by these businesses. These responses are provided in **Appendix Table 3**. Notwithstanding, audits conducted two, three, four or five times a year can represent a significant operational and financial pressure, particularly for small-scale businesses with limited resources. Frequent audits may divert time and staff from core activities, highlighting the need to balance compliance requirements with business capacity.

4. Factors most significantly impacting businesses in terms of compliance

Answered: 95 Skipped: 4

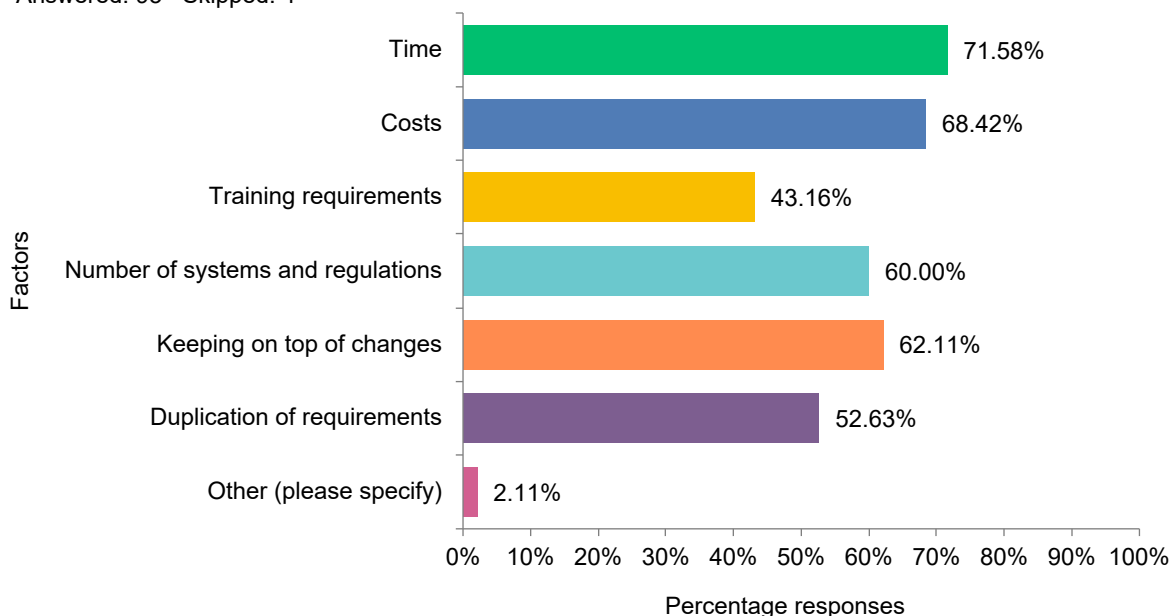


Figure 5: The results highlight that multiple compliance-related challenges are commonly experienced, with most respondents selecting more than one factor. The most frequently cited concern was **Time**, selected by **71.58%** of respondents, indicating that compliance activities are widely perceived as time-consuming and potentially disruptive to routine operations. This was closely followed by **Costs** (68.42%), underscoring the financial burden associated with meeting compliance requirements particularly in the context of staffing, external audits, and reporting obligations. **Keeping on top of changes** (62.11%) and the **number of systems and regulations** (60.00%) were also key concerns. These findings suggest that businesses are challenged not only by the volume of regulatory requirements but also by their dynamic and evolving nature, which may require frequent updates to internal processes and documentation. Additionally, **Duplication of requirements** (52.63%) was reported as a notable issue, highlighting potential inefficiencies where businesses may be subject to overlapping or redundant compliance processes. **Training requirements** were selected by **43.16%** of respondents, reflecting the resource implications of maintaining a workforce that is continually up to date with standards. In addition, interrogation of the data by business scale revealed that duplication significantly impacted businesses across all sizes, with the highest proportion of affected respondents reaching 80%.

Two respondents provided additional insights under the "Other" category. One noted that they are a small business with minimal operational changes, suggesting that annual audits may be unnecessary and disproportionate to their risk profile. The second respondent indicated that “all of the above” factors impact their business, reinforcing the notion that compliance challenges are often cumulative and interrelated, rather than isolated to a single issue. Overall, these findings illustrate the multifaceted nature of compliance burdens, with time, cost, and regulatory complexity emerging as consistent pain points across the sector.

5. Multiple compliance requirements

Responses were received regarding adherence to multiple compliance systems across a diverse range of sectors, including biosecurity and market access, environmental protection, chemical management, Fair Work requirements, social and ethical standards, food safety, organic certification, retail requirements, trade obligations, and worker health and safety. These responses reflect the breadth of compliance frameworks relevant to the operational landscape and demonstrate varying levels of engagement and compliance across sectors. Based on these survey findings, compliance programs selected for further investigation into potential duplication were chosen from those areas that received the highest number of responses. This approach ensured a representative mix of compliance areas that growers typically engage with, aiming to mirror the on-ground reality of managing multiple overlapping requirements in a real-world context. A detailed account of all received responses to compliance requirements has been compiled and is provided in the **appendix Figure 3 to Figure 12**.

Grower business profile classification

By examining the number of crops grown, total number of workers employed, and the number of states in which operations occur, a comprehensive grower business profile was devised, enabling the classification of operations into small-medium, medium-large, and large-very large categories.

Based on the data presented in the table, **small to medium** organizations typically operate with 1 to 3 levels of management, with 1 or 5 types of crops grown and are, usually located at a single site. These organizations employ between 1 to 60 staff, with a workforce composition of 60% part-time, 20% full-time, and 20% owner involvement. Their weekly time investment in relevant activities ranges from 0 to 5 hours, and their annual expenditure lies between \$1,000 and \$30,000. Approximately 40% engage in relevant activities daily, with frequency of use ranging from one to four times a year. In contrast, **large to very large** organizations display more complex structures with 2 to 5 management levels, spanning 1 to 3 types of crops grown and operate at across 1 to 5 states. These organizations employ 134 to 1,270 staff, with 69% working full-time. They commit significantly more time i.e. 11 to over 31 hours weekly and have higher expenditure levels ranging from \$31,000 to over \$200,000. Notably, 81% engage daily, with 75% utilizing relevant systems or processes four or more times annually. This comparative analysis highlights the scalability of operations and resource commitment in relation to organizational size. The "medium to large" category represents a transitional group between small-medium and large-very large organizations, and the data suggests a clear progression in terms of scale, structure, and resource commitment. Analysis of grower business profiles classified as Small–Medium, Medium–Large, and Large–Very Large, shows that key differentiators include the number of supply chain levels, total workforce size, hours worked per week, and total annual compliance cost. State-level differences also influence classification.

Business profile	No. of supply chain levels	Crops grown	State	Total no. of workers	Compliance management	Hours per week	Total annual cost	Frequency dealing with compliance	Audit frequency
Small - medium	1 to 3 levels	1 or 5	Single	1 – 60	60% part-time 20% full-time 20% owner	0-5 hours	\$1000-\$30000	40% on a daily basis (daily to monthly)	1 to 4 times a year
Medium - large	1 to 4 levels	1 to 4	1 to 5 states	45 -134	57% part-time	11-30 hours	\$6000 – greater than \$40,000	93% on a daily basis	21% once a year, 14% twice a year, 29% 3 times a year, 14% 4 times a year, 7% 5 times a year, 14.2% more frequently
Large - very large	2 to 5 levels	1 – 3	1 to 5 states	134-1270	69% full-time	11-31+ hours	\$31,000-\$200K and above	81% on a daily basis	75% 4 times a year or more frequently

Table 5: Grower business profile categories

This table outlines three categories of grower business profiles small-medium, medium-large, and large-very large. The categorization was developed using combinatorial data on the association with the number of supply chain levels, number of crops grown, total workforce, and number of states in which the business operates.

Extent and effect of system duplication

1. All business scales affected by duplication

Further analysis of the data presented previously in Figure 5, which highlights the factors most significantly impacting businesses in terms of compliance, revealed that duplication affected businesses across all scales as detailed in the table below. Notably, the highest proportion of impacted respondents reached 80%, underscoring the widespread nature of this issue.

In addition, a large proportion of respondents (84%) identify duplication in system requirements and regulations as a major concern impacting their business operations and efficiency either moderately or significantly.

Business Profile	Impact responses (%)
Small-medium	40% affected by duplication
Medium-large	73% affected by duplication
Large-very large	81% affected by duplication

Table 6: Impact of Duplication by Business Profile

2. Duplication a major concern

Answered: 65, Skipped: 34

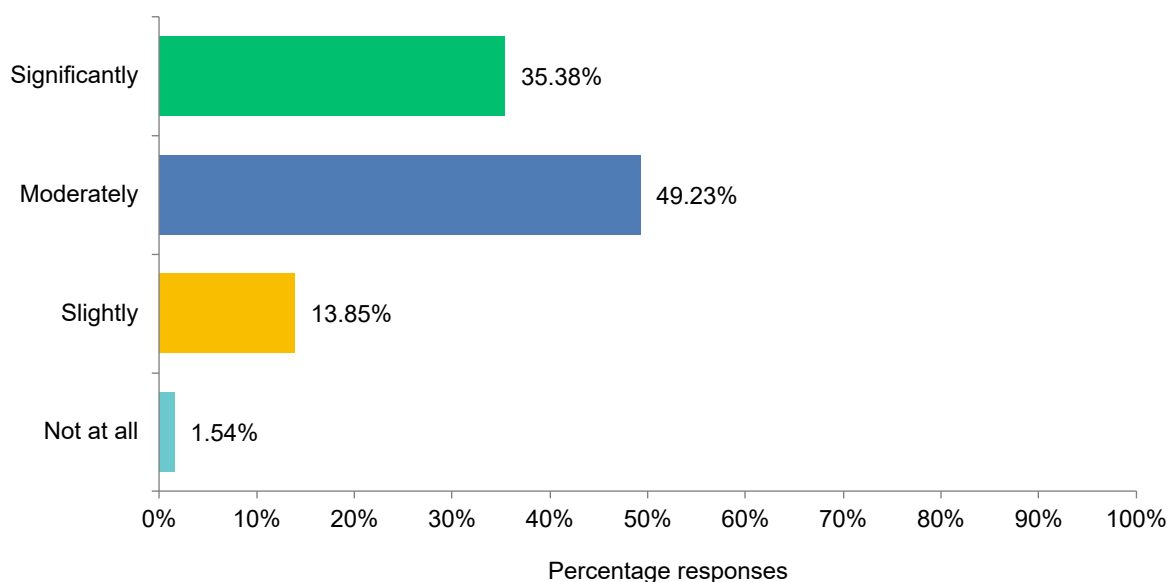


Figure 6: Perceived impact of duplication across system requirements and regulations on business operations and efficiency.

3. Respondent insights into Challenges Arising from duplication

Respondent feedback on the effects of duplication in compliance systems reveals a clear consensus around the burdens of **time**, **cost**, and **complexity**. The most frequently mentioned issue was the significant **time** investment required to manage duplicated systems, particularly where similar data must be recorded or presented in varying formats across different platforms. **Audit duplication**, **conflicting requirements**, and the **need to stay updated** with changing standards were also repeatedly cited. Businesses expressed frustration over having to meet similar compliance requirements for different customers or certification bodies, often without mutual recognition of equivalent standards. This leads to inefficiencies, increased operational costs, and reduced time for core business activities such as growing and production. Summary of these points is illustrated in the word cloud representation below. Detailed comments provided by respondents can be found in **Appendix Table 4**.



Grower sentiments on the potential of Regulatory Technology (RegTech) to streamline processes and reduce redundancy

The survey results indicate that a substantial majority of respondents (91%) feel comfortable using technology for business-related activities (**Figure 7**). This level of comfort suggests that grower businesses are well-positioned to adopt technology-based solutions aimed at streamlining system duplication. Establishing this baseline is critical, as technological readiness is a key prerequisite for the successful implementation of digital tools.

Furthermore, the positive finding aligns with responses to another question where respondents expressed strong optimism toward interest in a regulatory technology (RegTech) solution to address duplication across systems and regulations with fewer expressing uncertainty (10.77%), unlikeliness (6.15%), or selecting "Other" (3.08%) (**Figure 8**). Respondents who selected "Other (please specify)" generally expressed conditional support for adopting a RegTech solution. Common themes included concerns about excessive paperwork and implementation burden. For example, one respondent noted it was "not likely going to sell if it involves too much paperwork," while another emphasized the importance of ensuring that the solution was "not just another layer" and "didn't require large amounts of extra work to implement".

The responses indicated a generally positive outlook toward the adoption of regulatory technology (RegTech) solutions to address system duplication. A total of 49.23% of respondents reported being somewhat likely to very likely to invest in a RegTech solution for their grower business. This suggests a moderate to strong level of interest in leveraging technology to streamline compliance processes. Among those who selected "Other," respondents commonly emphasized the need for clear benefits and minimal burden. As one participant stated, they were "keen to reduce duplication, but there MUST be a proven return on investment".

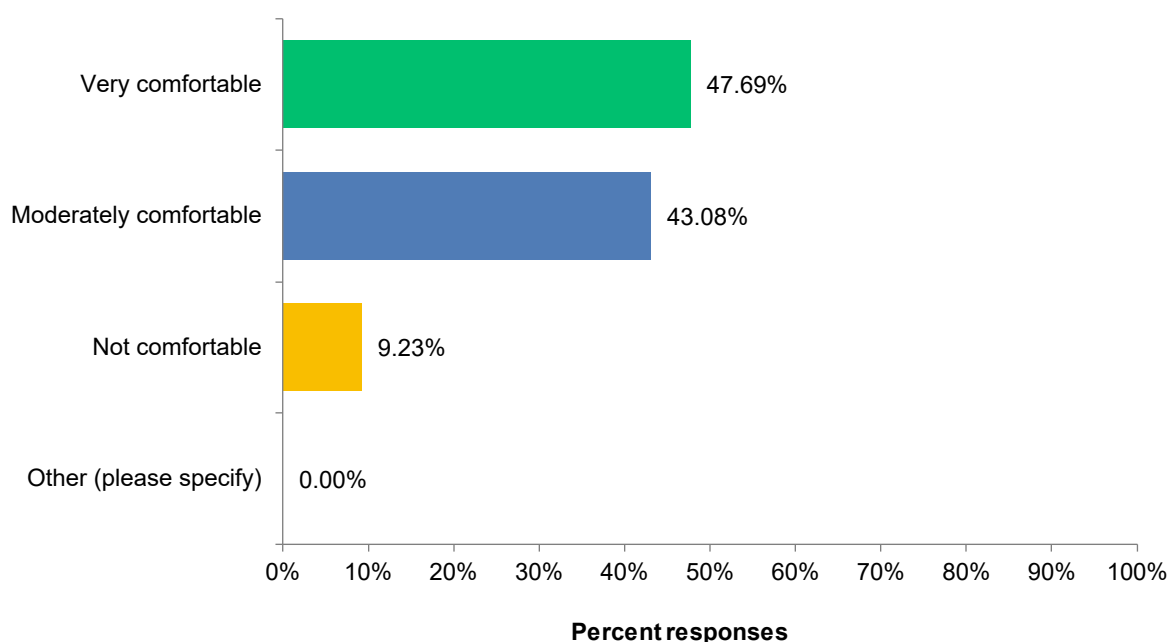


Figure 7: Respondents' comfort levels with using technology for business-related activities.

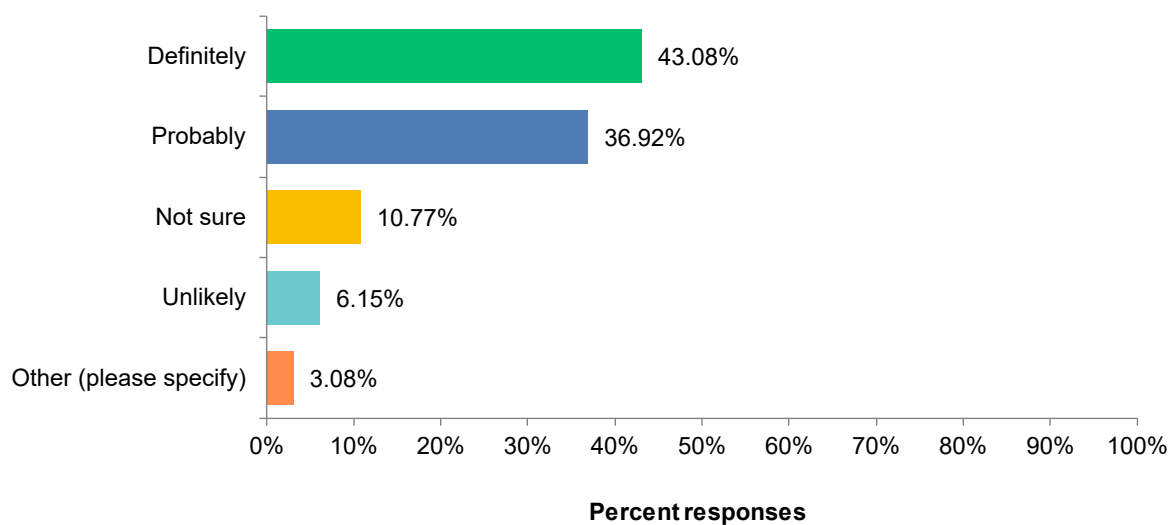


Figure 8: Respondents' interest in a regulatory technology (RegTech) solution that offers cross-recognition to reduce system duplication.

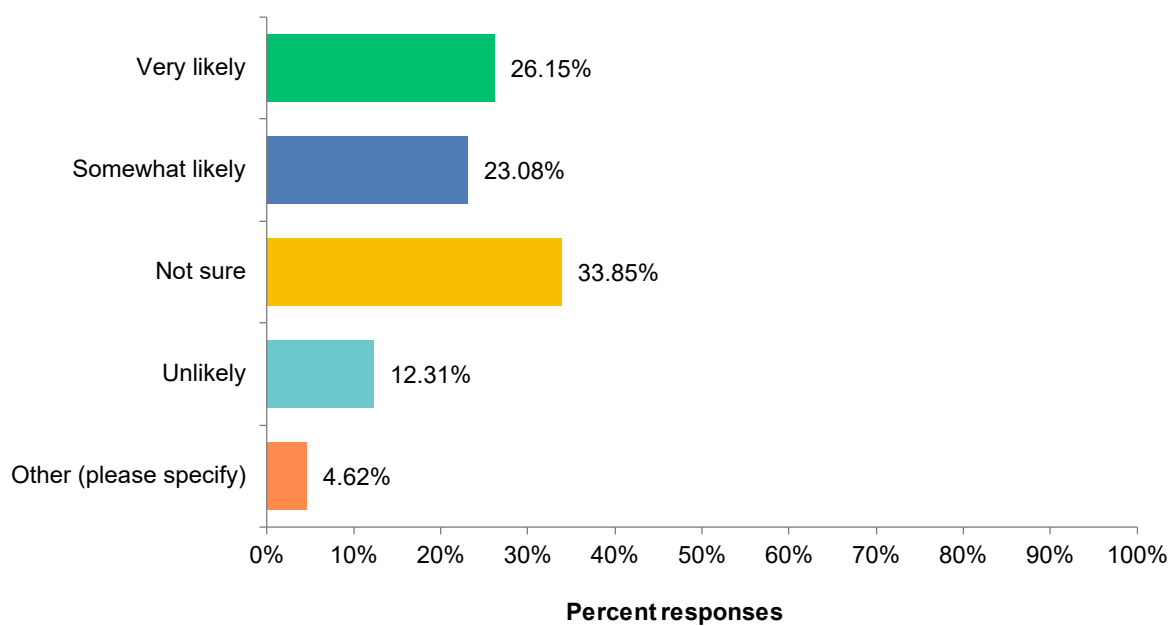


Figure 9: Likelihood of respondents investing in a RegTech solution to reduce system duplication.

Growers' sentiments on the desired features in a RegTech solution

Growers shared a broad and practical range of suggestions for features they would like to see in a RegTech solution to help reduce compliance duplication. The feedback highlights a strong desire for simplification, flexibility, and alignment across the industry. Key themes included:

- **A centralised compliance platform:** A nationally recognised, cross-accepted portal was a common request. Growers want a single, trusted system to manage certifications, audit records, reporting, and compliance documentation.
- **"Collect once, use many times" functionality:** Many respondents emphasised the need for common data to be entered once and then used across different audits, standards, and schemes to reduce duplication.
- **Digitisation and streamlined forms:** Several growers expressed frustration with current manual or fragmented systems. They called for all compliance-related forms and records to be digitised, removing the need for PDFs, Word docs, or printed paperwork.
- **Audit efficiency improvements:**
 - Longer audit cycles for smaller operations
 - Simplified record-keeping based on risk and business size
 - The ability to complete self-assessments or only update changed sections annually
- **Tailored compliance experiences:**
 - Customised checklists or filters by customer, crop type (e.g. ground crops vs. tree crops), or business size
 - Industry-specific configuration options
- **Training and support:**
 - Integration with formal training pathways such as TAFE and VET
 - Improved auditor consistency and calibration
 - Clearer guidance around requirements and audit preparation
- **Technology integration and data privacy:**
 - Use of AI and automation to flag gaps, interpret standards, or simplify evidence collection
 - Strong protections to ensure confidentiality of grower and packer data

While the majority of growers were positive and solutions-focused, a small number expressed frustration with current systems and suggested that a complete overhaul, not just incremental improvements, may be required.

Investigating Duplication Across Regulatory and Certification Programs

One of the project's key aims was to identify duplication across standards, a goal that was initially pursued with enthusiasm. However, as the research has progressed, it has become evident that while requirements may appear similar on the surface, they often carry different meanings due to variations in intent and scope. The analysis identified varying degrees of overlap across different programs, with instances occurring both within the same intent and across distinct intents. This overlap was examined through two primary lenses: the intent of program scope and the intent of compliance criteria. By categorizing overlaps in this manner, both broad and nuanced similarities that exist among regulatory and certification programs were uncovered. A more detailed description of the types of overlaps and their interpretations is provided in **Figure 10**.

The intent of program scope highlights the overarching objectives of different programs. For instance, a program may be designed to address Food Safety regulations, while another may focus on Work Health and Safety. While these areas serve distinct purposes, their compliance requirements may sometimes intersect, leading to similarities in compliance criteria. Such intersections suggest that while the core goals may differ, the means of achieving compliance may often share common foundational sections. A detailed analysis of these similar sections revealed that as program scopes diverge, the potential to identify genuine duplication across standards diminishes as illustrated in **Figure 11**.

The intent of compliance criteria, on the other hand, delves into specific regulatory or procedural mandates that programs enforce. A clear example of this is the requirement to document a property map, which may be a shared criterion across multiple programs. However, despite this commonality, differences in interpretation, format, or level of detail required can create significant variations in application. These subtle differences underscore the complexity of defining true duplication, as what may appear to be an overlap in wording may diverge significantly in practical implementation due to differences in intent and scope.

The findings further emphasize that overlap can be observed both in written compliance procedures and in true implementation. This can include elements such as required documentation, procedural evidence, or compliance verification mechanisms. While textual similarities might suggest duplication, the specific application of these requirements often varies, influenced by program-specific nuances or contextual interpretations. As a result, careful consideration is needed when assessing redundancy to ensure that overlaps are appropriately classified and do not obscure critical program distinctions. Notwithstanding, true duplications are present when both the intent and compliance criterion in question overlap. To support this process, a structured decision-making framework was devised to systematically categorize overlaps, distinguishing between perceived duplication and true redundancy based on both intent and compliance criteria.

This decision-making framework helps categorise the nature of these overlaps based on two primary factors: intent of program scope and intent of compliance criteria. It also helps distinguish between similar requirements and identifies areas of redundancy, while also allowing for necessary program differentiation. The swimlane diagram (**Figure 12**) illustrates this decision tree, offering a visual guide to the process of categorizing overlaps by examining both textual and practical similarities or

differences. This structured approach is essential, as it would potentially enable regulators and organizations to streamline program requirements without compromising program integrity or compliance. Importantly, this decision-making exercise could serve as a critical data input for a RegTech solution, where data-driven insights can be leveraged to refine and optimize duplicative and complex compliance processes. Furthermore, embedding the logic of this decision tree into a RegTech system would enable dynamic identification and streamlining of overlapping requirements, to present removed duplicative requirements in the user interface thereby reducing inefficiencies and enhancing overall compliance management in practice.

In mapping the compliance criteria within all the sections of the reference standard manual FSQ4.2 against other four programs, instances of different types of overlaps have been identified. More than 250 instances of duplication across different levels were identified. Table 7 includes a selection of these examples illustrating both true and perceived duplication; full details of all identified instances are provided in the accompanying spreadsheet data set Appendix Supplementary Data Set 2. A detailed breakdown of section name, element name, no. of overlaps and whether the overlap is a true or perceived duplication is provided in Table 8.

Defining duplication was not straightforward, as it often depends on the context and intent behind each requirement.

Overlap Type	Interpretation
No overlap	Compliance criteria do not exist in the standard manual (potentially due to being out of scope or not being an auditable criteria).
Potential overlap	Appears as an overlap with the wordings, intent, elements of evidence, records, resources, but not specific details relating to the compliance criteria to draw a concrete score.
Partially overlapping with different intent	Some of the requirements within the compliance criteria and associated documentation overlap either in wording or practice, however the differences in intent exist.
Fully overlapping with different intent	Majority of the requirements within the compliance criteria and associated documentation overlap either in wording or practice, however the differences in intent exist.
Partially overlapping with same intent	Some of the requirements within the compliance criteria and associated documentation overlap either in wording or practice, with same intent.
Fully overlapping with same intent	Majority of the requirements within the compliance criteria and associated documentation overlap in practice, with same intent.

Figure 10: Classification of Overlap in Compliance Criteria Across Five Compliance Programs

This figure illustrates the classification of overlap observed when mapping compliance criteria across five compliance programs. The overlap is categorized into six types based on wording, intent, and documentation. "No overlap" indicates the absence of corresponding compliance criteria. "Potential overlap" suggests similarities in wording or intent but lacks specific details for a definitive conclusion. The "Perceived" category includes cases where compliance criteria overlap in wording or practice but differ in intent, either partially or fully. The "Part" and "True" categories represent cases where the overlap occurs with the same intent, either partially or fully, indicating stronger alignment across programs. This classification framework aids in assessing the consistency and comparability of compliance requirements across regulatory or certification programs.

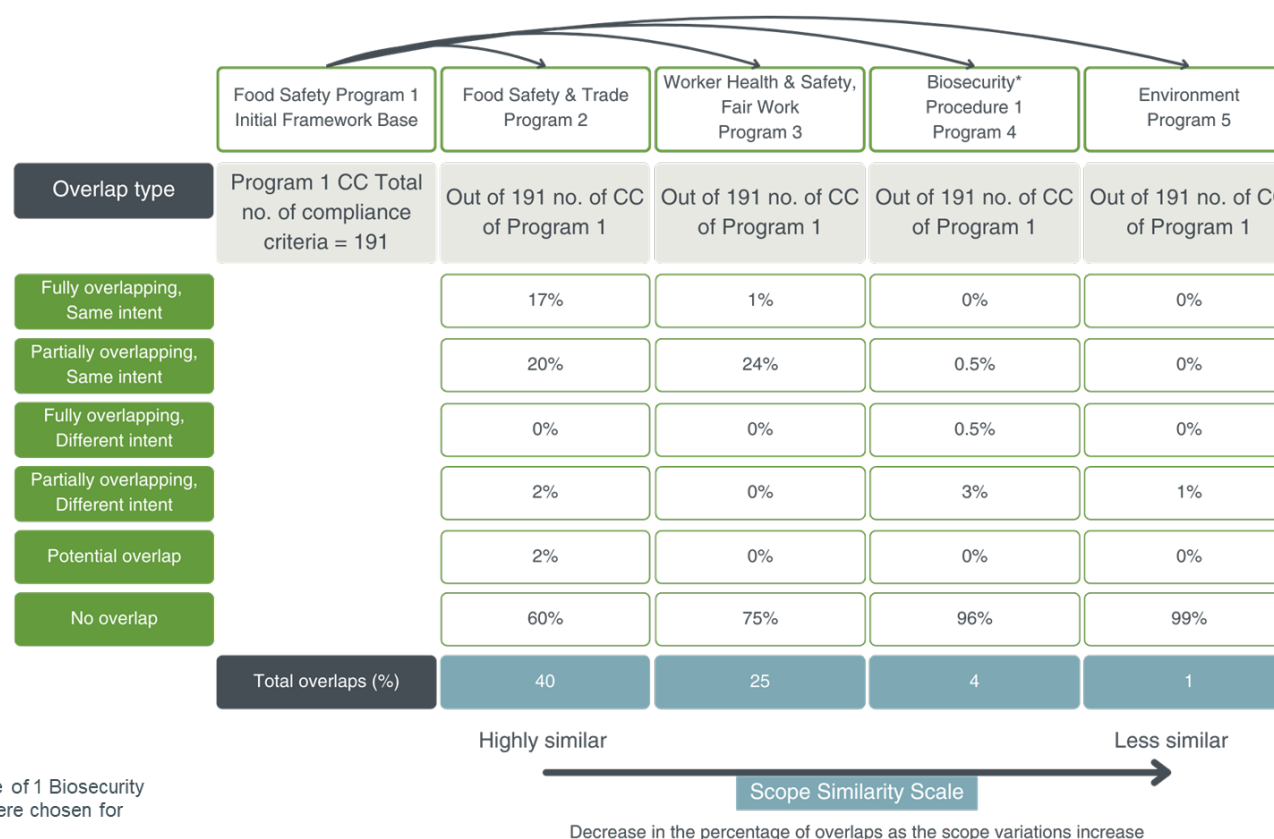


Figure 11. Compliance Criteria Overlap Across Five Compliance Programs

This figure presents the results of mapping compliance criteria across five compliance programs, using FSQ4.2 as the reference framework (total compliance criteria = 191). Overlap types are classified into six categories based on wording, intent, and documentation alignment. The percentage of compliance criteria falling into each overlap category is shown for each program. The total percentage of overlaps decreases as scope variations increase, as indicated by the Scope Similarity Scale. Programs with similar objectives, such as Food Safety & Trade (Program 2), exhibit a higher degree of overlap, while those with distinct compliance focuses, such as Environment Program 5, show minimal alignment. These findings highlight the extent of commonalities and gaps in compliance frameworks, informing potential opportunities for compliance alignment and integration efforts and the potential use of RegTech for streamlining. Full details of overlaps are provided in **Appendix Supplementary Data Set 2**.

Key Steps

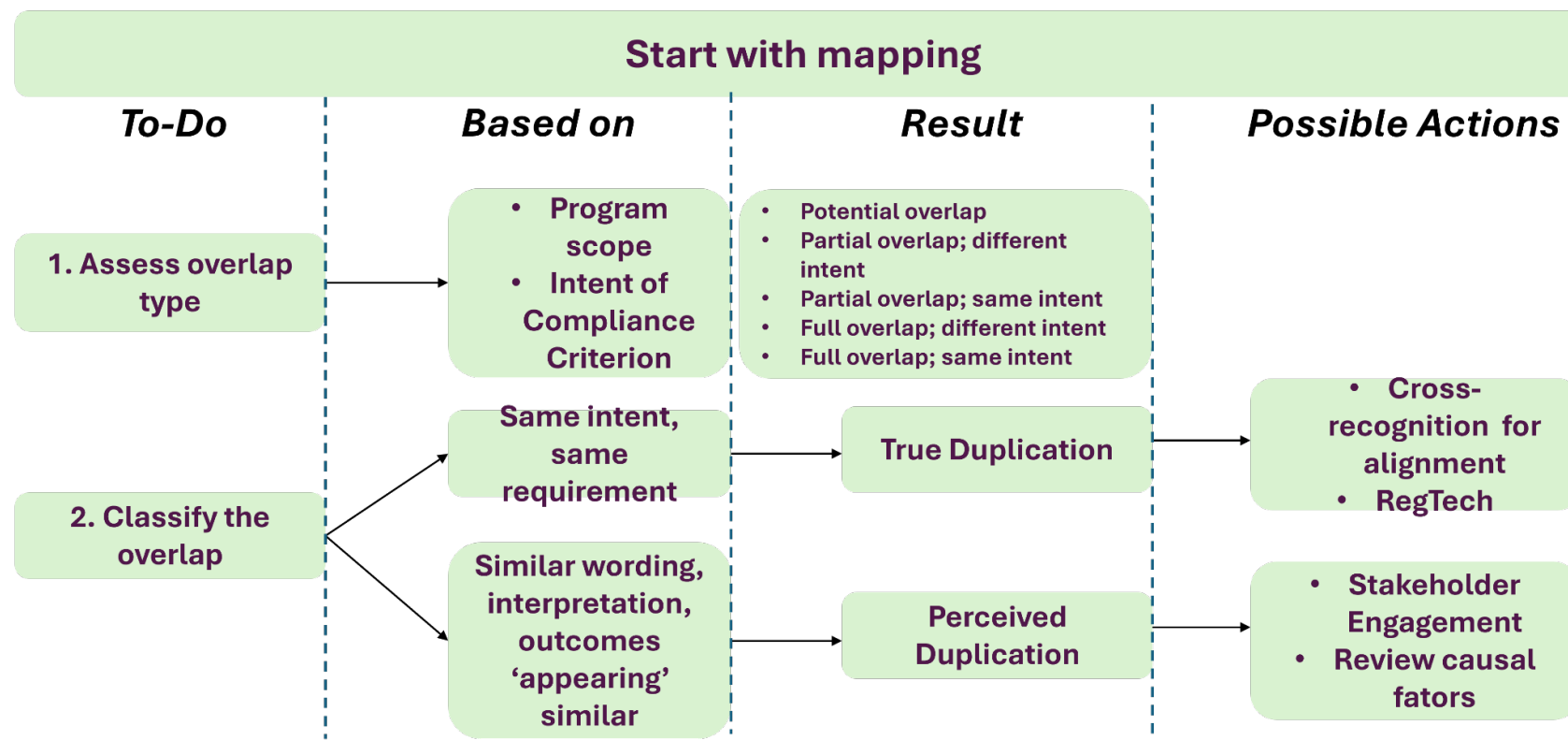


Figure 12: Program Overlap Decision Tree

This decision tree provides a structured process for identifying and assessing overlaps between compliance or regulatory programs to determine whether they indicate true redundancy (i.e. duplication) or perceived duplication. Beginning with a mapping exercise, the framework helps determine whether overlaps exist and classifies them based on the intent of either the compliance criterion or the program scope. It then guides users through a series of decision points to distinguish between true duplication, interpretation-based differences, and distinct program requirements. The tree supports actions such as exploring RegTech solutions, reviewing cross-recognition potential, and evaluating the contextual intent of requirements to inform streamlining opportunities.

Example 1

Duplication type: Perceived Duplication

Aspect (Premises, Facilities, Equipment, Tools, Packaging and Vehicles)	FSQ4.2 Requirement	ICA-07 Procedure Requirements	Alignment / Difference
Purpose / Intent	Ensure cooling systems are constructed and maintained to minimise contamination risk.	Same intent — to ensure effective temperature control and hygiene in cold room facilities.	Shared objective
Cooling System Performance	Must be maintained, calibrated, and operate at specified temperatures.	Same, but includes additional detail on air circulation.	Partial overlap, ICA more specific
Temperature Monitoring	Requires temperature measurement and calibration.	Requires calibration with a detailed procedure and record-keeping (e.g. sensor calibration record).	ICA has explicit documentation needs
Facility Construction	Must minimise contamination risk.	Cold room must be lockable and have adequate air circulation.	ICA adds prescriptive structural detail

Table 7.1 Comparison of **Cold Room Requirements**: FSQ4.2 vs ICA-07 NSW

While FSQ4.2 and ICA-07 share similar operational requirements, such as maintaining calibrated cooling systems to prevent contamination, their underlying intent differs. FSQ4.2 focuses on food safety, ensuring hygienic conditions during storage, while ICA-07 is a biosecurity protocol aimed at managing Queensland fruit fly risk through cold treatment of host produce. This biosecurity focus makes ICA-07 more prescriptive, specifying that cold rooms must be lockable, have adequate air circulation, and follow a detailed sensor calibration procedure with documented records. As a result, the procedures partially overlap in function but diverge in scope and compliance emphasis. This example highlights perceived duplication arising from overlapping language “cooling systems”, “calibration”, and “maintenance” used across different compliance criteria, without clear explanations of intent or contextual differences.

Example 2

Duplication type: Perceived Duplication

Aspect	FSQ4.2 Requirement	Fair Farms Procedure	Alignment/Difference
Purpose / Intent	Ensure harvested produce can be traced from production to destination.	Ensure accurate records of worker output (harvest picking/packing volume) for those on piecework rates.	Different intent despite similar record types.
Scope of Record-Keeping	Crop/variety, site, harvest/packing dates, batch codes, quantity, and destination must be recorded.	Records limited to volumes picked/packed by individual workers.	FSQ focuses on produce, Fair Farms on labour output.
Traceability Focus	End-to-end produce traceability including batch and destination.	Not applicable — no product-level traceability required.	FSQ is supply chain-focused; Fair Farms is HR/FairWork-focused.
Evidence Requirements	Harvest, packing and dispatch record (Form F13), delivery/receival advice, consignment records, traceability/mass balance exercises if required.	Piecework records for harvest/picking/packing volumes.	Different forms and evidence used.
Overlap	Both require accurate harvest and packing volume records.	Same, but with worker-specific context for pay compliance.	Partial overlap – same data type, different use.

Table 7.2 Comparison of **Harvest Records**: FSQ4.2 vs Fair Farms

This table presents a partial duplication example between Freshcare FSQ4.2 and Fair Farms requirements. While both require records of harvest and packing volumes, the intent, scope, and evidence requirements differ significantly. FSQ4.2 focuses on produce traceability for food safety and supply chain integrity, whereas Fair Farms emphasizes worker output tracking to support piecework pay compliance. The overlap lies in the data type collected, but the purpose and application diverge. This example illustrates perceived duplication due to the shared use of the term “harvest” across different program requirements. Although the word is the same, its context and intent vary without clarification, this can lead to confusion about compliance obligations.

Example 3

Duplication type: Perceived Duplication

Aspect	FSQ4.2 Requirement	ICA-04 NSW (Fumigation with Methyl Bromide)	Alignment/Difference
Section Name	Product Identification and Traceability	Package Identification upon Dispatch	Both sections deal with traceability and labeling requirements at dispatch.
Intent / Purpose	Enable produce to be traced from production to its destination.	Ensure treated produce is traceable and compliant with ICA protocol before issuing a PHAC.	Same intent – traceability; FSQ is general compliance, ICA is treatment-specific.
Compliance Criteria	All packed produce must be marked with business name, physical address, packing date/batch ID, and other required trade descriptions.	Packages must be marked with: (a) IP number, (b) “MEETS ICA-01”, and (c) treatment date or code.	Both require labeling for traceability, but ICA has highly specific marking criteria.
Records / Evidence	Form F13 – Harvest, Packing and Dispatch Record	Package marking verified before issuing Plant Health Assurance Certificate (PHAC)	FSQ uses general forms; ICA uses procedural verification as part of quarantine compliance.
Labelling Focus	Broad product and batch identification for business and customer requirements.	Narrow, regulated label content specific to ICA protocol and quarantine movement requirements.	FSQ supports commercial traceability; ICA enforces biosecurity traceability.
Overlap	Both require product identification before dispatch for traceability.	Same, but ICA is tightly aligned with treatment verification and regulated plant movement.	Partial overlap – same traceability objective, different operational and regulatory contexts.

Table 7.3 Comparison of **Traceability Identification**: FSQ4.2 vs ICA-04 NSW Fumigation with Methyl Bromide

The overlap between FSQ4.2 and ICA-04 NSW requirements has resulted in a perceived duplication due to their shared emphasis on product identification and traceability at the point of dispatch. While both frameworks require labelling of packed produce for traceability purposes, they serve different regulatory contexts: FSQ4.2 focuses on general compliance and market requirements, whereas ICA-04 mandates specific labelling aligned with biosecurity protocols, such as inclusion of the Interstate Produce (IP) number and treatment verification. This functional similarity, label-based traceability can give the impression of duplication, even though the intent and technical specifications differ. The perceived duplication between FSQ4.2 and ICA-04 NSW requirements largely stems from the similar wording and general interpretation of key terms such as “identification,” “traceability,” and “upon dispatch.” While both standards reference these concepts, their meanings and applications differ based on context. FSQ4.2 uses them in relation to market compliance and supply chain traceability, whereas ICA-04 applies them specifically within a biosecurity framework tied to treatment verification.

Example 4

Duplication type: Perceived Duplication

Aspect	FSQ4.2 Requirement	EPA ERA Standard for Banana Cultivation	Alignment/Difference
Purpose / Intent	Minimise food safety risks by ensuring fertilisers and soil additives are safely applied.	Ensure environmental compliance, particularly nutrient (N & P) load monitoring in banana cultivation.	Different intent: FSQ focuses on food safety, ERA focuses on environmental protection.
Scope of Record-Keeping	Application date, location, crop, product used, rate, weather, application method, applicator name.	Location, date, product name, rate, N & P composition, block-level N & P calculation using prescribed methodology.	FSQ focuses broadly on safe use; ERA requires nutrient-specific tracking.
Traceability Focus	General traceability to protect produce from contamination.	Block-level nutrient management and reporting for environmental regulation.	FSQ tracks operational input safety; ERA tracks environmental nutrient discharge compliance.
Evidence Requirements	Form F5 – Fertiliser and soil additives application record.	Records as per Appendices 1 and 2 (including prescribed N & P methodology and application data).	Both require detailed records, but data types and use-cases differ.
Overlap	Both require fertiliser application records to be maintained.	Same data type (fertiliser application) but collected for different compliance objectives.	Full overlap in activity (record-keeping) but with distinctly different regulatory intent.

Table 7.4: Comparison of **fertiliser and soil additive record-keeping requirements**: FSQ4.2 vs EPA ERA Standard for Banana Cultivation.

Fertiliser record-keeping obligations under Freshcare FSQ4.2 and the EPA’s ERA Standard for Banana Cultivation represent a clear case of perceived duplication. Both standards require similar documentation such as application dates, locations, and product types and use overlapping terminology like “record keeping for fertilisers and soil additives.” However, their compliance focus diverges: FSQ4.2 aims to manage food safety risks and enable product traceability, while the ERA standard emphasises environmental protection through nutrient input management, particularly nitrogen and phosphorus, at the farm block level using a prescribed calculation methodology. The similarity in language and record types can mislead businesses into thinking they are meeting the same requirement twice. In practice, the differing data detail and intent demonstrate that while the activities are related, they are not fully duplicated but rather reflect separate compliance drivers.

Example 5

Duplication type: Perceived Duplication

Aspect	FSQ4.2	Fair Farms	Alignment/Difference
Purpose/intent	Prevent chemical, microbial, and physical contamination of produce	Ensure workplace health and safety.	Different objectives— product safety vs worker safety.
Audience / Applicability	Applies to both workers and visitors who enter the production area.	Applies primarily to workers within the business unit.	FSQ includes external individuals (visitors); Fair Farms is employee focused.
Evidence Requirements	A maintained form with food safety instructions for workers and visitors (health, allergens, hygiene).	WHS signage and documentation demonstrating communication practices.	Both require documented evidence; forms vs signage emphasis.
Overlap	Signage and documentation used as communication tools. Some shared topics: chemical safety, hygiene, facilities, training.	Signage and documentation used as communication tools. Some shared topics: chemical safety, hygiene, facilities, training.	Shared tools (signage) and themes, but distinct compliance contexts. Partial overlap: methods align, purposes differ.

Table 7.5: Comparison of **communication of safety instructions to workers and visitors' requirements**: FSQ4.2 vs Fair Farms.

Comparison of FSQ4.2 and Fair Farms standards reveals a partial overlap in requirements relating to worker communication, signage, and instruction delivery. Although the language used across both schemes appears similar emphasizing concepts like "signage," "workers," and "instructions communicated" the underlying intent differs. This may lead to a perception of duplication, even when the implementation focus or compliance rationale diverges between programs. Although FSQ4.2 and Fair Farms use similar terms like "signage" and "instructions," their intent differs: FSQ4.2 focuses on operational compliance and food safety, while Fair Farms prioritizes ethical employment and worker welfare. FSQ4.2 aims to reduce food safety risks, whereas Fair Farms emphasizes communication that supports worker rights, and inclusion.

Example 6

Duplication type: Perceived Duplication

Aspect	FSQ4.2 Requirement	Fair Farms Requirement	Alignment/Difference
Purpose / Intent	Manage access to minimise the risk of contamination of produce from individuals suffering from or carrying foodborne illnesses.	Reduce the risk of illness or injury resulting from environmental hazards (e.g. extreme weather, sun exposure) through WHS controls.	Different intent: FSQ focuses on protecting produce from illness; Fair Farms focuses on protecting workers from becoming ill.
Scope of Procedures	Restrict access of symptomatic or infected individuals to food handling areas; require illness reporting.	Procedures in place to prevent illness/injury due to environmental exposure and fatigue; manage isolated workers.	FSQ applies to infectious disease risks; Fair Farms applies to environmental and physical hazards.
Target Population	Workers and visitors who may pose a contamination risk.	Workers exposed to environmental hazards.	FSQ applies to both workers and visitors; Fair Farms applies only to workers.
Evidence Requirements	Form F10 – Records of food safety instructions and compliance with illness reporting/access restrictions.	WHS documentation detailing procedures for managing fatigue, environment, and remote work.	Both require formal documentation of procedures, but for different types of health risks.
Overlap	Both address the issue of illness and procedures to mitigate associated risks.		Partial overlap: Shared concern about illness, but different causes, impacts, and risk contexts.

Table 7.6: Comparison of **worker illness reporting and access restrictions**: FSQ4.2 vs Fair Farms.

This figure presents a comparative overview of FSQ4.2 (Food Safety Quality) and Fair Farms program requirements as they relate to illness and risk management. The comparison is structured across five aspects: purpose/intent, scope of procedures, target population, evidence requirements, and areas of overlap. While both frameworks address health-related risks in horticultural operations, they differ in focus and application. FSQ4.2 is primarily concerned with protecting produce from contamination by managing the presence and reporting of foodborne illnesses among workers and visitors. In contrast, the Fair Farms requirement centres on protecting workers from environmental and occupational health risks through workplace health and safety (WHS) controls. The figure highlights these differences and identifies a partial overlap in their mutual interest in preventing illness, albeit from different sources and for different risk targets. While both reference terms like “illness,” “workers,” and “manage access,” the intent differs, FSQ4.2 focuses on biosecurity and operational continuity, whereas Fair Farms emphasizes worker wellbeing and protections for isolated or remote workers. Similar wording can lead to perceived duplication despite distinct underlying purposes.

Example 7

Duplication type: Perceived Duplication

Aspect	Freshcare FSQ4.2	Fair Farms	Alignment/Difference
Section Name	Chemicals	Safe Working Conditions	Different section focus
Element Focus	Train and authorise workers who store, handle, apply and dispose of chemicals	Maintain and implement appropriate WHS policies and procedures	Partial overlap
Training Requirement	Mandatory completion of a recognised chemical user course or equivalent (e.g., AHCCHM307, AHCCHM304)	Requires competency, training, and supervision, but no specific units cited	Different intent and specificity
Evidence Required	Training records with specified national units (Appendix A-F4)	WHS policy and procedures, possibly including training records	Partial overlap
Regulatory Reference	Aligned with national units of competence (via training.gov.au)	Refers to WHS Codes of Practice and Standards (e.g., AS4775-2007, AS1851-2012)	Different regulatory anchors
Intent	Protect food from chemical contamination through proper handling and application	Protect workers from chemical exposure and unsafe conditions	Different intent despite overlapping practice
Overlap Summary	Requires trained, authorised workers for chemical use	Requires WHS procedures including safe handling of hazardous substances	Yes — both require training and controls, but with different objectives

Table 7.7: Comparison of **chemical handling training and competency requirements**: FSQ4.2 vs Fair Farms.

This figure compares the treatment of chemical management training and controls under Freshcare FSQ4.2 and Fair Farms. Although both frameworks address chemical-related risks, they do so from distinct perspectives: Freshcare FSQ4.2 focuses on protecting produce from chemical contamination through the training and authorisation of workers who handle chemicals, while Fair Farms emphasises workplace health and safety, aiming to protect workers from chemical exposure and other hazards. The comparison highlights partial overlap, particularly in the requirement for training and procedural controls, but reveals different intents, levels of specificity, and regulatory references. Apparent duplication may arise from similarities in wording (e.g., "chemical training") and assumed equivalency in purpose, despite the underlying differences in scope and objectives.

Example 8

Duplication type: Perceived Duplication

Aspect	Freshcare FSQ4.2	HARPS	Alignment / Difference
Section Name	Hazard Analysis	Product Testing	Different section focus
Element Name / Focus	Conduct risk assessments for heavy metals	Microbiological, chemical, and heavy metal testing program	Both address heavy metal risks
Compliance Criteria	If risk from heavy metals is assessed as high (F1.2.1), implement controls and testing	Product testing (including heavy metals) is required, regardless of assessed risk	FSQ4.2 is risk-based; HARPS is prescriptive
Evidence Required	Form – F1 Risk Assessment – Heavy Metals; Factsheet – F1 Hazard Analysis	Testing records; no formalised procedure or supporting resource provided	FSQ4.2 provides structured tools; HARPS lacks formal procedural guidance
Trigger for Testing	Testing occurs only when risk is assessed as high	Testing is mandated regardless of risk level	Different decision logic for initiating testing
Intent / Approach	Manage site-specific risk and apply testing if needed	Standardised testing for verification across all sites/products	FSQ4.2 is conditional and site-specific; HARPS is broad and standardised

Table 7.8: Comparison of Heavy Metal Risk Management in FSQ4.2 and HARPS

There is perceived duplication between FSQ4.2 and HARPS due to both referencing “heavy metal testing”; however, the requirements differ significantly in context and intent. This table compares how Freshcare FSQ4.2 and HARPS address the management of heavy metal risks. Freshcare integrates heavy metal risk as part of its broader hazard analysis, requiring site- and crop-specific risk assessments to determine if testing is necessary. Testing and control measures are only implemented if the assessed risk is high, with support provided via structured forms and factsheets. In contrast, HARPS mandates routine product testing for heavy metals irrespective of assessed risk. The table highlights differences in risk-based versus prescriptive approaches and in the level of procedural support provided.

Example 9

Duplication type: Actual “True” Duplication

Aspect	FSQ4.2 Requirement	HARPS Requirement	Notes
Section Name	Incident Management, Recall and Withdrawal	Recall	Both relate to managing non-compliant or unsafe product through recall processes.
Intent / Purpose	Ensure produce that does not meet food safety requirements is effectively managed.	Ensure readiness to withdraw or recall product from the supply chain efficiently.	Same intent – protect food safety and ensure traceability in the event of a product issue.
Compliance Criteria	A test of the incident management plan is conducted at least annually. A record is kept.	A mock recall must be conducted annually, including a mass balance check. 100% of the product must be accounted for within 2 hours.	HARPS specifies timing and product selection; FSQ is broader but still requires annual testing and records.
Evidence / Records	Record of mock recall exercise, testing the incident management procedure.	Record of mock recall, including product traceability and reconciliation of mass balance.	Both require documented evidence of an annual mock recall.
Traceability Focus	Ability to simulate and respond to a food safety incident affecting product.	Ability to trace and account for 100% of product in a set timeframe to simulate a real-world recall.	Full alignment on traceability outcome.
Overlap	Test of the plan is required annually with evidence retained.	Same — annual mock recall with evidence retained.	Full overlap — same purpose, frequency, and core requirement.

Table 7.9: Comparison of Mock Recall Requirements in FSQ4.2 and HARPS

This table compares the recall and incident management provisions of Freshcare FSQ4.2 and HARPS. Both systems require businesses to conduct annual mock recalls or incident management tests and to retain records as evidence of compliance. The intent in both standards is to ensure that non-compliant or unsafe products can be efficiently traced and withdrawn from the supply chain, safeguarding food safety. While HARPS specifies stricter parameters such as the need to account for 100% of product within two hours, the fundamental requirement, purpose, and evidence expectations are fully aligned.

This represents a case of true duplication across both schemes. HARPS requires certification to a GFSI-recognised scheme, such as Freshcare FSQ, as a prerequisite, meaning the annual mock recall is already fulfilled under FSQ4.2. While this overlap has been acknowledged through the development of mutual recognition arrangements and combined audit frameworks, this example illustrates what can occur hypothetically when mutual recognition is not applied. In such cases, businesses may be required to demonstrate the same compliance activity twice, once for each standard, resulting in unnecessary regulatory duplication without added food safety value or other tangible or non-tangible benefits to businesses.

Example 10

Duplication type: The following example defines overlaps and intents across 5 programs where a combination of Actual “True” Duplication, and Perceived Duplication has been observed.

Program	Mapping Requirement	Intent / Purpose	Degree of Duplication	Key Notes
Freshcare FSQ	Property map must include key features such as workers' accommodation, buildings, packing facilities, amenities, production areas and growing sites.	Support food safety risk assessment and traceability.	True Duplication	Substantially aligned with HARPS and Fair Farms in scope and purpose.
HARPS	Requires a site map including buildings, production blocks, and relevant facilities as part of GFSI-aligned requirements.	Demonstrate site layout and support traceability and food safety.	True Duplication	Duplicates Freshcare requirement as a GFSI-benchmarked overlay.
Fair Farms	Requires a map showing farm layout including work areas, amenities, worker housing, and production zones.	Support ethical labour and workplace safety requirements.	True Duplication	Same mapping components, though driven by a workplace perspective.
ICA-07 (NSW)	Requires a facility plan, not a general property map. Must include road access, treatment area, segregation zones, and storage/consignment areas. Cold room numbers, location, and sensor identification must also be documented.	Ensure compliance with cold treatment procedures and biosecurity certification for host produce.	Partial Duplication/ Partly perceived	Some overlap in mapping physical infrastructure, but with a biosecurity-specific and prescriptive focus.
Environmental ERA Standard (Banana Cultivation)	Requires a map showing block areas, unique block identifiers, and leaf sampling locations as part of a nutrient management plan.	Facilitate environmental performance and compliance with prescribed methodologies.	Perceived Duplication	Appears similar due to "mapping" terminology, but the purpose and data requirements are environmentally driven and distinct from food safety or certification needs.

Table 7.10: Understanding Mapping Requirements: Property, Facility, and Farm Layouts Across Compliance Programs.

This example illustrates the varying nature of duplication in mapping requirements across five programs—Freshcare FSQ, HARPS, Fair Farms, ICA-07 (NSW), and the Environmental ERA Standard for Banana Cultivation. While the terms “map,” “layout,” or “plan” appear across these programs, the intent, detail, and regulatory context vary significantly.

There is true duplication among Freshcare FSQ, HARPS, and Fair Farms. All three programs require a property or farm map that includes similar elements such as workers' accommodation and facilities, relevant buildings, packing facilities and amenities, and clearly marked production areas and growing sites. These shared requirements support overlapping objectives including food safety risk assessment, traceability, and workplace compliance. However, the ICA-07 protocol in NSW introduces a different scope. While it also requires a site layout, it refers to this as a facility plan, reflecting its focus on biosecurity. There is a partial overlap—it includes documentation of infrastructure such as road access, treatment areas, segregation zones, and storage/consignment facilities, which can be found on general farm maps. But ICA-07 is more prescriptive, requiring detailed information specific to cold treatment processes, such as the number and location of cold rooms, and identification of each temperature sensor. The intent here is to certify biosecurity treatment and traceability for host produce under cold treatment procedures, making it distinct in both purpose and technical depth. In contrast, the Environmental ERA Standard for Banana Cultivation presents a case of perceived duplication. While it also refers to mapping requirements—such as the documentation of block area, block identifier, and leaf sampling locations—these serve a very different function. The mapping is part of an environmental nutrient management plan, required under the prescribed methodology for banana cultivation. Though similar language (e.g., “map”, “block”, “location”) may suggest overlap, the intent differs significantly, as the focus is on environmental compliance and performance, not food safety or certification.

Table 8.1: Comparative Mapping of FSQ4.2 Requirements Against Fair Farms Requirements

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Hazard analysis	Risk assessments for persistent chemicals	2/2	0/2
Hazard analysis	Risk assessments for heavy metals	2/2	0/2
Hazard analysis	Risk assessments for fertilisers and soil additives	2/2	0/2
Hazard analysis	Risk assessments for pre-harvest water	2/2	0/2
Hazard analysis	Risk assessment for an additional food safety hazard	1/1	0/2
Hazard analysis	Justification with a risk assessment of any aspect of non-implementation of the standard	1/1	0/2
Chemicals	Store, manage, and dispose of chemicals	6/6	0/6
Chemicals	Train and authorize workers	2/3	0/3
Premises, Facilities, Equipment, Tools, Packaging and Vehicles	Provide and maintain toilets and handwashing facilities	0/2	1/2
People	Communicate food safety instructions to workers and visitors	1/3	0/3
People	Manage access to property and handling areas	1/2	0/2
Product identification and traceability	Establish a system to track produce from production to its destination.	1/6	0/6

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with Fair Farms were identified.

Table 8.1 (continued): Comparative Mapping of FSQ4.2 Requirements Against Fair Farms Requirements

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	No. of overlaps/no. of cc in each element	
		Perceived overlap	True overlap
Scope and commitment	Define the business scope and the scope of certification	1/3	0/3
Scope and commitment	Identify property areas, infrastructure and local activities on a property map.	1/1	1/1
Scope and commitment	Define the roles, responsibilities and reporting relationships of workers responsible for the management of food safety and quality.	2/5	0/5
Scope and commitment	Document the business commitment to program.	4/4	0/4
Documentation	Verify compliance through relevant documents and records.	3/4	0/4
Training and Development	Train workers to ensure basic food safety awareness.	7/7	0/7
Internal audit, corrective and preventative action	Conduct internal audits to verify ongoing compliance with this Standard.	1/2	0/2
Internal audit, corrective and preventative action	Complete corrective actions for any non-compliance.	3/3	0/3
Total overlaps		43	2
Total percentage of overlaps (both perceived and true)		24%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with Fair Farms were identified.

Table 8.2: Comparative Mapping of FSQ4.2 Requirements Against EPA Agricultural ERA Standard for Banana Cultivation

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	No of overlaps/no. of cc in each element	
		Perceived overlap	True overlap
Fertilisers and soil additives	Manage fertilisers and soil additives to minimise the risk of contaminating produce.	1/9	0/9
Scope and commitment	Identify property areas, infrastructure and local activities on a property map.	1/1	0/1
Total overlaps		2	0
Total percentage of overlaps (both perceived and true)		1%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with EPA Agricultural ERA Standard for Banana Cultivation were identified.

Table 8.3: Comparative Mapping of FSQ4.2 Requirements Against HARPS

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Hazard analysis	Risk assessments for persistent chemicals	2/2	0/2
Hazard analysis	Risk assessments for heavy metals	2/2	0/2
Hazard analysis	Risk assessments for fertilisers and soil additives	2/2	0/2
Hazard analysis	Risk assessments for pre-harvest water	2/2	0/2
Hazard analysis	Review of annual risk assessments.	1/1	0/1
Growing Site	Manage growing sites to minimise the risk of contaminating produce.	1/9	3/9
Chemicals	Test produce for chemical residues to verify that chemicals are applied correctly, withholding periods are observed and produce complies with MRLs.	1/3	2/3
Fertilisers and soil additives	Manage fertilisers and soil additives to minimise the risk of contaminating produce.	2/9	4/9
Water	Manage and maintain water sources and infrastructure.	2/4	0/4
Water	Manage all other water usage.	0/3	1/3
Allergens	Identify and manage potential sources of allergens.	0/3	1/3
Allergens	Manage allergen labelling.	0/1	1/1

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with HARPS were identified.

Table 8.3 (continued): Comparative Mapping of FSQ4.2 Requirements Against HARPS

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Premises, facilities, equipment, tools, packaging and vehicles	Construct and maintain growing, handling, packing and storage facilities to ensure they are suitable for the production and preparation of produce.	9/11	0/11
Premises, facilities, equipment, tools, packaging and vehicles	Construct and maintain facilities for handling and packing produce for retail sale (includes, but is not limited to, retail crates, pre-packs).	1/3	1/3
Premises, facilities, equipment, tools, packaging and vehicles	Provide and maintain toilets and hand washing facilities to minimise the risk of contaminating produce.	2/2	0/2
Premises, facilities, equipment, tools, packaging and vehicles	Maintain and clean tools, equipment and containers that contact produce.	4/6	2/6
Premises, facilities, equipment, tools, packaging and vehicles	Maintain monitoring and measuring equipment.	0/1	1/1
Premises, facilities, equipment, tools, packaging and vehicles	Manage packaging materials to minimise the risk of contaminating produce.	1/3	0/3
Premises, facilities, equipment, tools, packaging and vehicles	Preventative maintenance, and cleaning is effective to minimise the risk of contaminating produce.	0/5	4/5

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with HARPS were identified.

Table 8.3 (continued): Comparative Mapping of FSQ4.2 Requirements Against HARPS

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Premises, facilities, equipment, tools, packaging and vehicles	Waste is managed and appropriately disposed of.	2/3	0/3
Animals and pests	Measures are taken to minimise animal and pest presence.	1/1	0/1
People	Food safety instructions are communicated to workers and visitors to minimise the risk of chemical, microbial and physical contamination of produce.	4/6	0/6
People	Manage access to the property, growing sites and product handling areas to minimise the risk of contamination of produce.	1/2	0/2
Suppliers	Identify and manage materials and services that may introduce a food safety risk.	1/5	1/5
Incident management, recall and withdrawal	Maintain an incident management plan to ensure produce that does not meet food safety requirements is effectively managed.	1/4	1/4
Incident management, recall and withdrawal	Manage product recall and withdrawal.	2/4	0/4
Scope and commitment	Define the business scope and the scope of Freshcare certification.	0/3	2/3
Scope and commitment	Identify property areas, infrastructure and local activities on a property map.	0/1	1/1

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with HARPS were identified.

Table 8.3 (continued): Comparative Mapping of FSQ4.2 Requirements Against HARPS

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Scope and commitment	Define the roles, responsibilities and reporting relationships of workers responsible for the management of food safety and quality.	1/4	0/4
Scope and commitment	Document the business commitment to food safety and quality and the Freshcare Program.	1/4	0/4
Documentation	Procedures and/or work instructions are maintained for activities that impact food safety or quality.	0/2	1/2
Training and development	Complete Freshcare training.	0/1	1/1
Training and development	Train all workers who complete tasks relevant to this Standard to ensure a base level of food safety awareness.	0/6	2/6
Internal audit, corrective and preventative action	Conduct internal audits to verify ongoing compliance with this Standard.	1/2	1/2
Customer requirements	Comply with customer specifications.	3/3	3/3
No. of overlaps in each category		53	33
Total percentage of overlaps (both perceived and true)		43%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with HARPS were identified.

Table 8.4.1: Comparative Mapping of FSQ4.2 Requirements Against ICA01 NSW – Dipping with Dimethoate

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Chemicals	Maintain and calibrate chemical application equipment.	1/3	1/3
Chemicals	Manage mixing and disposal of chemical solutions to minimise the risk of contaminating produce.	0/2	1/2
Chemicals	Record all chemical applications.	1/2	0/2
Product identification and traceability	Maintain a product identification and traceability system to enable produce to be traced from production to its destination.	1/6	0/6
No. of overlaps in each category		3	2
Total percentage of overlaps (both perceived and true)		3%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with ICA01 NSW – Dipping with Dimethoate were identified.

Table 8.4.2: Comparative Mapping of FSQ4.2 Requirements Against ICA02 NSW – Flood spraying with dimethoate

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Chemicals	Maintain and calibrate chemical application equipment.	1/3	1/3
Chemicals	Manage mixing and disposal of chemical solutions to minimise the risk of contaminating produce.	0/2	1/2
Product identification and traceability	Maintain a product identification and traceability system to enable produce to be traced from production to its destination.	1/6	0/6
No. of overlaps in each category		3	2
Total percentage of overlaps (both perceived and true)		3%	

partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with ICA02 NSW – Flood spraying with dimethoate were identified.

Table 8.4.3: Comparative Mapping of FSQ4.2 Requirements Against ICA04 NSW – Fumigation with methyl bromide

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Chemicals	Maintain and calibrate chemical application equipment.	0/3	1/3
Chemicals	Record all chemical applications	1/2	0/2
Premises, Facilities, equipment, tools, packaging and vehicles	Maintain monitoring and measuring equipment.	1/1	0/1
Premises, Facilities, equipment, tools, packaging and vehicles	Manage produce transport vehicles to minimise the risk of contaminating produce.	1/3	0/3
Product identification and traceability	Maintain a product identification and traceability system to enable produce to be traced from production to its destination.	1/6	0/6
No. of overlaps in each category		4	1
Total percentage of overlaps (both perceived and true)		3%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with ICA04 NSW – Fumigation with methyl bromide were identified.

Table 8.4.4: Comparative Mapping of FSQ4.2 Requirements Against ICA07 NSW – Cold treatment and certification of host produce

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Premises, Facilities, equipment, tools, packaging and vehicles	Maintain monitoring and measuring equipment.	1/1	0/1
Premises, Facilities, equipment, tools, packaging and vehicles	Construct and maintain cooling systems to minimise the risk of contaminating produce.	2/2	2/2
Product identification and traceability	Maintain a product identification and traceability system to enable produce to be traced from production to its destination.	4/6	0/6
Scope and commitment	Identify property areas, infrastructure and local activities on a property map.	1/1	0/1
No. of overlaps in each category		8	2
Total percentage of overlaps (both perceived and true)		5%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with ICA07 NSW – Cold treatment and certification of host produce were identified.

Table 8.4.5: Comparative Mapping of FSQ4.2 Requirements Against ICA08 NSW - Mature Green Condition and Immature Green Condition of Papaw and Babaco

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Premises, Facilities, equipment, tools, packaging and vehicles	Maintain monitoring and measuring equipment.	1/1	0/1
Premises, Facilities, equipment, tools, packaging and vehicles	Construct and maintain cooling systems to minimise the risk of contaminating produce.	2/2	2/2
Product identification and traceability	Maintain a product identification and traceability system to enable produce to be traced from production to its destination.	4/6	0/6
Scope and commitment	Identify property areas, infrastructure and local activities on a property map.	1/1	0/1
Customer requirements	Comply with customer specifications.	2/3	0/3
No. of overlaps in each category		10	2
Total percentage of overlaps (both perceived and true)		6%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with ICA08 NSW - Mature Green Condition and Immature Green Condition of Papaw and Babaco.

Table 8.4.6: Comparative Mapping of FSQ4.2 Requirements Against ICA 15 NSW - Mature green condition of Passionfruit, Tahitian limes and Black Sapotes

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Product identification and traceability	Maintain a product identification and traceability system to enable produce to be traced from production to its destination.	3/6	0/6
Scope and commitment	Identify property areas, infrastructure and local activities on a property map.	1/1	0/1
Customer requirements	Comply with customer specifications	2/3	0/3
No. of overlaps in each category		6	0
Total percentage of overlaps (both perceived and true)		3%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with ICA 15 NSW - Mature green condition of Passionfruit, Tahitian limes and Black Sapotes.

Table 8.4.7: Comparative Mapping of FSQ4.2 Requirements Against ICA 16 - NSW Certification of mature green condition of bananas

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Product identification and traceability	Maintain a product identification and traceability system to enable produce to be traced from production to its destination.	1/6	0/6
Customer requirements	Comply with customer specifications.	1/3	0/3
No. of overlaps in each category		2	0
Total percentage of overlaps (both perceived and true)		2%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with ICA 16 - NSW Certification of mature green condition of bananas.

Table 8.4.8: Comparative Mapping of FSQ4.2 Requirements Against ICA 18 - NSW Treatment and inspection of custard apples and other Annona spp.

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Chemicals	Maintain and calibrate chemical application equipment	2/3	0/3
Chemicals	Record all chemical applications	1/2	0/2
Premises, facilities, equipment, tools, packaging and vehicles	Manage produce transport vehicles to minimise the risk of contaminating produce.	1/3	0/3
Product identification and traceability	Maintain a product identification and traceability system to enable produce to be traced from production to its destination.	2/6	0/6
Scope and commitment	Identify property areas, infrastructure and local activities on a property map.	0/1	1/1
Customer requirements	Comply with customer specifications.	1/3	0/3
No. of overlaps in each category		7	1
Total percentage of overlaps (both perceived and true)		4%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with ICA 18 - NSW Treatment and inspection of custard apples and other Annona spp.

Table 8.4.9: Comparative Mapping of FSQ4.2 Requirements Against ICA 20 - NSW Pre-harvest treatment and post-harvest inspection of Table Grapes

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Scope and commitment	Identify property areas, infrastructure and local activities on a property map.	0/1	1/1
Product identification and traceability	Maintain a product identification and traceability system to enable produce to be traced from production to its destination.	1/6	0/6
Customer requirements	Comply with customer specifications.	1/3	0/3
No. of overlaps in each category		2	1
Total percentage of overlaps (both perceived and true)		2%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with ICA 20 - NSW Pre-harvest treatment and post-harvest inspection of Table Grapes.

Table 8.4.10: Comparative Mapping of FSQ4.2 Requirements Against ICA-30 -Hard Green Condition of Avocados Requirements

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Scope and commitment	Identify property areas, infrastructure and local activities on a property map.	0/1	1/1
Product identification and traceability	Maintain a product identification and traceability system to enable produce to be traced from production to its destination.	3/6	0/6
No. of overlaps in each category		3	1
Total percentage of overlaps (both perceived and true)		2%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with ICA-30 -Hard Green Condition of Avocados Requirements.

Table 8.4.11: Comparative Mapping of FSQ4.2 Requirements Against ICA 31-NSW pre-harvest treatment and inspection of blueberries for blueberry rust.

FSQ4.2 Section Name	FSQ4.2 Element Name Summary	Total no of overlaps/Total no. of cc in each element	
		Perceived overlap	True overlap
Scope and commitment	Identify property areas, infrastructure and local activities on a property map.	0/1	1/1
Chemicals	Maintain and calibrate chemical application equipment.	1/3	0/3
Chemicals	Record all chemical applications	1/2	0/2

Product identification and traceability	Maintain a product identification and traceability system to enable produce to be traced from production to its destination.	2/6	0/6
Customer requirements	Comply with customer specifications	2/3	0/3
No. of overlaps in each category		6	1
Total percentage of overlaps (both perceived and true)		4%	

Note: cc: compliance criteria; FSQ4.2= Freshcare Food Safety and Quality version 4.2; where an overlap is neither a true nor a perceived overlap, the overlap either does not exist or is a potential overlap that requires further assessment. Perceived overlaps include partial or full overlaps with different intent, or partial overlaps with the same intent, whereas true duplication refers only to full/partial overlaps with the same intent. This table includes only those FSQ4.2 elements where perceived or true compliance criteria overlaps with ICA 31-NSW pre-harvest treatment and inspection of blueberries for blueberry rust.

Challenges

1. Multiple levels of overlaps

This research has revealed multiple levels of overlaps in compliance requirements, both perceived and true, as described in Table 7. These overlaps create confusion, increasing the complexity of compliance and making it difficult for growers to distinguish between redundant, complementary, or conflicting requirements. As a result, growers may struggle with inefficiencies, duplication of effort, and uncertainty in meeting all necessary standards and legislative requirements.

2. Inconsistent language

Mapping compliance programs in this research revealed discrepancies in terminology use, and naming conventions, some of the examples are detailed below:

- For instance, ICA biosecurity procedures refer to a **“Facility Plan”**, while Fair Farms, Freshcare, and HARPS use **“Property Plan”**, and the Agricultural ERA Standard for banana cultivation calls it a **“Farm Map.”** While these terms might seem interchangeable, a deeper analysis of their requirements shows that they serve distinct purposes.
- The following terms although similar meaning have either inconsistent naming or interpretations in the glossaries of the standard manuals.

Program	Naming	Interpretation
Freshcare	Supplier	An individual or business that supplies materials or services.
HARPS	Supplier	The grower / packer of product to which Approval applies.
HARPS	Approved supplier	A supplier who is approved by the business to provide a product or service that meets defined specifications.
HARPS	Ancillary services	Ancillary services, that is support services, may be provided within the business onsite and include processes such as ripening and fumigation. Ancillary services provided on a different site within the business require that site to be approved. Ancillary services provided by a different party require that party to be managed as an approved supplier.

- The presence of inconsistency in naming conventions across programs had been identified.

Program	Naming	Interpretations
Freshcare	Compliance criteria	specific requirements that need to be met to demonstrate compliance to the Standard Element.
HARPS	Requirement	specific requirements that need to be met to demonstrate compliance to the Standard Element.
Fair Farms	Requirement (element)	The element describes the outcomes required, the practices needed to ensure compliance and records that may be used to demonstrate compliance with the Fair Farms Standard.

3. Unclear guidance

A key challenge identified in mapping compliance standards is the lack of clear and consistent guidance in the program resources. A lack of standardization in essential and overlapping compliance documents across different programs, such as worker position descriptions, presents a significant challenge. For example, Fair Farms users are provided with two separate resources for position description templates, one within the program manual and another from Fair Work templates as an external resource, while Freshcare offers its own distinct template. This inconsistency creates confusion for growers, making it difficult to ensure compliance with all requirements. As a result, there is an increased risk of misinterpretation and duplication of effort. Further complexity was observed during grower engagement at industry conference, Hort Connections 2024. A common point of confusion was the treatment of Brussels sprouts, which have specific biosecurity requirements for shipment but are not covered under the Primary Production and Processing (PPP) Standards for Horticulture currently applicable to berries, leafy vegetables, and melons. Although crop groupings such as Group 013 (Leafy Vegetables) are used consistently in regulation, the definition of "leafy vegetables" is not explicitly stated, creating ambiguity and the mistaken assumption that Brussels sprouts fall within this category whereas as per the botanical and culinary classification, 'brussel sprouts' do not fall in the 'leafy greens' category. This highlights a broader challenge where a lack of clarity in crop definitions leads to misinterpretation and inconsistent application of regulatory requirements.

4. Inconsistencies in audit checklists

A key challenge identified by the RegTech Horticulture Community of Practice is the inconsistency in audit checklists, which makes compliance preparation difficult for growers. The order of questions in audit checklists often does not align with the structure of the standard manual, the primary resource used by growers for audit preparation. Additionally, there is a lack of uniformity between checklists developed by certification bodies and those outlined in the standards, leading to confusion and inefficiencies in the audit process. These inconsistencies create additional administrative burdens and increase the risk of non-compliance due to misinterpretation of requirements.

5. Volume and vastness of resources

Compliance manuals and interpretive guides are often extensive, making it challenging for users to navigate requirements efficiently. For instance, the Freshcare manual and interpretive guide consists of 129 pages, while the HARPS manual and interpretive guide spans 168 pages. The sheer volume of information can be overwhelming, increasing the likelihood of misinterpretation and inefficiencies in implementation.

6. Inefficiency in transfer of advances in knowledge

A significant challenge within compliance and regulatory frameworks is the inefficient transfer of updated or accurate knowledge. This was evident during the use of ICA 01 as a case study for mapping, where findings were presented to the Horticulture Community of Practice (CoP). At the time, several CoP members, including growers, incorrectly asserted that the ICA 01 procedure had expired. However, upon further investigation, reviewing multiple authoritative web pages and directly contacting the relevant team leader it was confirmed that the procedure itself remains valid. Only specific 'use patterns of dimethoate' had expired, not the entire protocol. This case highlights how misunderstandings, stemming from inadequate or unclear knowledge dissemination, can lead to misinformed decisions and misinterpretations across the industry.

Opportunities

Several opportunities have been identified to streamline compliance overlaps and enhance efficiency in compliance processes. These opportunities focus on reducing duplication where possible and where present, minimizing the administrative burden on stakeholders, and improving cross-recognition of standards where overlaps exist particularly where true duplications are present. The opportunities are grouped into 3 major categories.

1. Stakeholder engagement for program overlaps cross-recognitions

The overlapping program criteria identified present an opportunity to strengthen stakeholder engagement to enhance overall efficiency in compliance processes. There is opportunity to engage stakeholders in discussions on potential of cross-recognition and alignment of compliance processes, where possible. By facilitating collaboration among regulatory bodies, industry groups, and certification programs, stakeholder engagement can help streamline requirements, reduce duplication, and improve overall efficiency. Clear communication and mutual recognition of overlaps can minimize administrative burden, enhance compliance clarity, and support a more cohesive compliance framework for all stakeholders involved. An in-principle agreement between the parties is a prerequisite for streamlining overlaps.

2. Improved guidance and consistency

Another key opportunity is to improve clarity and consistency of terminology across programs by distinguishing between similar terms with different intents and standardizing terms that have the same intended meaning. This would enhance stakeholder understanding and reduce the risk of misinterpreting compliance requirements. Furthermore, opportunities exist to improve clarity in language in the compliance program guidance materials by removing any unnecessary repetition such as similar wordings and overall ambiguity. Opportunity also exists in efficient transfer of advances in knowledge within the industry.

3. Streamlining overlapping requirements

The identified overlapping requirements across programs present an opportunity to streamline compliance processes through a combination of strategic approaches and technological approaches to reduce the burden on growers. By simplifying overlapping frameworks, where feasible, growers can focus on meeting essential standards without unnecessary administrative complexity, ultimately improving adherence and reducing the risk of misinterpretation.

Options

To address overlapping and cumbersome compliance requirements effectively, several solutions can be implemented. The following options have been identified through desktop search based on similar approaches in the industry as well as from the input from the RegTech Horticulture Community of Practice and the Volunteer Technologist Working Group.

1. Cross-Recognition and Mutual Agreements of Compliance Programs

1.1 Establish agreements within regulatory bodies and between regulatory bodies and certification programs to recognize overlapping compliance requirements and/or systems.

To leverage stakeholder engagement for addressing program overlaps and achieving cross-recognition, several approaches can be considered. Facilitated industry forums and working groups can be established to bring together regulatory bodies, certification programs, and industry representatives to discuss alignment opportunities. Memorandums of Understanding (MoUs) or formal agreements between compliance programs can be explored to recognize equivalent requirements and streamline auditing processes. An example of a facilitated industry forum in the horticulture industry in Australia is the Harmonized Australian Retailer Produce Scheme (HARPS) Technical Advisory Group. HARPS was established to streamline food safety certification requirements for suppliers to major Australian retailers. The Technical Advisory Group brings suppliers, growers, peak industry bodies, industry associations, auditors and scheme owners to align food safety requirements and reduce duplication in audits. A practical example of cross-recognition through formal agreements is the Australian Government's recognition of Global Food Safety Initiative (GFSI) certification in horticulture packhouses and registered establishments. Since 1 October 2022, businesses certified under an approved Global Food Safety Initiative (GFSI) scheme, such as GLOBALG.A.P., Freshcare, BRC Global Standard for Food Safety, and SQF, have been eligible for a time reduction in departmental audits. Additionally, GFSI certification can be used as evidence for meeting certain compliance requirements related to pest control, hygiene, and waste management. A recent example of formal arrangements between government and industry to streamline overlapping requirements is seen from the recognition of Freshcare Food Safety and Quality standard certification for the Government's Primary Production and Processing (PPP) food safety requirements for berries, leafy vegetables and melons.

1.2 Develop standardised frameworks for mutual recognition to reduce duplication in audits and reporting.

Developing standardised frameworks, where feasible, for mutual recognition can significantly reduce duplication in audits and reporting, making compliance processes more efficient for businesses. For example, the combined resources (e.g. harmonised audit checklist consolidating overlapping criteria) of HARPS (Harmonized Australian Retailer Produce Scheme) and Freshcare have been instrumental in streamlining food safety and quality certification requirements in Australia. Both HARPS and Freshcare work together to align their standards and auditing processes, ensuring that businesses can meet multiple certification requirements with a single audit. This reduces the burden on growers by consolidating resources, simplifying reporting, and minimizing the risk of duplicating effort. Additionally, by aligning compliance timelines i.e. audit schedules and criteria, businesses can demonstrate compliance with greater ease and efficiency. This model could serve as a valuable

reference for developing broader frameworks of mutual recognition across other industries and compliance programs. Another option for solution is to standardise templates, where feasible, for overlapping compliance documents, such as position descriptions to help reduce confusion and improve efficiency.

2.0 Improved Clarity and Consistency in Compliance guidance

2.1 Conduct periodic reviews of standards to eliminate inconsistencies and ambiguities.

To address these challenges, periodic reviews of compliance standards should be conducted to identify and eliminate inconsistencies. Regular evaluations will help ensure that duplicative requirements are identified and where feasible standardised. The regulator evaluations will also ensure that standards remain up to date, aligned with industry advancements, and effectively address emerging challenges. A systematic review process can also improve stakeholder engagement by incorporating feedback from industry experts, researchers, and policymakers. By refining compliance frameworks through continuous assessment, a more transparent and predictable compliance environment can be established, promoting compliance and operational efficiency. The challenges of unclear guidance, inconsistent language and duplication can be addressed through regular reviews.

2.2 Develop a comprehensive glossary to clarify similar but distinct terminologies

One of the key challenges growers faces in compliance is the ambiguity and overlap of technical terminologies. This can result in misinterpretations and unintended non-compliance. A practical solution to address this issue is to develop a comprehensive glossary to clarify similar but distinct terminologies. This would help standardise definitions across compliance documents, ensuring that growers, and wider industry stakeholders, have a shared understanding of critical terms.

2.3 Enhancing Consistency in Audit Checklists

Feedback from the RegTech Horticulture Community of Practice highlighted challenges in navigating audit checklists due to inconsistencies in their structure. Specifically, growers find it difficult to prepare for audits because the order of questions in the checklist does not align with the standard manual, which is their primary resource for preparation. Additionally, discrepancies exist between checklists developed by certification bodies and those outlined in the standards, creating further confusion. To address these issues, the RegTech Horticulture Community of Practice suggested harmonizing audit checklists across certification bodies and standards. Furthermore, it was suggested that checklists include clear referencing details, such as links to specific sections of the manual, to improve usability and ensure a more streamlined audit process.

3.0 Leveraging RegTech for Streamlined Compliance

A key opportunity exists to leverage regulatory technology (RegTech) to automate complex compliance processes such as navigating the web of compliance requirements to save time and costs that are involved in either otherwise manual work or in searching for business information for compliance purposes. Additionally, leveraging RegTech solutions to minimise duplication can further enhance efficiency by automating compliance, consolidating reporting processes, and ensuring real-time visibility into compliance requirements. These technological solutions help reduce manual effort while improving accuracy and consistency across compliance programs.

3.1 Knowledge Bank / Hub for Regulatory and Compliance Mapping

The RegTech Horticulture Community of Practice has identified the need for a Knowledge Bank / Hub that maps the landscape of all regulatory and compliance obligations relevant to growers. Rather than holding the information itself, this platform would provide links to the latest versions of compliance documents and resources. Growers would use a "smart checklist" to answer a series of questions tailored to their specific needs, such as: *What do you want to grow? Where do you want to grow it? Who do you want to supply to? Which states or countries do you want to supply to? What do you want to be known for (e.g., Organic, provenance)?* Based on these answers, the platform could link the grower to relevant resources, such as peak industry body websites, which already host comprehensive data on specific standards and guidelines.

A potential challenge in maintaining this resource is ensuring it remains up to date with the ever-evolving compliance landscape. However, the solution discussed within the Community of Practice is to leverage firms that specialize in providing real-time updates to legislation as it is approved. Additionally, program owners and peak industry bodies could be contracted to provide ongoing updates.

This approach would also streamline audit processes, as the information required for audits could be integrated into Business Management Systems (BMS). Audits would become part of the regular business workflow, with the BMS drawing down the necessary audit reports, including a set of questions and records that the auditor requires. This would significantly reduce the time and effort spent on audits for all parties involved, providing a more efficient and effective compliance management system.

3.2 Enhancing Audit Efficiency Through Standardised Tools

Feedback from the CoP emphasized the need for greater efficiency and consistency in audit preparation and execution. To address this, the following four key suggestions were proposed:

- 1. Centralized Audit Database**

Establishing a comprehensive database containing all requirements and audit questions from relevant standards. This database would enable the generation of a consolidated audit checklist tailored to any combination of standards, streamlining the audit process and reducing duplication for growers undergoing multiple certifications.

- 2. Look-Up Tables for Standardised Definitions**

Developing look-up tables with clear definitions, exclusions, and footnotes specific to commodities and locations. This would help ensure consistency in interpretation, minimize confusion, and improve compliance understanding for both auditors and growers.

- 3. Dynamic Database for Real-Time Standard Updates**

The Hort-CoP identified the complexity of maintaining up-to-date audit requirements and ensuring consistent interpretation across audits. To address this, a recommendation was made to develop a real-time, updatable database managed by standard owners. This database would provide auditors with the latest guidance on interpreting requirements, ensuring alignment with current industry practices and regulatory expectations. Additionally, standard owners could use this platform to mediate feedback from auditees, auditors, certification bodies (CBs), and other stakeholders, allowing continuous updates without

waiting for formal republication of interpretive guidelines. Implementing such a system would enhance transparency, reduce inconsistencies in audits, and improve adaptability to evolving compliance needs.

4. Integrated Record-Keeping Software Application for Growers and Supply Chain

The Hort-CoPHor highlighted the need for a comprehensive record-keeping application (app) to support growers and supply chain stakeholders in managing compliance requirements efficiently. This app would serve as a centralized platform for storing, tracking, and retrieving essential records related to audits, certifications, traceability, and regulatory obligations. By integrating multiple compliance needs into a single digital tool, the app would reduce administrative burdens, improve data accessibility, and enhance transparency across the supply chain. Features such as automated reminders, document uploads, and real-time data sharing with auditors and certification bodies could further streamline compliance management and improve operational efficiency for growers.

Recommendations

Enhance Stakeholder Consultation for Program Overlap and Cross-Recognition

To address inefficiencies in compliance requirements and minimize regulatory redundancy, it is recommended that structured stakeholder engagement initiatives be established. These initiatives should focus on improving dialogue, aligning standards, and developing frameworks for mutual recognition across compliance programs. The following actions are proposed:

1. **Establish structured stakeholder engagement forums**
Regular consultation forums should be created to facilitate dialogue between regulatory bodies, industry representatives, and research institutions. These forums would serve as a platform to identify and resolve inconsistencies in compliance requirements.
2. **Develop a framework for mutual recognition**
A structured framework should be designed to enable the recognition of overlapping compliance programs. This would reduce duplication, enhance efficiency, and provide clarity for growers and industry stakeholders.

Leverage RegTech to reduce duplication and streamline complex compliance processes

Based on feedback from the Horticulture Community of Practice and findings from this research, the following technological solutions are recommended to enhance compliance management and streamline the auditing process for growers. **The main RegTech solution recommended by the VTWG are outlined in the next section:**

1. **Establish a Centralized Database for Audit Questions and Standards**
It is recommended that a comprehensive database be developed to store all requirements and audit questions from relevant standards. This would allow for the generation of a consolidated audit checklist that can be customized for any combination of standards in a single audit, reducing redundancy and simplifying the audit process for growers.
2. **Develop Look-Up Tables for Standardised Definitions and Exclusions**
A system of look-up tables should be implemented to provide clear, consistent definitions, exclusions, and footnotes specific to different commodities and locations. This would ensure a uniform understanding of compliance requirements and help minimize confusion during audits.
3. **Create a Real-Time, Updatable Database for Interpretation Guidance**
It is recommended to develop a dynamic, real-time database that can be updated by standard owners with interpretation guidance for auditors. This would enable auditors to access the latest requirements and interpretations, reducing inconsistencies and improving the accuracy of audits. Furthermore, standard owners could mediate feedback from stakeholders and update the database without waiting for formal republication.
4. **Implement a Knowledge Bank / Hub for Regulatory and Compliance Mapping**
A centralized Knowledge Bank / Hub should be established to map the landscape of all regulatory and compliance obligations. This platform would provide links to the latest versions

of relevant regulatory documents and allow growers to access tailored resources based on their specific business needs. A "smart checklist" could help growers identify the exact compliance requirements based on questions such as *What do you want to grow? Where do you want to grow it?* This would ensure that growers are always directed to the most relevant and up-to-date resources.

5. **Integrate Audit Processes into Business Management Systems**

To reduce the administrative burden of audits, it is recommended to integrate audit requirements directly into Business Management Systems (BMS). This would allow the BMS to automatically generate audit reports, including all necessary questions and records. By doing so, the audit process would become a seamless part of daily business operations, saving time and improving efficiency for both growers and auditors.

Improved Clarity and Consistency in Compliance Guidance

To enhance regulatory transparency and reduce inconsistencies in compliance guidance, it is recommended that the following measures be implemented:

1. **Conduct Periodic Reviews of Standards**

Periodic reviews of compliance standards should be conducted to identify and eliminate inconsistencies and ambiguities. These evaluations will:

- Identify duplicative or conflicting requirements and, where feasible, standardise them.
- Ensure that compliance standards remain up to date and aligned with industry advancements.
- Incorporate feedback from key stakeholders, including industry experts, researchers, and policymakers, to improve regulatory frameworks.

A structured review process will help address challenges related to unclear guidance, inconsistent language, and duplication, ensuring that standards evolve alongside industry developments.

2. **Develop a Comprehensive Glossary for Compliance Terminologies**

To mitigate the challenge of ambiguous and overlapping technical terminologies in compliance documentation, it is recommended that a comprehensive glossary be developed. This glossary should:

- Standardise definitions across compliance documents to ensure a shared understanding of key terms among growers and stakeholders.
- Reduce misinterpretation of compliance requirements, thereby minimizing instances of unintended non-compliance.
- Be regularly updated in consultation with regulatory authorities, industry bodies, and subject matter experts.

A standardised glossary will provide greater clarity and facilitate more consistent application of compliance requirements across the horticulture industry.

3. Enhance Consistency in Audit Checklists

Feedback from the RegTech Horticulture Community of Practice has highlighted the need for greater consistency in audit checklists to improve grower preparedness and streamline audits. To address this, the following actions are recommended:

- **Harmonize audit checklists** across certification bodies and compliance standards to ensure alignment and eliminate discrepancies.
- **Improve checklist structure** by ensuring that audit questions follow the same order as those in the compliance manual, making it easier for growers to prepare.
- **Include clear referencing details** in audit checklists, such as direct links or citations to specific sections of the compliance manual, to improve usability.

Implementing these measures will reduce confusion, improve audit efficiency, and ensure a more consistent compliance assessment process across the industry.

Identification of the Problem statement and RegTech recommendations

The research insights from the compliance landscape review, duplication analysis, and grower survey findings were synthesised into a problem statement, which was subsequently presented to the Volunteer Technologist Working Group for potential RegTech solution(s) recommendations. The VTWG proposed four solution options, which were evaluated against feasibility, governance requirements, and long-term value to the sector. These recommendations informed the preferred path forward, including a detailed phased investment approach. The full set of options and rationale for the recommended pathway are outlined in a separate document, provided as **Report A2: Options Paper** in the appendix.

Problem statement

The horticulture industry faces a fragmented and complex compliance landscape, with over 220 distinct programs and regulations that vary across states, crops, and verification processes. Growers, auditors, and program owners alike struggle with navigating these requirements, often finding it difficult to determine which specific compliance obligations apply to their situation. This lack of clarity leads to inefficiencies, confusion, and increased administrative burdens for growers, while auditors face challenges in preparing audits, and program owners work to align their standards with evolving legislative requirements. The current approach to managing compliance is cumbersome, resource-intensive, and lacks a clear pathway for identifying applicable regulations. A more efficient and cohesive system is needed to ensure compliance is both manageable and complete across all stakeholders.

Findings from VTWG

The group informed that while technology can support improvements, it alone cannot resolve key challenges. The discussions highlighted several key themes to guide future work. These included the importance of strong governance to ensure clear roles and accountability, and a focus on cost-effectiveness to make solutions sustainable. Participants emphasized the importance of leveraging

existing systems wherever possible to reduce duplication and save time. However, they also recommended exercising caution, noting that this approach may present several challenges that would need to be carefully considered. The Table A7 appendices include a list of technology projects and existing tools discussed during the workshop that were actively running in parallel to this project.

Identification of key themes, Challenges and Guiding Principles

Key themes and Challenges

The key compliance challenges discussed were issues such as fragmentation, duplication, navigation complexity, and the time burden of audits. Several high-level challenges were identified during the discussions. First, there is a need to clearly identify and engage the right stakeholders from the outset. The project must also define and communicate a clear end goal to maintain focus and alignment. Securing adequate funding remains a critical concern, alongside the need for strong program management to coordinate efforts effectively. While leveraging existing systems is a desirable goal, it may prove more complex than anticipated due to integration and compatibility issues. Lastly, simplifying processes was seen as essential to improve usability and efficiency across the board.

Guiding Principles

Addressing these issues requires coordinated governance, streamlined processes, and stakeholder collaboration. Guiding principles and considerations, informed by the Volunteer Technologist Working Group (VTWG), included leveraging existing solutions, using agile methods for usability, standardising data practices, simplifying processes, ensuring tangible benefits, maintaining documentation and traceability, and aligning with ST22009 objectives under federal project guidelines. VTWG also emphasised on the role of existing solution providers. Key discussions centred on articulating a clear project vision, defining stakeholder value, and positioning technology as an enabler rather than a driver. The group further examined challenges related to interoperability, highlighted the critical need for accurate regulatory interpretation, and stressed the importance of delivering strong value propositions beyond time savings such as error reduction, improved compliance confidence, and enhanced market access.

In addition to the findings outlined above, several key themes consistently emerged during workshops with the VTWG:

- **Clarity of Purpose:**
Clearly defining the problem to be solved is essential to ensure alignment across stakeholders and avoid scope drift.
- **Governance Before Development:**
Governance must be clearly articulated before any solution is designed or built an in-principle agreement between the involved entities needs to happen as a prerequisite prior to moving forward. This includes:
 - Solution Ownership: Determining who is responsible for creating and maintaining any developed solution, if needed.
 - Data Stewardship: Establishing clear roles around the ownership, access, and use of data.
 - Delivery Approach: Outlining how value will be delivered incrementally through phased implementation, allowing early wins and reducing risk.

- Program Landscape Navigation: Simplifying how growers navigate existing programs and compliance requirements by creating a clearer, more unified view.

Options for Solutions

1. Status Quo (Do Nothing)

This option has been ruled out, as it fails to address the challenges and opportunities identified through the research findings.

2. Establish a Common Language and Governance Framework

Develop a shared terminology and governance structure that can be adopted by industry stakeholders and software providers to support the evolution of the digital ecosystem.

3. Develop a Proof-of-Concept (POC) Data Cube

Build a demonstrative POC as a data cube with a simple user interface utilising advanced technologies such as Application Programming Interfaces (APIs), natural language Processing (NLP), and Artificial Intelligence (AI) to showcase the potential value of the proposed solution. This approach signals the commitment of industry to the issues raised, while allowing software providers to further develop and scale solutions based on the established common language. It limits long-term involvement and avoids creating ongoing operational dependencies.

4. Develop and Maintain a Full-Scale Solution

Construct and manage a comprehensive solution based on the POC. While this approach could deliver long-term impact, it would require industry partners to assume ongoing system ownership and maintenance responsibilities roles for which they both are neither resourced nor mandated.

Pathways Forward

Of the options considered, **Option 2 (Establishing a Common Language and Governance Framework)** is preferred and recommended with the potential of option 3 to be realised in future but not an immediate next step.

Developing a common language and governance framework represents the most effective and collaborative way to demonstrate responsiveness to the grower concerns identified in this research. By standardising the terminology and data expectations used across industry bodies, the complexity can be meaningfully reduced for growers and auditors without introducing entirely new systems or workflows. This approach aligns with familiar processes while streamlining them, reinforcing confidence and continuity.

Importantly, this framework positions industry as enablers not system owners by supporting the ecosystem without assuming a role in software development or long-term technical maintenance. Farm management solution providers remain the best placed to build and enhance systems, and will also benefit from a more consistent, simplified approach to data exchange and compliance alignment.

By adopting Option 2, industry can lead the development of a shared governance and data model, resolving long-standing issues around complexity and duplication as highlighted in the RegTech report. The proposed model will be openly accessible to all software providers, ensuring a level playing field and avoiding any perception of preferential treatment. This positions the framework as a unifying industry asset supporting innovation, reducing duplication of effort and subsequent program duplication, and enhancing sector-wide efficiency without imposing additional compliance layers.

This program delivers tangible benefits across the horticulture compliance ecosystem by simplifying data collection, enhancing interoperability, and supporting shared understanding of compliance requirements. Key beneficiaries include:

1. Growers

Growers will benefit from a "collect once, use many times" approach. When data is captured correctly using the standardised common language, duplicative or overlapping data requirements across different audits and certifications can be satisfied simultaneously. This reduces the need to repeatedly gather or reformat the same information, saving time and effort.

2. Auditors and Certifiers

Auditors and certification bodies will benefit from improved consistency and data reusability. When growers align their data collection with shared standards, auditors can rely on that data to satisfy multiple compliance checks. This reduces the complexity of audits and minimises the need for reformatting or revalidation of common elements (e.g., property maps, input records).

3. Farm Management Software Providers

Solution providers gain clarity on the data and documentation expectations required for compliance across multiple programs. By aligning to a common standard, they can design features such as compliance dashboards or alert systems that add real value to users.

Value Propositions and Challenges to consider while developing a Shared Common Language Model with Governance Framework

The horticulture Community of Practice (Hort-CoPHor) provided rich feedback on the proposed development of a **common compliance language model** supported by a governance framework. Discussions, both in-person and online, revealed a shared interest in reducing compliance complexity, improving audit readiness, and fostering interoperability, while also highlighting significant implementation challenges and governance considerations. In addition to the core feedback, participants also provided several additional considerations to guide future development and implementation of the model.

Key Value Propositions and Opportunities

- **Opportunity to Anchor to Global Frameworks:** Strong support for aligning the model with globally recognised initiatives such as the Global Food Safety Initiative (GFSI) to ensure relevance and recognition. It was also suggested that GFSI be invited to participate in the governance working group, to support development and credibility of the common language model.
- **Audit Clarity & Data Readiness:** A shared language model could improve audit preparedness, reduce misinterpretation, and enable growers to structure compliance data to be interoperable (“data-cube ready”) across programs and platforms.
- **ESG Integration:** A harmonised compliance language could support growers in more efficiently absorbing Environmental, Social, and Governance (ESG) obligations by linking them to existing audit frameworks. The ESG landscape is evolving rapidly, and participants noted growing language inconsistencies across ESG requirements, which may further complicate compliance unless proactively addressed.
- **Centralised Knowledge Support:** A centralised knowledge hub offers a single source of truth, promoting consistent interpretation and application of government regulations across jurisdictions. This reduces confusion for both growers and auditors, particularly in areas like the Primary Production and Processing standards and helps harmonise compliance practices nationwide.
- **Defined Evidence Expectations:** Clear guidance on what constitutes acceptable evidence empowers growers to prepare confidently and efficiently. By reducing ambiguity around documentation, this approach minimises delays and errors. Auditors, in turn, can spend less time verifying paperwork and more time focusing on the on-site compliance assessment, enhancing both accuracy and cost-efficiency.
- **Accessibility over Duplication:** This approach acknowledges that many growers already maintain valid records for HR, WHS, and similar areas. Instead of requiring duplicate systems, the emphasis is on accessing and verifying existing data. This reduces administrative burden while still maintaining rigorous standards, as seen in programs like Fair Farms.
- **Fairer and More Competitive Compliance Landscape:** By lowering the barriers created by complex and inconsistent compliance demands, this model fosters equity among growers. It

allows businesses of all sizes to compete fairly in the market, shifting the focus from who can manage compliance best to who produces the best product under shared standards.

- **Phased, Strategic Implementation:** A deliberate, staged rollout enables meaningful collaboration and system integrity. By first agreeing on the problem, then building shared governance and language before introducing technical solutions, stakeholders can avoid fragmented efforts. This phased approach supports long-term system alignment and adaptability.
- **Cross-Domain Governance:** With overlapping standards in areas like food safety, ethical sourcing, and biosecurity, a unified governance model provides clarity and coordination. It helps align similar but separate frameworks to reduce duplication and streamline compliance across different regulatory domains, addressing the "same-same-but-different" challenge effectively.

Challenges Identified

- **Digital Divide:** Many growers still use paper records. Concerns were raised about inclusivity and the perceived value of digital solutions for non-digital users.
- **Communication and Uptake Risks:** The solution must be clearly communicated and seen as beneficial to encourage organic uptake, especially in a landscape already saturated with tools and platforms.
- **Competitive Advantage Concerns and Value Proposition:** Some businesses that have already invested in meeting complex compliance requirements may view standardisation as diluting their competitive edge. However, this was also seen by others as a key value proposition of the model, by introducing a level playing field, it can reduce barriers for other businesses and promote fairer access to markets and certification outcomes through adoption of a standardised language.

Governance and Ownership Questions

Participants raised foundational questions for governance design:

- Who owns, funds, and maintains the model?
- How is governance structured and recognised?
- How will time and resource commitments of working group members be managed?
- Who accredits or oversees the framework's implementation?

Terminology Alignment vs. Language Change

- **Glossary Preferred:** Directly rewording standards is seen as unfeasible due to regulatory sensitivities. A crosswalk, glossary, or equivalence matrix is the preferred path to improve understanding without changing program language.
- **Terminology does not equal to Simplification:** Simply aligning words doesn't guarantee ease of compliance. Some growers need more clarity, others need tools for delivery.

Additional Considerations

- **Education and training** will be critical to the model's success. While terminology standardisation may improve understanding, it will not fully resolve deeper compliance burden issues without ongoing capacity building.
- **Program and commodity diversity** must be respected. A one-size-fits-all model risks overlooking the specific requirements of different certification schemes (e.g., Freshcare vs. ICA arrangements).
- **Peak industry bodies** may be better placed to lead integration efforts and coordinate cross-program alignment, rather than placing the responsibility on individual businesses or growers.

This feedback reinforces the value of co-design and sector-wide collaboration in shaping a model that is both practical and inclusive.

Summary

This project has provided a practical pathway for reducing compliance complexity in horticulture. By engaging both growers and technologists, it became clear that the challenge lies not in technology gaps alone, but in inconsistent terminology, overlapping scopes, and unclear compliance guidance.

The proposed RegTech framework, grounded in industry-led research and stakeholder input, supports the phased development of a common language model and governance approach to align programs more effectively. This foundation will help simplify access to requirements, preparedness for audits, improve interoperability, and allow data to be collected once and used many times. Importantly, it lays the groundwork for scalable digital compliance tools without requiring any single regulator or industry group to own the entire solution.

Moving forward, collaboration across key schemes, support for open-source principles, and shared ownership of naming conventions will be essential. With continued stakeholder alignment, the horticulture sector can build a compliance system that is clearer, more efficient, and future ready.

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Appendices

List of Figures and Tables

Appendix Supplementary Data Set 1: Locked compliance landscape spreadsheet – mapping over 220 programs by type, obligation, and sector.

Note: This resource forms part of Freshcare’s intellectual property and is securely stored within internal systems. It is available upon request, subject to approval.

Appendix Supplementary Data Set 2: Locked cross-program comparison spreadsheet – outlining overlaps across five key compliance programs.

Note: This resource forms part of Freshcare’s intellectual property and is securely stored within internal systems. It is available upon request, subject to approval.

The **following two key reports** have been prepared to support broader knowledge sharing and future planning:

- **Report A1 – A Handout-Style Booklet Summary of ST22009 Project Insights:** This report provides an accessible summary of key findings, challenges, and recommended actions for growers, industry, and regulators.
- **Report A2 – Options Paper:** This document outlines the proposed solution pathways and presents the rationale for the preferred phased investment approach.

Both reports will be published via **Hort Innovation** to ensure sector-wide access and continued engagement with the project outcomes.