SOiL CRC

Performance through collaboration

Surveying on-farm practices: Social benchmarking of rural landholders across Australia

Final report for research project 1.2.005

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The Local Shire Councils of:
North Central Victoria: Loddon, Macedon, Ranges, Gannawarra, Greater Bendigo, Hepburn, Mount Alexander, Northern Grampians, Buloke, Campaspe, Central Goldfields, Pyrenees, and Swan Hill.
Northern Wheatbelt of Western Australia: Dandaragan, Moora, Coorow, Dalwallinu, and Wongan-Ballidu.
Central West New South Wales: Parkes, Lachlan, Cowra, Bland, Blayney, Cabonne, and Forbes.
The Wimmera, **Victoria:** Ararat, Buloke, Hindmarsh, Horsham, Northern Grampians, Pyrenees, West Wimmera, and Yarriambiack

Finally, every landholder who has filled in one of our surveys, you are absolutely integral to this project and we hope to hear from you again soon.

Disclaimer

Peer review statement

The Soil CRC recognises the value of knowledge exchange and the importance of objective peer review. It is committed to encouraging and supporting its research teams in this regard.

The author(s) confirm(s) that this document has been reviewed and approved by the project's steering committee and by its program leader. These reviewers evaluated its:

- originality
- methodology
- rigour
- compliance with ethical guidelines
- conclusions against results
- conformity with the principles of the Australian Code for the Responsible Conduct of Research (NHMRC 2018), and provided constructive feedback which was considered and addressed by the author(s)

Keywords

Social Benchmarking Survey, farmers, drivers of decision-making, landholder, values.

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Executive summary

The aim of this project was to gain a broad understanding of the factors driving farmer decision-making across Australia by implementing Social Benchmarking Surveys for landholders within six selected farming regions. Project 1.2005 was part two of a larger research program, requiring the completion of the final three baseline surveys. This report brings together findings from all six regions.

The surveys were developed using an established method of survey design and implementation. Project Leader Dr Hanabeth Luke built upon and modified the method Professor Allan Curtis had applied over several decades. The method required a high level of stakeholder engagement and input into the survey design, with survey topics and questions co-developed and refined via a series of workshops. The survey findings were discussed with regional partners via interactive presentations and information sheets and a full report for each region that was published on the Soil CRC website. The procedural lessons learned during the survey implementation across regions have informed the continual improvement of the survey tool and process. The postal Soil CRC Social Benchmarking Surveys are complemented by an online version, with links and QR codes sent out with an advance notice. The survey instrument now also includes additional open questions that enable deeper insight into some key areas.

The first survey was undertaken in the North Central area of Victoria. Subsequent surveys were implemented in the Eyre Peninsula of South Australia, Northern Wheatbelt region of Western Australia, the Central West region of New South Wales, across Tasmania and in the Wimmera region of Western Victoria. Through the rapid release of summary findings, and the regional Social Benchmarking Reports, our project has made findings immediately accessible for local partners for integration into their strategic planning and practice.

A key finding of the project is heterogeneity across regions – there is great variety in terms of demographics, proportion of landholder types, information sources used, knowledge levels, and implementation of a range of practices for farmers across farming systems and regions. A full and detailed report on survey findings is available in the regional reports. Despite the heterogeneity across all regions, the '*Ability to pass on a healthier environment for future generations'* was the most important value landholders attached to their property. Farmer perceptions of climate change emerged as an interesting theme, where, in three of the six regions surveyed, less than half of farmers viewed climate change as anthropogenically-induced. An analysis was undertaken on differences by age – using established definitions of generations – finding that younger farmers use different information sources, but feel generally less well-supported than their older counterparts in their agricultural activities.

Project objectives

Overall Purpose:	Six surveys of farmers' current and intended practice are required to be completed early in the span of the Soil CRC. Drawing on the process and learnings of the first four Soil CRC landholder surveys that were implemented 2019-2021, this report is to extend this work and enable the implementation and completion of the fifth and sixth surveys, as well as the write-up of the NSW (fourth) survey.
Objective 1:	To complete analysis and reporting on the NSW (fourth) survey.
Objective 2:	To continue to develop working relationships with the identified organisations/groups in the last two regions and to determine the

	boundaries for each region to be surveyed in line with the matrix developed at the start of this survey project for maximum benefit to farmers, partner groups and the Soil CRC.
Objective 3:	To develop, administer and analyse the fifth and sixth Soil CRC farmer current and intended practice surveys in the remaining regions (likely Queensland and Tasmania), in partnership with relevant Soil CRC partners.
Objective 4:	To explore opportunities for interactions with the Soil CRC soil mapping project.
Long Term Objective 1:	To provide a baseline understanding of the practices and intended practices of farmers such as they impact on soil management and soil management decisions to extend to six partner regions of the Soil CRC.
Long Term Objective 2:	To develop an empirically-based and regionally-relevant understanding of the influences on farmer decision-making as it relates to soils.
Long Term Objective 3:	To work with the team at Federation University to explore opportunities for interactions with the Soil CRC soil spatial mapping project. The spatial data generated by this survey may be included in those maps, and/or those maps may be cross-referenced with our social data to address unique research questions.

Project results

Objective 1:	Completed analysis and reporting on the NSW (fourth) survey.
Objective 2:	Developed working relationships with the identified Wimmera and Tasmanian grower groups. Boundaries for each region were determined in line with the matrix developed at the start of this survey project to maximise benefit to farmers, partner groups and the Soil CRC.
Objective 3:	Developed, administered and analysed the fifth and sixth Soil CRC farmer current and intended practice surveys in the remaining regions in the Wimmera, Victoria and Tasmania, in partnership with relevant Soil CRC and other regional partners.
Objective 4:	Discussed opportunities for interactions with the Soil CRC soil mapping project.
Long Term Objective 1:	This report and each of the six partner regions' Soil CRC reports provide a baseline understanding of the practices and intended practices of farmers such as they impact on soil management and soil management decisions.
Long Term Objective 2:	Developed an empirically based and regionally relevant understanding of the influences on farmer decision-making as it relates to soils.
Long Term Objective 3:	Discussed opportunities for interactions with the Soil CRC soil spatial mapping project. When that project is ready, spatial data generated by this survey project may be included in those maps, and/or spatial data layers may be cross-referenced with our social data to address unique research questions.

1. Introduction

The Soil CRC national survey project, Surveying On-Farm Practices, was initiated in 2019 in partnership with local farming organisations. The project goes part way towards achieving the Soil CRC's goal of surveying six regions, twice, over its 10-year time frame. Six regions have now been surveyed, each representing a range of different farming systems, landscapes, and Soil CRC partner organisations. Although some of the data was completed in the previous stage of the project (1.2.004), a summary of findings from all six of these surveys is included in this final project report.

A central aim of this project was to gain a broad understanding of the factors driving farmer decision-making across Australia by implementing Social Benchmarking Surveys for landholders within selected regions across five states. The data from these surveys can inform decision-making and strategic planning for local farming groups, natural resource management (NRM) organisations and the Soil CRC.

This Soil CRC project is led by Dr Hanabeth Luke of Southern Cross University (SCU). Principally funded by the Soil CRC, funds for regional surveys were also contributed by the North Central Catchment Management Area (CMA), AIR EP, the West Midlands Group, the Wimmera CMA and the Eyre Peninsula Landscape Board. Data gathered not only provides relevant regional insights, it also contributes to the wider Soil CRC research portfolio. For example, Soil CRC researchers now have improved understanding of farmer knowledge of soil health and management, the impact of farmer participation in soil health groups, and the implementation of best practice soil management by farmers. Three Soil CRC PhD research projects have also been informed by aspects of the survey data set.

The project research team includes social scientists from SCU and Charles Sturt University. The research draws on a widely-accepted approach to social benchmarking for regional NRM developed by Professor Allan Curtis (see Curtis et al., 2005). This survey-based methodology has been applied across Australia, including as part of the Australian Government's National Action Plan for Salinity and Water Quality, with case studies in Victoria, New South Wales and Queensland.

Surveys are developed using an established method of survey design and implementation that has been adapted from the method developed and used by Professor Curtis over several decades. The method requires a high level of stakeholder engagement and input into the survey design, with survey topics and questions developed and refined via a series of workshops. Survey findings are provided to regional partners via interactive presentations, information sheets and a full report for each region, the latter two being published on the Soil CRC website at the following link: https://soilcrc.com.au/resources/surveying-farm-practices/.

Groups associated with the Soil CRC, and willing to partner with the survey team, were identified to co-develop the survey instrument (questionnaire) and support its implementation in their regions. The project was presented at the inaugural Soil CRC conference in 2019, as well as in 2022 and 2023, and many relationships were formed there with participants across Australia. The survey is designed to gain understanding of the drivers of on-farm decision-making and, in particular, explore farmer knowledge of soil heath and management and the implementation of best practice soil management. Over the longer term, Soil CRC social surveying will collate a dataset of national significance, showing both breadth and depth of information on factors involved in on-farm decision-making for Australian farmers.

The first region surveyed was North Central Victoria because they had existing relationships with the survey team and had conducted a similar survey in the past. This provided the opportunity to build a longitudinal data set. Subsequent surveys were developed for the Eyre Peninsula of South Australia, the Northern Wheatbelt region of Western Australia, the Central West region of New South Wales, Tasmania and the Wimmera region of Victoria. The procedural lessons learned during

the survey implementation across regions have informed the continual improvement of the survey instrument and process.

The established survey method has been modified by Dr Hanabeth Luke, and the postal Soil CRC Social Benchmarking Surveys are complemented by an online survey, with links and QR codes sent out with an advance notice. It now also includes several open questions that enable deeper insight into some key areas. A clear method has been documented and submitted to the Soil CRC to support the implementation of subsequent and repeat farmer-practice surveys that can continue to evaluate practice change.

This report summarises the data presented in the individual reports from all six regions surveyed: North Central Victoria, the Eyre Peninsula of South Australia, the Northern Wheatbelt of Western Australia, Central West New South Wales, the Wimmera region of Victoria, and Tasmania.

2. Background

2.1. Rationale for this project

Ongoing research is important for understanding the evolving motivations that drive current farm and soil management practices (e.g. Allan et al., 2018; Stimpson et al., 2019). A range of farm management decisions will influence soil health in a number of ways, with different decisions leading to pathways that can result in either soil stabilisation or soil erosion, and either increased soil organic matter or decreased soil organic matter. Over time, these choices can lead to farming enterprises that are either building, or reducing their long-term resilience to economic, social and environmental shocks. For agricultural and NRM organisations to encourage the best decision-making for healthy soils and resilient farming systems, they need to understand the landholder and the array of influences that underpin their decision-making. Understanding landholders is especially important for encouraging positive behaviours and the adoption of new innovations and best practice (Abadi et al., 2020). Changing human behaviour can be difficult, and engaging rural property owners in practice change is no exception. There is a large set of possible factors influencing decisions and these vary according to each technology, property owner, social context and intervention, as well as over time.

Unless there are strong economic drivers supporting implementation, effecting change is often problematic because the private benefits of action by rural property owners to address environmental degradation are often uncertain, while the costs are diffused over time and space. There is often limited commitment by governments to legislate and/or enforce compliance to land management rules.

Further complicating the task for those implementing research, development and extension across rural areas, is the scope and pace of social change in many regional areas. As conceptualised by the Multifunctional Rural Transition (Holmes, 2006), many rural areas are shaped by a mix of production (e.g. agriculture), consumption (e.g. recreation) and conservation values (Barr, 2005). Agriculture may remain the dominant land use, but primary production may not be the principal focus of many landowners.

Where practitioners are confident about the appropriateness of the outcomes they are seeking and the science that links proposed interventions and desired outcomes, they can apply best practice recommendations. For example, with riparian management there are widely accepted best practices that include fencing to manage stock access, providing off-stream watering points for stock, eradicating pest plants and planting trees and shrubs. Under these circumstances, those setting out to achieve change need to make an assessment of the adoptability of those best practices and respond appropriately (Pannell, 2011). For example, if awareness, knowledge or management skills are important constraints, then activities that address those topics are appropriate. If the issue is that the change involves considerable expense and appears to offer limited financial returns to landowners, then some form of cost-sharing between government and private landowners might be appropriate.

Curtis and Lefroy (2010) made the additional point that NRM occurs in modified environments where there is often uncertainty about the way forward and, even, the desired condition to aim for. They argued that under these circumstances it is important to engage property owners (and other stakeholders) in dialogue, learning and action which typically involves engaging and building human (i.e. knowledge and skills) and social capital (i.e. positive social norms, relationships built on trust and reciprocity, and networks as platforms). For example, there is considerable uncertainty about how to maintain soil health under cropping regimes. Experience suggests that farmers will lack confidence in practices that have not been trialled in their local area.

In Australia, farmers justifiably consider themselves responsible stewards of the land, and while production is important, there is a growing interest in other key areas such as aesthetics, conservation, recreation and restoration (Mendham et al., 2010). Therefore, research, such as that undertaken here, is important as it contributes to ongoing knowledge about Australia's changing on-farm practices, priorities, beliefs, and challenges, offering a snapshot of values, beliefs and attitudes of farmers. Importantly, the management practices, values and land use by owners of rural property are important aspects that characterise the multifunctional rural landscapes of Australia as important elements of farmer identity (Groth et al., 2017). These aspects will be discussed in detail in the following section of the report.

Prior to this study, the most recent Social Benchmarking Survey was completed in the Wimmera region of Victoria in 2016 (Curtis & Mendham, 2017). With similar surveys in 2002, 2007 and 2011, analysis of the Wimmera survey data has provided important insights for NRM practitioners, including trends in social structure (i.e. property size, occupational identity, length of residence, extent of absentee ownership, enterprise mix), and for researchers (e.g. extent of stability and change in values, beliefs and attitudes) (Toman et al., 2019).

2.2. Conceptual framework

This section outlines the conceptual framework underpinning this research. We begin with lay definitions of the concepts used throughout the report.

2.2.1. Lay definitions of key concepts

Values: Guiding principles/what is important to us.

Beliefs: What we think is true.

Norms: How we/others think we ought to behave. These can be personal norms or social norms.

Attitudes: What we think should happen in relation to a specific social issue.

Knowledge: Grasp of facts, understanding of process.

Skills: Ability to implement or perform a task.

Trust: Willingness of those who are vulnerable to rely on others, which in part depends on the trustworthiness of those seeking to be trusted. Trustworthiness is based on assessments by others of our ability, benevolence and integrity.

Landholders: All survey respondents.

Farmers: Full- and part-time landholder respondents only (full-time farmer landholder only respondents will be made explicit).

2.2.2. Values and beliefs: Difficult to change but important for effective engagement

Researchers typically distinguish between 'assigned values' and 'held values'. Assigned values are those that individuals attach to specific physical goods, activities or services (Lockwood, 1999), and they are sometimes referred to as 'attached values'. Held values are ideas or principles that people hold as important to them (Lockwood, 1999), and are generally highly abstract, generic and conceptual, but guide personal action (McIntyre et al., 2008).

Value orientations are the positions a person takes when a particular set of held values are more important to them than other held values (Axelrod, 1994). Individuals can hold more than one value orientation simultaneously (Lockwood, 1999; Stern, 2000). This is an important point and one confirmed by results of Social Benchmarking Surveys across Victoria. Indeed, across all regions,

almost all survey respondents gave a high rating to items measuring social, economic and environmental held and assigned values (Curtis & Curtis, 2018).

A number of theoretical approaches have been developed and applied to explain the relationship between values and behaviour. Values-Belief-Norm Theory (VBN) explains an individual's motivation for environmental behaviour. It is an important theory that underpins much contemporary social research, including the Soil CRC Social Benchmarking Surveys.

VBN theory suggests that individual behaviour is derived from core elements of personality and belief structures. These elements inform people's specific beliefs about human-environmental interactions, consequences, and an individual's responsibility for taking action. VBN theory proposes a chain of elements, with one component influencing the next. The elements of VBN theory include values, beliefs (awareness of consequences or whether the condition of the asset will affect yourself, others or the environment; ascribed responsibility beliefs; and general environmental concern), personal norms and behaviour (Stern, 2000).

VBN theory hypothesises that environmental behaviour is more likely if the individual believes that there may be adverse consequences for something that they value highly (Stern et al., 1993). To explore the influence of held values (guiding principles), the survey employed seven to 10 items based on the scale developed by de Groot and Steg (2007) and adapted from Schwartz's value typology that distinguishes between biospheric, egoistic and altruistic values (Schwartz, 1992, 1994).

Items included in the survey topics also explored 16 attached values focused on the importance of the farm business, and relationships with family, the wider community and the local environment. Those items drew on previous research (e.g. Seymour et al., 2010; Stedman, 2002).

Some beliefs and attitudes related to private property rights appear to be important for some property owners who are likely to be difficult to engage in NRM. For example, results from the 2014 North Central survey suggest about one in four landowners are concerned about protecting private property rights and their beliefs appear to be an impediment to their engagement in government programs (Curtis & Mendham, 2015).

VBN and related theories arising from the Theory of Planned Behaviour do not account for the larger set of factors, including seasonal conditions and markets that influence land use and management decisions by rural property owners (Pannell et al., 2006). While it is possible that values, beliefs and personal norms (VBN) may mediate or moderate some of these other factors, it is difficult to change these deep-seated personal attributes (i.e. VBN) in the short or medium term. Nevertheless, it is essential to understand the values and beliefs of landowners if they are to be effectively engaged.

An increasing proportion of rural property owners in parts of rural Australia are identifying as non-farmers by occupation (Curtis & Curtis, 2018), and farmer identity is an important influence on their knowledge and management skills and the adoption of best practices for sustainable farming and biodiversity conservation (Curtis & Mendham, 2015; Groth et al., 2014).

An associated trend is for considerable change in rural property ownership, for example, in Victoria, it is estimated to be at 4–5% per annum across the State, including the regions surrounding Melbourne and Bendigo (Mendham & Curtis, 2010). That rate of change suggests 40–50% of rural properties will change ownership in a decade. New and longer-term property owners are different and those differences present both a challenge and an opportunity for agricultural and NRM practitioners, as new owners are typically less experienced, thus less knowledgeable about many farming and land management practices, while less connected to existing farming and NRM networks. At the same time, new, non-farming or hobby-farming landowners are typically more committed to environmental values, less reliant on on-property income, and are often seeking

advice about ways to better manage their properties. Items in the Soil CRC Social Benchmarking Surveys explored these topics.

One of the responses of social researchers tasked with advising agricultural practitioners on effective engagement is to develop typologies that distinguish groups/types based on key attributes. Those attributes might include: the main industry (e.g. forestry, farming); enterprise type (e.g. dairy, beef, sheep, horticulture); land class (e.g. floodplains, hills); management approaches (e.g. irrigation or dryland; adoption of conservation practices); property types (large or small); and/or personal characteristics such as values or attitudes.

Typologies appeal as a useful aid for agricultural and NRM practitioners if they include: all rural property owners (e.g. not just farmers by occupation); are soundly based (i.e. grounded in relevant theory); and are constructed using reliable methods (e.g. not based purely on the intuition of researchers). Unfortunately, there are few examples where those criteria have been met. It is also important that typologies enable NRM practitioners to readily identify different cohorts when they set out to engage rural property owners.

Groth's Farmer Collective Identity Construct scale (FCIC) has 12 items across seven dimensions (i.e. self-categorisation; behavioural involvement; evaluation; importance; social embeddedness; attachment; and sense of independence) (Groth et al., 2016). A technical report (Curtis & Mendham, 2015) provides: a comprehensive explanation of how the FCIC scale was developed; the items included; the results of tests of scale reliability and validity; the approach to typology development using the scale; the characteristics of the four types of landowners (i.e. full-time farmers, part-time farmers, hobby farmers, non-farmers); and implications of farmer identity for NRM.

The key points are that:

1. Farmer identity is an important influence on land use and management.
2. Part-time farmers are an important cohort, distinct from hobby farmers and closer to full-time farmers in that they typically have a strong business focus.
3. Groth's typology provides a useful guide (heuristic) for agricultural and NRM organisations and practitioners setting out to engage different types of rural property owners.

Given the limitations of space in the Soil CRC Social Benchmarking Surveys, and with results indicating a strong positive relationship respondent's scores on Groth's FCIC scale and their self-identification as full-time farmer (FTF), part-time farmer (PTF), hobby farmer (HF) or non-farmer (NF), the Soil CRC surveys did not include the FCIC scale. Instead, respondents were asked to self-select from the four categories listed above and, in a later section, write in their current occupation (e.g. farmer, teacher, retiree).

2.3. Levers for change

Researchers have identified what can be considered 'levers' to effect change (e.g. improving knowledge and management skills) and processes or platforms that are effective for engaging rural property owners in learning, dialogue and action (e.g. Landcare and commodity groups). Government programs that engage property owners, including through cost-sharing where there are public benefits from work on private property, can also have a positive influence on the adoption of best agricultural practice and land management.

Social norms are an important but often neglected aspect of a community's social capital. Social norms can be both positive and negative influences on agricultural practice and land management (Minato et al., 2010). Indeed, a key outcome of Landcare participation has been the establishment of positive social norms about what sustainable farming involves in a local context (Curtis et al.,

2014). Social norms are best identified through qualitative research within a community where there are ‘ties that bind’. However it is possible to explore personal norms through surveys and these may reflect social norms. The Soil CRC surveys include two items exploring personal norms related to soil management.

Trust (i.e. willingness to rely on others) is an important element of the social capital of organisations, whether they be government agencies, private businesses or volunteer organisations. Where trust in an organisation is high, partners will be more likely to accept advice, enter partnerships to develop and implement plans, forgive mistakes, and provide positive recommendations to others (Sharp & Curtis, 2014).

A key point from the limited number of studies examining landowner trust in agricultural and NRM organisations is that many rural property owners are not predisposed to trust others (e.g. Curtis & Mendham, 2017). Judgements about the trustworthiness of individuals and organisations also influence landowner willingness to trust. Trustworthiness involves assessments of three key elements: capability; benevolence; and integrity (Sharp & Curtis, 2014; Mayer et al., 1995).

3. Methodology

The Soil CRC Social Benchmarking Surveys are based on a well-established methodology (e.g. Curtis & Mendham, 2015). The administrative process of the survey ultimately derives from Dillman (1978), and is a well-tested format (see, for example, Curtis et al., 2005). Six case study regions were selected: North Central Victoria, the Eyre Peninsula of South Australia, the Northern Wheatbelt of Western Australia, Central West New South Wales, the Wimmera region of Victoria, and Tasmania.

3.1. Case study selection

Case study regions were selected based on criteria that included the following:

1. Must have at least one Soil CRC partner.
2. Willingness of regional Soil CRC partner organisation(s) to participate, with sufficient resources, time and capacity.
3. Existence of other Soil CRC projects in the region, particularly from Programs 2-4.
4. Regions that can provide both variety and similarities to enable cross-regional analysis.
5. Represent different types of organisations across regions, including both NRM organisations and local farmer research and development groups.
6. Larger geography of the region, including soil type and climate.
7. Capacity to access landholder data for survey mail-out.
8. Relevant jurisdictions of use to partner groups influences boundaries of the regions surveyed.

3.2. Survey structure

The survey instrument is based on a number of core questions (Figure 1) that are built on previous research of some of the key factors which come together to influence the decisions made by landholders that lead to different agricultural and land management outcomes on their properties. These include sections on the 'held' and 'attached' values of landholders (McIntyre et al., 2008; Seymour et al., 2010; Stedman, 2002). They also include a number of questions relating to the practicalities of property management over time, such as who is involved in the management of the farm, whether the farm is turning a profit, whether the land tenure is being expanded or reduced in size over time, and whether there are any significant plans to change the land use currently in place. Questions on future plans for the property are posed, including whether to sell or to hand on the property/farm onto the next generation, and including the extent to which succession plans are in place.

The Soil CRC survey instruments include items exploring engagement through various locally-relevant platforms (e.g. Landcare, soil health groups, and commodity groups) and processes (e.g. training, field days and government programs). The surveys also include measures of respondents' predisposition to trust (Leahy & Anderson, 2008; Smith et al., 2013), judgements of the trustworthiness of local agricultural and NRM organisations, and trust in (i.e. willingness to rely on) them. Core items also explore landholder predisposition to accept risk (Meertens & Lion, 2008).

Integral components of the Soil CRC surveys are questions that relate to influences on soil health and fertility, though some of these vary across regions, due to some soil issues being more salient in some regions over others. There are up to 12 items that relate directly to soil issues, 21 farm practice items that relate to soil health and fertility, and up to 18 knowledge items that relate to soil-friendly management practices.

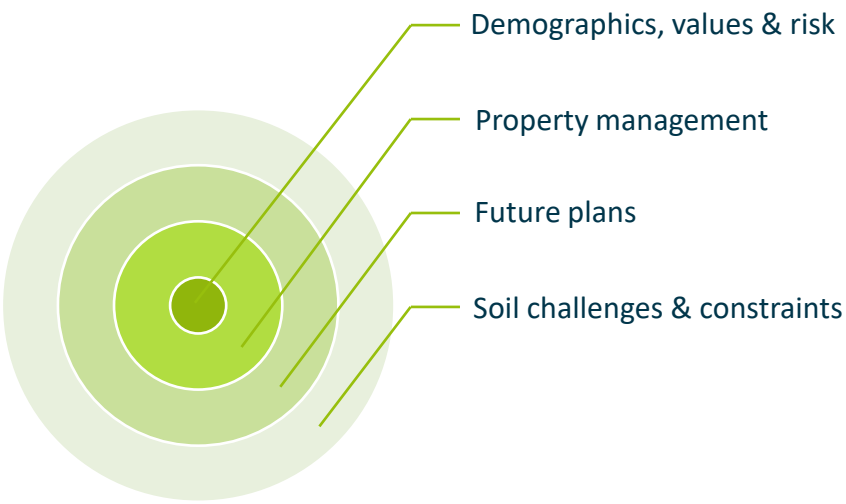


Figure 1: The survey instrument contains a number of core questions, which remain constant across regions, though some will vary slightly, such as regional soil issues deemed important for some soil types but not others.

3.3. Survey instrument co-design process

The survey co-design process is essential for building into the questionnaire a number of key topics identified by regional partners which allow insight into landholder experiences and practices. This requires running a workshop with local partners to discuss and mind-map regional challenges and existing interests of those local groups. These mind-maps are then distilled into three or four key areas of focus for that region that are then woven through the different survey sections. This includes a section on the relevant current and intended practices being implemented. There is also a section asking respondents to self-assess their knowledge across a number of items, and another on their beliefs, personal norms and confidence in implementation of best practice related to that topic. Finally, there is a section on regional issues, with one item on declining soil health and/or productivity, which helps contextualise the overall importance of the items about soil-related issues. Figure 2 shows an example of the priority topics raised in each of the regional workshops.

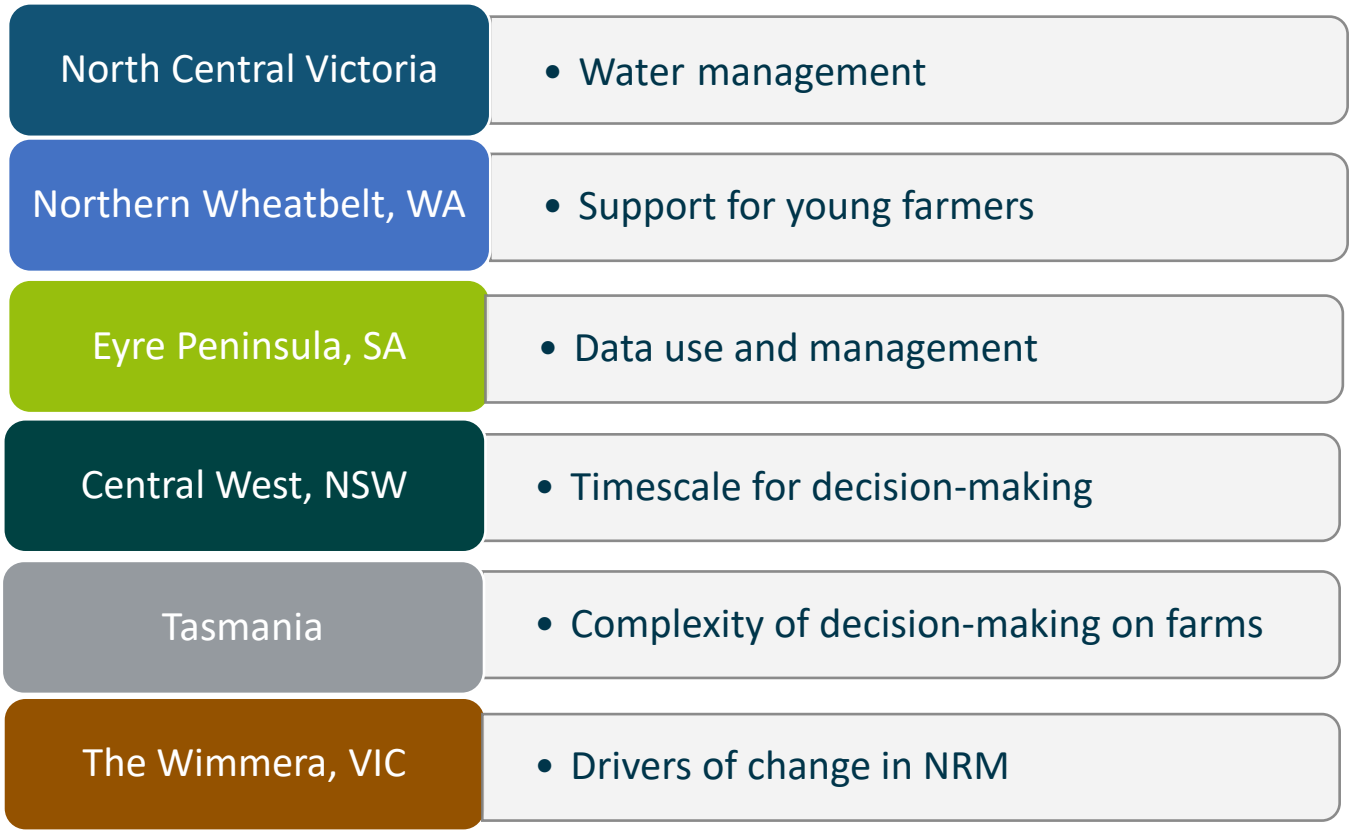


Figure 2: One of the topics driving survey customisation for each of the regions.

3.4. Survey aims and focus across regions

As outlined above, a key strength of this project is that the general survey approach is customised through collaboration with regional partners to ensure regional relevance. Whilst a core of questions remains to enable cross-survey comparisons and the development of the national dataset, each region has different priorities which are built into the survey instrument. In this way, each survey report can directly inform strategic planning and decisions around present and future directions, while providing clear pathways towards better engagement between the Soil CRC partners' regional farmer base in their activities.

3.4.1. For the North Central CMA, the survey process was expected to:

1. Describe the social/farming structure (i.e. property size, property subdivision/amalgamation, occupational identity of landholders and extent of absentee ownership) for the region and for each local government area (LGA).
2. Gather data to be used by the North Central CMA to assess progress in the achievement of the Regional Catchment Strategy and specific NRM program objectives.
3. Inform understanding of landholder adoption of best practice NRM.
4. Inform board and staff engagement with rural property owners (e.g. cohorts based on farmer occupational identity).

3.4.2. For Eyre Peninsula landholders, a broad range of topics was discussed and distilled into four main areas of focus:

1. A profile of farming on the Eyre Peninsula, including farm management structures and who plays a role in decision-making, to inform engagement with rural property owners.
2. Landholder expectations around the formation of AIR EP.
3. Factors leading to present and future resilience of Eyre Peninsula farms, including uptake of best practice.
4. The future of farming, including support for young farmers and emerging leaders.

3.4.3. For the Northern Wheatbelt, a list of priorities was developed and distilled into four main areas:

1. Profile of farming in the Northern Wheatbelt, including farmer engagement.
2. Data management and use.
3. Farm management practices, risk and resilience.
4. The future of farming in the Northern Wheatbelt.

3.4.4. For the Central West of NSW, a list of priorities was developed and distilled into four main areas:

1. Profile of farming in Central West NSW.
2. On-farm data management, especially in relation to soil testing.
3. Changing farm management practices: risk and resilience.
4. The future of farming in Central West NSW.

3.4.5. For Tasmania, a list of priorities was developed and distilled into five main areas:

1. Profile of farming in Tasmania.
2. The complexities of decision-making in Tasmanian land management.
3. Land management challenges.
4. The future of farming in Tasmania.
5. How to engage land managers.

3.4.6. For the Wimmera, Victoria, a list of priorities was developed and distilled into five main areas:

1. Profile of farming in the Wimmera.
2. Complexity in farming and land management: risk, change and resilience.
3. How to engage landholders.

4. Land management challenges.
5. The future of farming in the Wimmera.

3.5. Survey implementation

The Soil CRC Social Benchmarking Surveys for rural landholders were implemented between 2019 and 2023. The first was implementd in North Central Victoria, with the North Central CMA and Soil CRC staff working together to review, revise and update the 2014 survey that had been implemented in the region. A draft survey was subsequently pre-tested, including with a small group of rural property owners. A summary of all regions, with quantities of surveys sent, possible responses, actual responses and response rate (%) is presented in Table A.

The 2019 survey was posted to a randomly-selected sample of rural property owners (properties of 10 ha and above) identified using local government (i.e. Shire or City) ratepayer lists. The North Central CMA region includes a substantial part of 14 Shire or City LGAs. As in 2014, the intention was to survey approximately 2,000 rural property owners from across the region. The research team worked with Council/City staff to select a random sample of property owners, with the number in each LGA sample reflecting that LGA's proportion of the estimated total number of rural properties in the region. The mailout process occurred over a period of eight weeks, with an initial mailout (including a cover letter, survey booklet and return envelope), followed by three reminder/thank you cards, then a second mailout package to non-respondents, followed by two reminder/thank you cards. Mount Alexander LGA was the exception and Council staff undertook the mailout process for this Shire.

In 2019 surveys were initially posted to 2,040 property owners. After removing return-to-sender, duplicate ownerships, properties that had been sold, owners who were ill or overseas, and other acceptable reasons for a non-response, there were 1,862 possible respondents. With 663 returned and completed surveys, the response rate for 2019 was 36%.

A similar process was undertaken on the Eyre Peninsula, SA, working with the two local grower groups EPARF and LEADA, who, during the course of the project, merged to form AIR EP. The Eyre Peninsula Landscape Board also joined the project as a local partner, with PIRSA supporting the project. There were a limited number of landholders in the identified region, thus a census of all properties over 10 ha was conducted, with landholder mailing data identified from the ratepayer lists of the Eyre Peninsula Landscape Board.

In the Northern Wheatbelt, WA, a draft survey was pre-tested, including with a small group of rural landholders. A copy of the final 16-page survey booklet is included in the appendix of this report (Appendix B). The survey was posted to all rural property owners (properties of 10 ha and above) identified using spatially-referenced landholder contact lists for the Northern Wheatbelt region provided by the local governments of Dandaragan, Moora, Coorow, Wongan-Ballidu and Dalwallinu. Surveys were posted to 980 property owners. After removing return-to-sender, duplicate ownerships, properties that had been sold, owners who were ill or overseas, and others who took the option to opt-out of the survey, there were 745 possible respondents. A total of 176 surveys were completed. Of these, 42 were completed online and linked to the spatial property identifier, which enables these responses to be included in the total.

The 2021 Central West NSW Social Benchmarking Survey contributed to the national Soil CRC project. Project leader Dr Hanabeth Luke visited the Central West NSW region in 2021. A workshop with project partners Central West Farming Systems (CWFS) and Central West Local Land Services (CWLLS) identified key topics and questions to inform survey development. A questionnaire was drafted and piloted with local partners and a small group of rural landholders. The questionnaire was mailed to rural property owners with holdings greater than 10 ha. Priority addresses were

identified using spatially-referenced landholder contact lists for the Central West region provided by the local governments of Bland, Blayney, Cabonne, Cowra, Forbes, Lachlan, and Parkes. Questionnaires were posted to 2,500 property owners, equating to 1,872 possible respondents.

The 2022 Tasmanian Social Benchmarking Survey contributes to the national Soil CRC project. Southern Cross University researchers partnered with Charles Sturt University, NRM North, NRM South, Cradle Coast NRM, Southern Farming Systems and Rural Business Tasmania to develop and undertake the survey. Project team member Professor Catherine Allan met with representatives of these groups in Campbell Town, Tas, in February 2022. This workshop identified key topics and questions, with a focus on the complexities involved in decision-making about farms and land management. A questionnaire was drafted and piloted with local partners and a small group of rural landholders, again with Professor Allan as facilitator. In mid-2022, a survey booklet was mailed to a sample of 2,000 rural property owners holding land in Tasmania over 10 ha in size.

Project leader Dr Hanabeth Luke visited the Wimmera region of Victoria in mid-2022 and undertook a workshop with a team from the Wimmera CMA to identify key topics and questions to inform survey development. A questionnaire was drafted and piloted with a small group of Wimmera landholders. The questionnaire was mailed to a random sample of rural property owners with holdings greater than 10 ha. Priority addresses were identified using spatially-referenced landholder contact lists for the Wimmera region provided by the local governments of Ararat, Buloke, Hindmarsh, West Wimmera, Yarriambiack and Pyrenees. Questionnaires were posted to 1,612 farmers within these LGAs, with an additional 2,000 notices sent to Horsham and Northern Grampians landholders indirectly via the local councils, asking landholders to opt-in to complete the survey. Of these 1,612 surveys, 471 were 'return to sender' and opt-outs by other means, leading to a final sample of 1,141.

3.6. Response rates

Details of the questionnaires distributed as described above, and the response rate, are summarised in Table A.

Table A: Quantities of surveys sent and returned by region with response rate as percentage.

Survey	Mailed out	Possible respondents	Actual responses	Response rate %
North Central Vic	2040	1862	663	36
Eyre Peninsula SA	2055	1573	478	31
Northern Wheatbelt WA	980	745	176	24
Central West NSW	2284	1656	575	31
Tasmania	2000	1217	424	35
The Wimmera Vic	1612	1141	382	34

The overall response rates of between 24 and 36% (mean 31.8%) is a good result. There is a trend towards lower response rates for surveys of property owners in Australia and overseas (Stedman, 2016), particularly for surveys that are not directed to a specific audience (e.g. horse owners, cattle producers). This trend may reflect 'survey fatigue' across societies, concerns about privacy that have been heightened by recent exposure of 'data mining' by Facebook and Google, and lessening of ties with, and trust in, universities and governments.

Non-respondents may be different to respondents, and social researchers are often asked about the impact of non-responses on the reliability of survey data (i.e. ability to generalise from the respondents to the larger population). The research team's experience is that non-respondents are

not a homogenous group (i.e. there are many reasons for non-responses) and that with a response rate of ~50% it is unlikely that the cohort of non-respondents will be sufficiently different to change results significantly. In the past we have taken steps to compare respondents and non-respondents, including using available data for property size (based on LGA lists for both cohorts) and age of farmers (using ABS data for the non-respondent cohort and survey data for respondents). Those comparisons have suggested that respondents and non-respondents to the Social Benchmarking Surveys are not significantly different.

For each of the surveys a comparison was made between the mean property size of respondents and non-respondents to ensure that there was not a significant difference on property size. When reflecting on the reliability of survey data, social researchers can also draw upon established theory (e.g. whether results consistent with contemporary social theory about the stability of values, or the differences between cohorts based on farmer identity), and explore the extent results are consistent with those of previous studies (e.g. 2014 North Central Victoria survey). Those assessments suggest the survey data are reliable.

3.7. Data analysis

Analyses of the data have been undertaken on all surveys. Descriptive statistics such as frequencies, means and medians were used to summarise responses to all survey items ('not applicable' and missing responses were removed from the analysis of means). For items that asked respondents to specify an amount (e.g. days of paid off-property work in past 12 months), zeros were excluded in the calculation of means and medians (hence, these were treated as a 'no' response). In these situations, the means and medians should be treated as the mean or median of those who had undertaken the practice.

Further analyses include examination of data for statistically significant differences between different groups (e.g. full-time farmer, part-time farmer, hobby farmer and non-farmer). Because the normality of the data cannot be assumed, non-parametric approaches were used (e.g. Elliot and Woodward, 2007).

Kruskal Wallis Rank Sum Tests were used to test for differences on a continuous variable or a Likert scale variable (e.g. age or agreement with an issue) based on a grouping variable (e.g. farmer identity cohorts). Pearson's Chi-squared test with simulated values was used to test for differences on a 'Yes/No' (i.e. nominal data as for Landcare participant) based on a grouping variable (e.g. the farmer identity cohorts).

To explore relationships between variables in the survey, pairwise comparisons were conducted between each item and all other items in the survey, ignoring spurious comparisons. Kruskal Wallis Rank Sum Tests were used to test for relationships between Likert-type response and a grouping variable (e.g. full-time farmer, part-time farmer, hobby farmer and non-farmer) (results in an H value). Chi-squared tests were used to examine dependence between two categorical (or grouping) variables (e.g. between 'Yes/No' for management action implemented and Landcare member/Landcare non-membership).

Pairwise comparisons tested for relationships (positive and negative) between variables expected to influence adoption (i.e. independent variables) of best practices (i.e. the dependent variables). Those practices covered both environmental management and sustainable agriculture. Most practices were thought to be relevant to most property contexts. However, respondents were given the opportunity to choose 'Don't know' and 'Not applicable'. As might be expected, the proportion selecting this option varied across the best practice items. Those data are reported in the Results section of this report.

Survey recipients were asked to provide information about implementation of best practice NRM for both the full period of their management and for the past three years. Unfortunately, most respondents only answered for one period and that was typically for the full period of management. All pairwise comparisons and modelling for implementation of best practice NRM are focused on the full period of management.

Logistic regression modelling was used to explore the extent to which a small number of independent variables contribute to the presence or absence (as most were assessed using 'Yes/No') of best practice land management implementation. Experience with previous reports suggests that a model with from four to 10 variables provides useful guidance for agricultural and NRM practitioners.

Multicollinearity between independent variables (i.e. where two variables essentially have the same impact) was considered when performing regression modelling. However, experiences with social benchmarking data suggest that those efforts may lead to important variables being excluded from models. For example, pairwise comparisons may reveal a significant relationship between implementation of a best practice, and both participation in a soil health group and property size. If participation in a soil health group and property size are also correlated, regression modelling may exclude one of these variables. If multiple independent variables were considered 'at risk' for multicollinearity, then only one was chosen. There are sophisticated statistical techniques that can help to further tease out causality but these are beyond the scope of this research project.

Interpretation of the results of the pairwise comparisons (e.g. to eliminate significant relationships that were irrelevant/nonsense) allowed the research team to identify a small number (<25) of independent variables to include in the modelling for each best practice. Some variables were included in most models. The selected variables were then entered by Simon McDonald in a stepwise modelling process using Akaikes (AIC) Information Criterion as the step criteria.

For logistic regression modelling, the proportion of all responses for the dependent correctly predicted by the model provides an indication of the value of the model. A model is considered useful if it correctly predicts at least 70% of responses to the dependent variable (i.e. each best practice).

In all analyses the *p* statistic represents the significance level where a value below 0.05 is considered to be statistically significant. A *p* value below 0.05 means that it is unlikely (probability of less than 5%) that the observed relationship or difference has occurred purely by chance. All statistical analyses were performed using R software and Microsoft Excel.

4. Results

4.1. Profile of farming across regions

Key attributes of the survey sample are summarised in Table B. These key attributes are important for contextualising and interpreting the factors influencing farming knowledge, values, and practices..

Table B: Key attributes summary.

Key attributes (mean unless indicated)	North Central Victoria (2019)	The Eyre Peninsula, South Australia (2020)	Northern Wheatbelt, Western Australia (2020)	Central West NSW (2021)	Tasmania (2022)	The Wimmera, Victoria (2023)
Property size (area owned)	118ha (median 228ha)	2885ha (median 1500ha)	4712ha (median 3227ha)	1300ha (median 1140ha)	359ha (median 42ha)	1240ha (median 550ha)
Bought additional land in region in past 20 years	45%	51%	56%	37%	26%	51%
Subdivided or sold part of property past 20 years	15%	16%	27%	13%	14%	13%
Property leased, share farmed or agisted by others	45 ha	359 ha	27.5 ha	57 ha	40 ha	353 ha
Property leased, share farmed or agisted from others	225 ha	669 ha	1305 ha	88 ha	57 ha	353 ha
Age of respondent (median)	62 years	57 years	70 years	61 years	61 years	62 years
Proportion of Full-time Farmer (FTF) survey responses	49% (own 80% of the land surveyed)	62%	72%	55% (own 89% of land surveyed)	33% (own 87% land surveyed)	58% (own 87% of land surveyed)
Gender of respondent	22% Female	10% Female	8% Female	21% Female	25% Female	24% Female
Resident on property	73%	76%	83%	76%	96%	69%
Median length of family ownership	46 years (mean 59 years)	50 years (mean 67 years)	55 years (mean 90 years)	51 years (mean 40 years)	39 years (mean 22 years)	63 years (mean 57 years)
Other family members working on property	30%	59%	73%	56%	55%	62%
Paid off-property work last 12 months (mean number of days)	65 days	87 days, (median: 10 days)	20 days (median: 47 days)	79 days	103 days	79 days
Hours work on-property per week (mean)	35 hours	42 hours	46 hours	41 hours	31 hours	38 hours
Income from agriculture in relevant region 2018/19	69%	78%	89%	70%	57%	80%

Net profit from agriculture in relevant region (full-time farmers 2018/19)	65%	76%	70%	56%	62% (2020/21)	92% (2020/21)
Received net off-property income 2018/19	70% primary respondent	34% primary respondent	2% primary respondent	19% primary respondent	19% primary respondent	15% primary respondent
	30% spouse	23% spouse	34% spouse	16% spouse	11% spouse	21% spouse
	-% both	-% both	23% both	24% both	26% both	20% both
% All survey respondents net income from off-property >$50k	31%	43%	42%	57%	56%	51%
Completed short course related to property management, past 5 years	19% (respondent only)	89% (respondent or partner)	22% (respondent or partner)	24%	24%	28%
Attended a field day in the last 12 months	32%	53%	53%	34%	34%	48%
Property management or whole farm plan	28% (34% FTF)	44% (53% FTF)	45% (53% FTF)	36% (58% FTF)	36% (58% FTF)	41% (50% FTF)
Have a succession plan in place (Well advanced and ongoing)	27%	37%	41%	31%	19%	34%

4.1.1. Land use

The most common land use for the Northern Wheatbelt region of Western Australia, the Eyre Peninsula of South Australia and the Wimmera region in Victoria was cereal cropping, with the most common land use in North Central Victoria, Central West NSW and Tasmania being pasture (Figure 3).

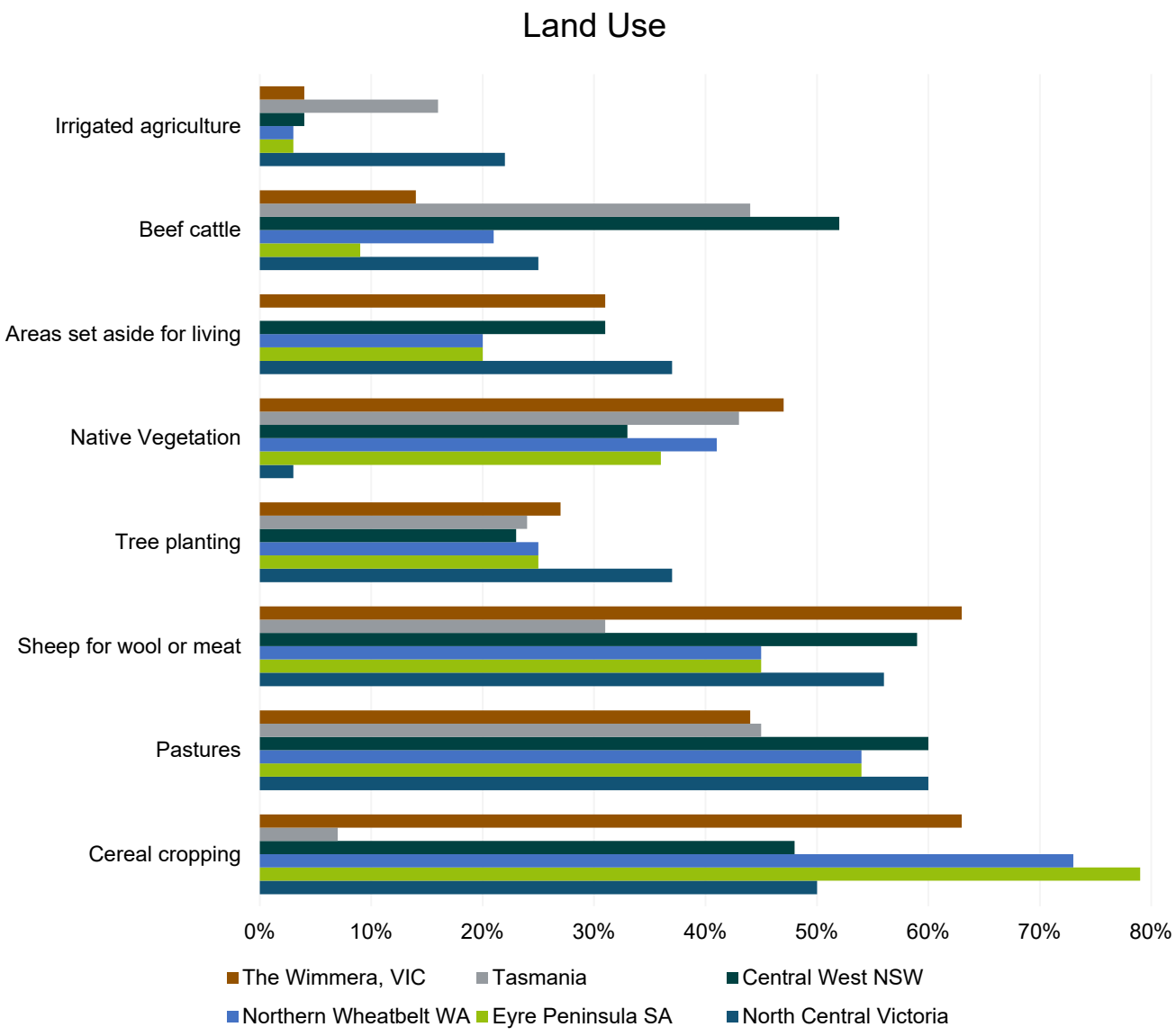


Figure 3: Land uses for each region.

4.1.2. Occupational identity

Survey participants self-identified into one of four groups based on their engagement with farming (Figure 4). Full-time farmers represented the largest percentage of respondents. North Central Victoria had the highest response rate to the survey and Tasmania had the highest proportion of female respondents (Figures 5 and 6).

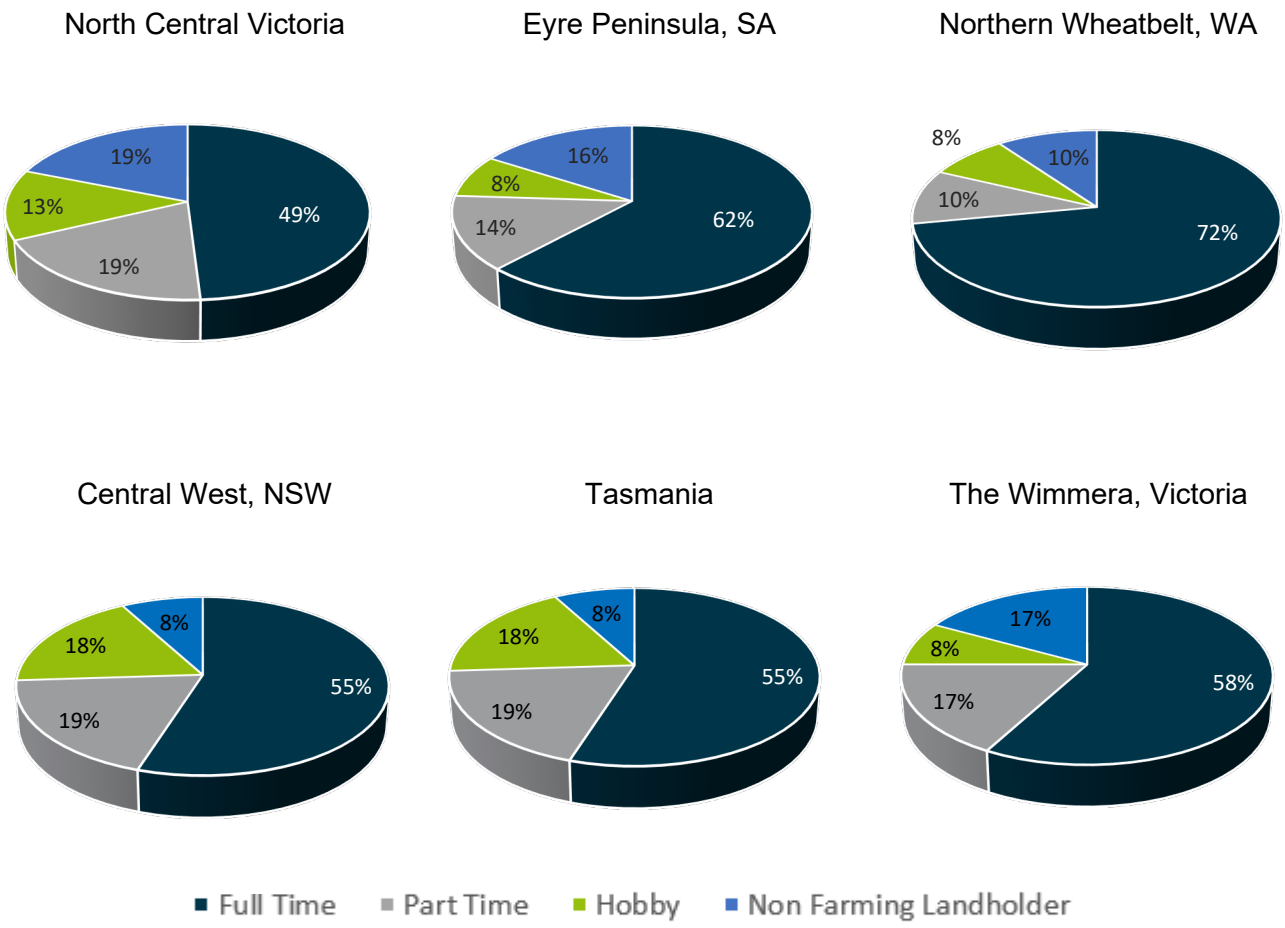


Figure 4: shows the overall survey regional response rate and response rates by gender for each of the landholder types

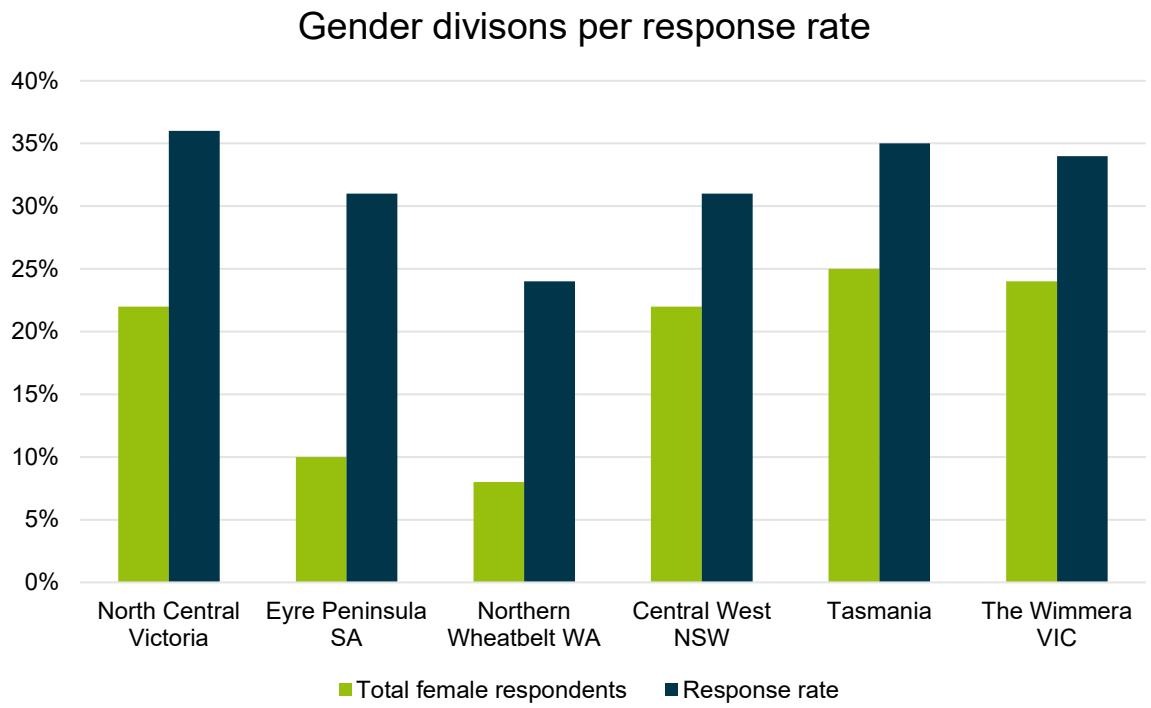


Figure 5: Response rate and composition of female respondents for each region

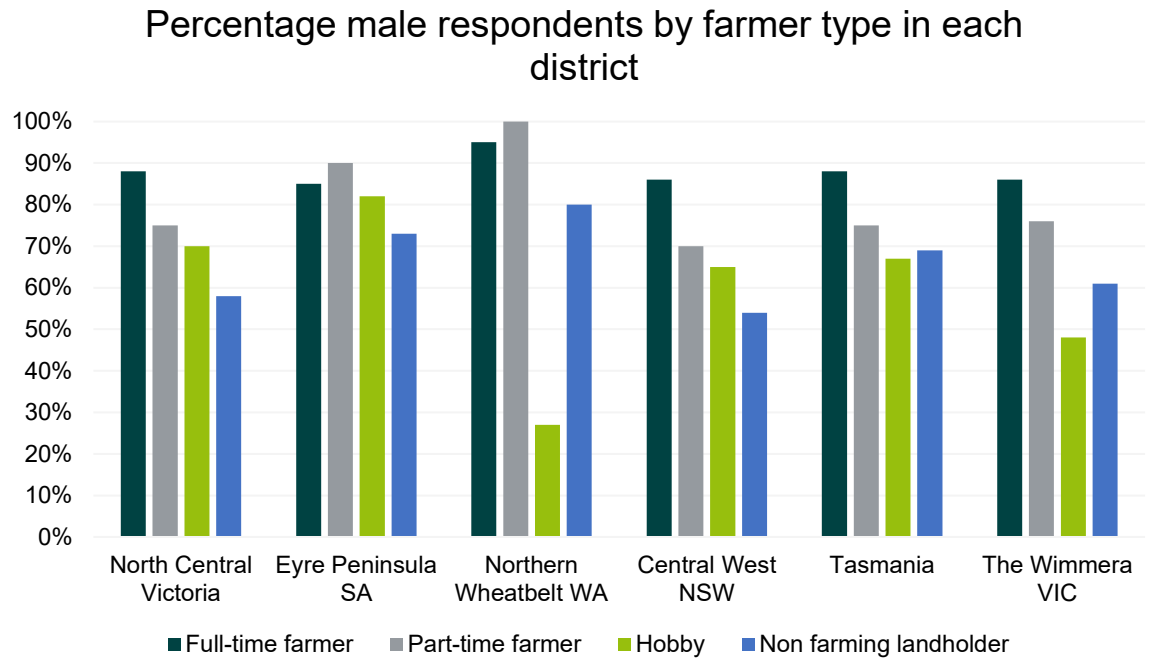


Figure 6: Percentage male respondents by farmer type and district

4.2. What is important to landholders?

This section explores farmer values, their predisposition towards risk and openness to change.

4.2.1. Values

What is important to landholders, and farmers in particular? Respondents were asked to assess the importance of a range of values to them. Some were those which they associated or attached to their property, and the others were their personal, intrinsic, or held values, labelled: *'The principles that guide your life'*.

The values people attached to their property varied across each region (Figure 7), however one of the top two values for all regions was the '*Ability to pass on a healthier environment for future generations*'.

In terms of principles that guide respondents' lives, the top two principles across regions were clearly indicated, being *'Looking after family'* and *'Preventing pollution and protecting natural resources'* (Figure 8). Notably, the results relating to the question '*Creating wealth and striving for a financially profitable business*', appeared to be less important in North Central Victoria. However, this was diluted by the 'non-farmers' group with the percentages of full-time (86%) and part-time farmers (68%) represented in much higher proportion.

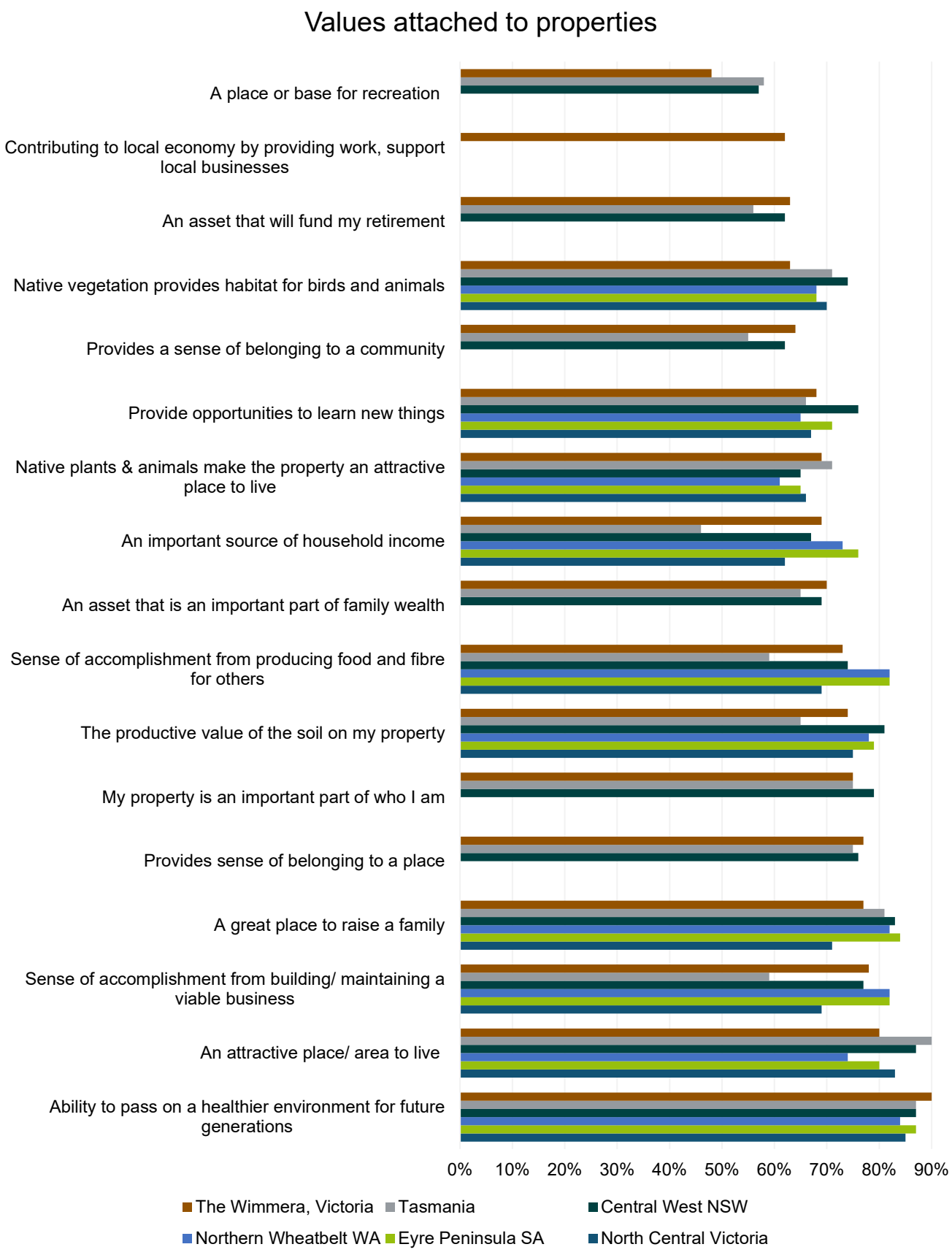


Figure 7: Percentage values attached to property in each region

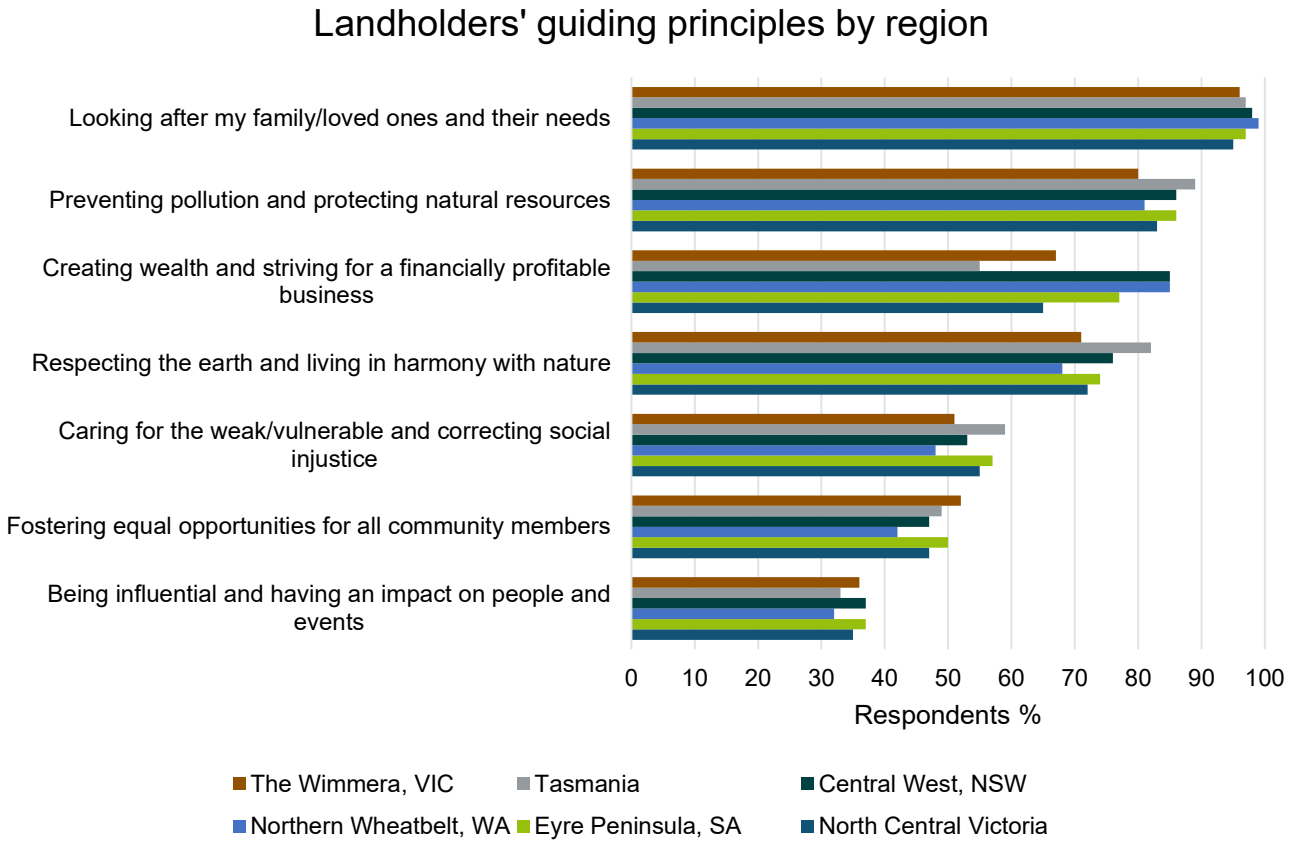


Figure 8: Percentage top 'held' values of landholders responding to the survey section 'The principles that guide your life'

4.2.2. Risk and openness to change

In all six regions surveyed respondents indicated a very high degree of openness toward new ideas about farming, with 91% of full-time farmers in the Northern Wheatbelt, and 90% of Eyre Peninsula landholders, agreeing or strongly agreeing with that statement (Table C). In the North Central Victoria and the Wimmera survey, 33% indicated that they were usually an early adopter of new agricultural technologies and practices; this was 44% for WA, 41 % for SA, 35% for NSW and 31% for Tasmanian respondents. Our research found that those identifying as early adopters are significantly more likely to be engaged in soil health groups and commodity groups. They are significantly more likely to adopt best practice and change their on-property operations to achieve both agricultural and ecological goals. They are more likely to take on cutting-edge innovations and respond to climate change by changing on-property operations to capture carbon and reduce carbon emissions.

Table C: Risk and openness to change for landholders, with results presented representing the mean score out of 5, and the overall percent agreement

STATEMENT	North Central Victoria	Eyre Peninsula, SA	Northern Wheatbelt, WA	Central West NSW	The Wimmera, Vic	Tasmania
I am usually an early adopter of new agricultural practices and technologies	3.3 33%	3.2 41%	3.3 44%	3.1 35%	3.1 33%	3.1 31%
I prefer to avoid risks	3.4 48%	3.4 58%	3.0 33%	3.3 48%	3.0 35%	3.1 41%
I usually view risks as a challenge to embrace	3.4 47%	3.5 57%	3.5 51%	3.3 49%	3.5 55%	3.3 45%
You can't be too careful when dealing with people	3.8 61%	3.4 55%	3.5 50%	3.6 62%	3.6 60%	3.6 59%
People are almost always interested only in their own welfare	3.3 44%	3.3 48%	3.1 34%	3.2 40%	3.1 39%	3.4 48%
Financially, I can afford to take a few risks and experiment with new ideas	-	3.2 44%	3.3 45%	3.1 47%	3.2 50%	3.2 44%
I am open to new ideas about farming	-	4.2 90%	4.2 91%	4.1 87%	4.0 89%	3.1 88%
This may not be the best farm around but there is no real need to change #	-	2.7 26%	2.7 15%	2.9 31%	2.5 19%	2.7 25%
I don't have enough time to consider changing my practices	-	2.6 17%	3.1 38%	- 29%	3.1 38%	- 20%

Wording for Central West survey was slightly different, 'My farm is doing okay the way things are, I see no reason to change'

4.3. Regional and on-farm challenges

The most important regional-scale issues were changes in weather patterns (North Central Victoria and Northern Wheatbelt WA, both 85%) and water security (Eyre Peninsula SA, 81%; Northern Wheatbelt WA, 78%). In the North Central Victoria survey, this question was focused on the importance of the quality of water in dams during drought (66%) and the movement of irrigation water away from their region (48%). However, the findings clearly indicate that water security is an important factor across all regions, more so for the comparatively drier regions of Eyre Peninsula SA and the Northern Wheatbelt WA. The top ten most important issues across the six regions are shown in Figure 9 and the most important property-scale issues in Figure 10.

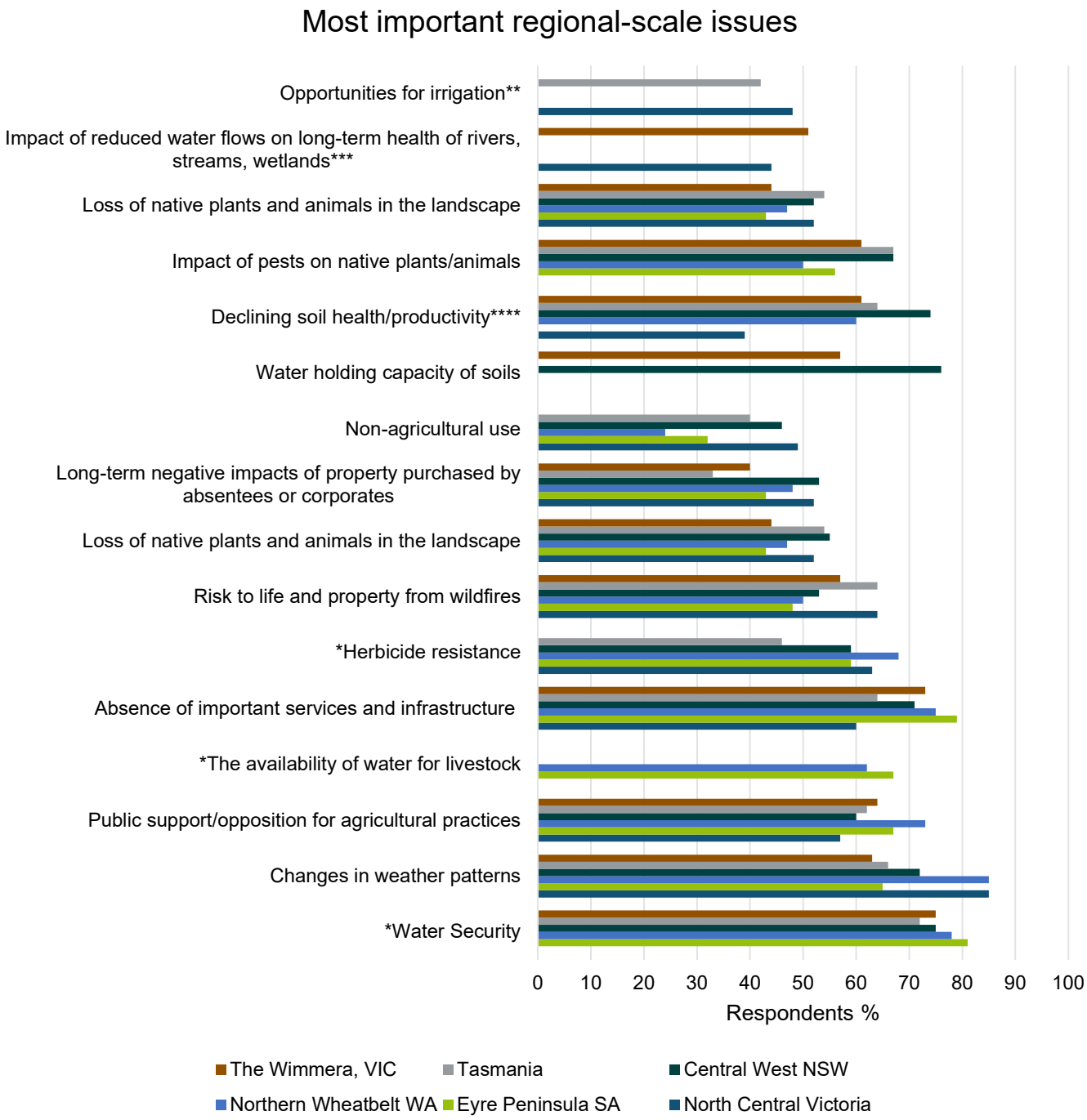


Figure 9: Percentage top ten most important issues across the six regions.
** indicates issue not included in all surveys.*

As can be seen in Figure 10, the most important property-scale issues identified by landholders across regions were soil erosion (North Central Victoria 72%; SA 68%; NSW 60%; WA 58%), as well as soils having low biological activity, declining nutrient status and low organic carbon (top concern for Tasmania 44%, Central West NSW 63%). Uncertain or low returns was the most important issue experienced by landholders in the Northern Wheatbelt WA and the Wimmera VIC, and the second most important issue for the Central West NSW – this may relate to the extent to which they appear to be experiencing temperature extremes and other impacts associated with climate change (Figure 11). Indeed, 70% of WA landholders who responded to the survey considered climate change a risk to the region.

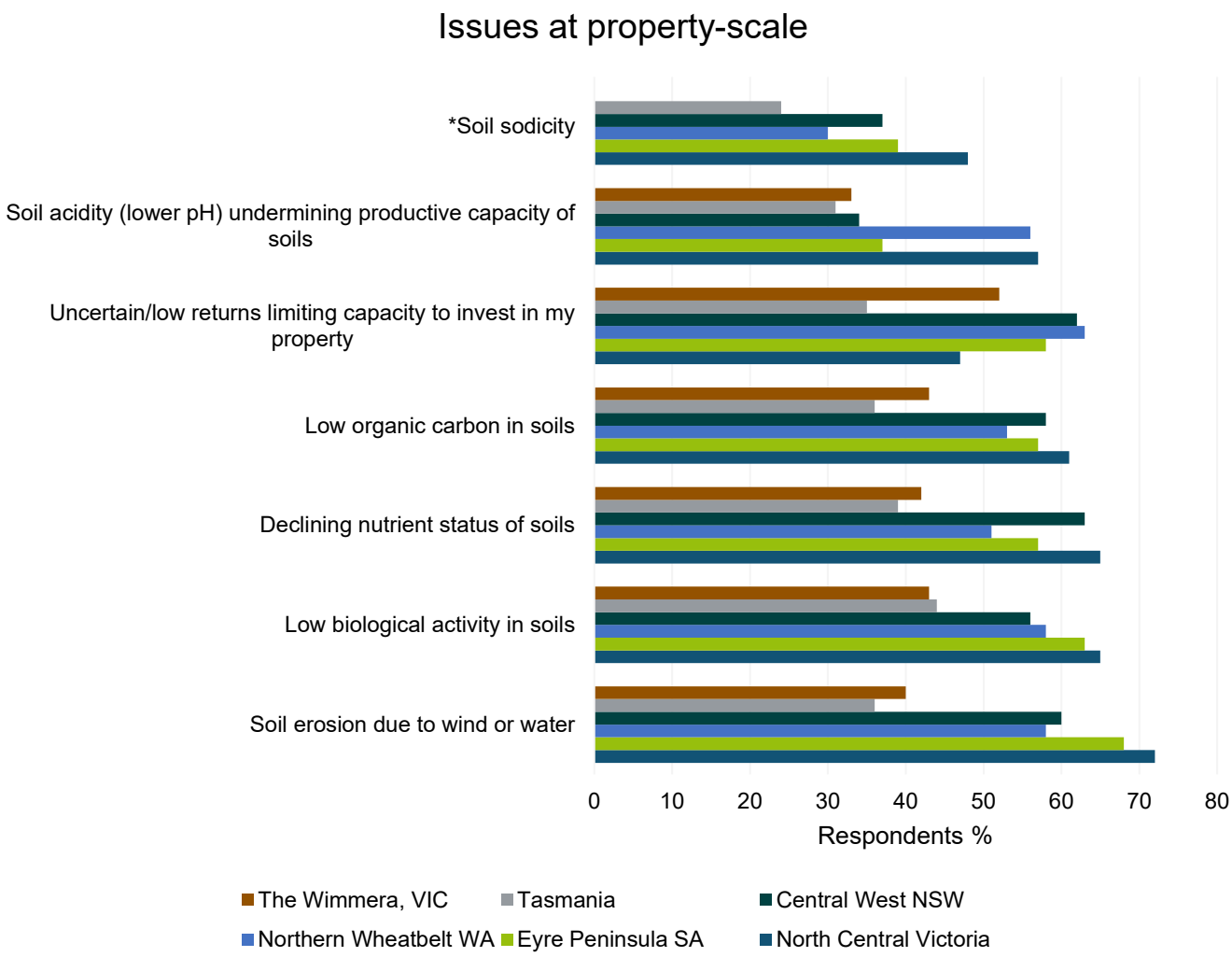


*Figure 10: Percentage importance of property-scale productivity and soil issues across regions. * indicates issue not included in all surveys.*

4.3.1. Beliefs about climate change

In this section we considered the level of concern related to the impacts of accelerated climate change. Sixty-three to eighty-five percent of landholders across regions considered 'Changes in weather patterns' to be a major regional issue, even when response to climate change items was quite low, suggesting a potential resistance to use the term 'climate change', specifically (Figure 11).

There were some substantial differences across regions in relation to beliefs on climate change. In the drying climate of the Northern Wheatbelt in WA, 70% of respondents believed that climate change posed a risk to their region, compared to just 43% of respondents on the Eyre Peninsula. Importantly, there was consistent confidence across regions that landholders can adapt to expected changes in weather patterns, with one exception in Tasmania (Figure 12).

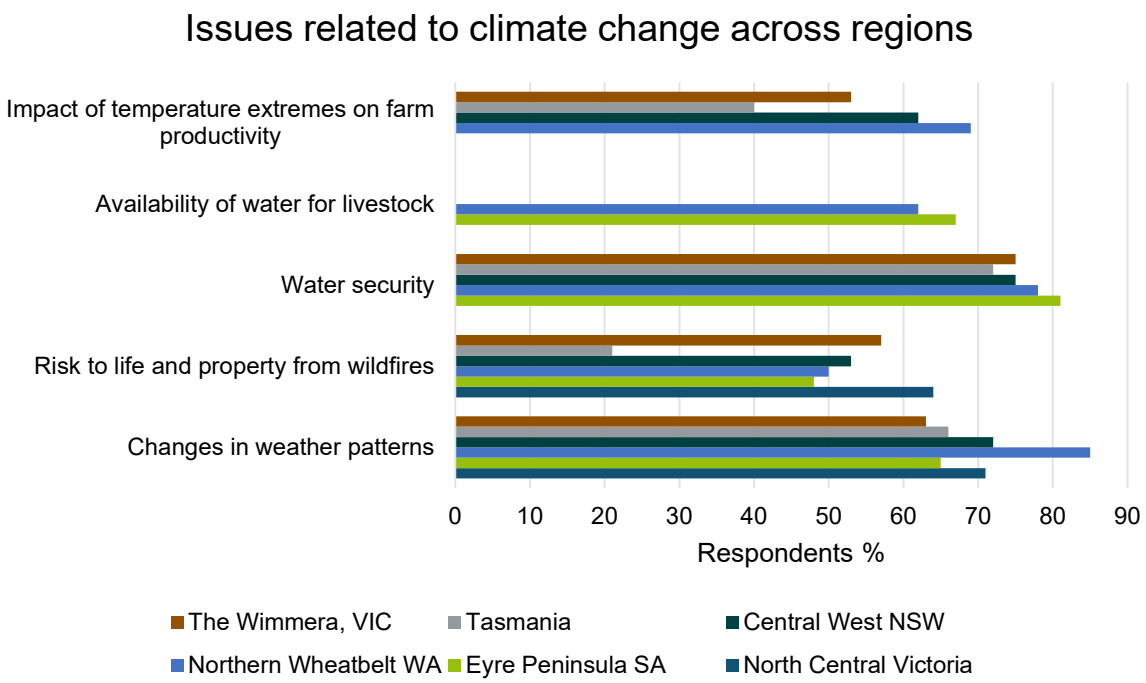


Figure 11: Percentage issues related to climate change across regions

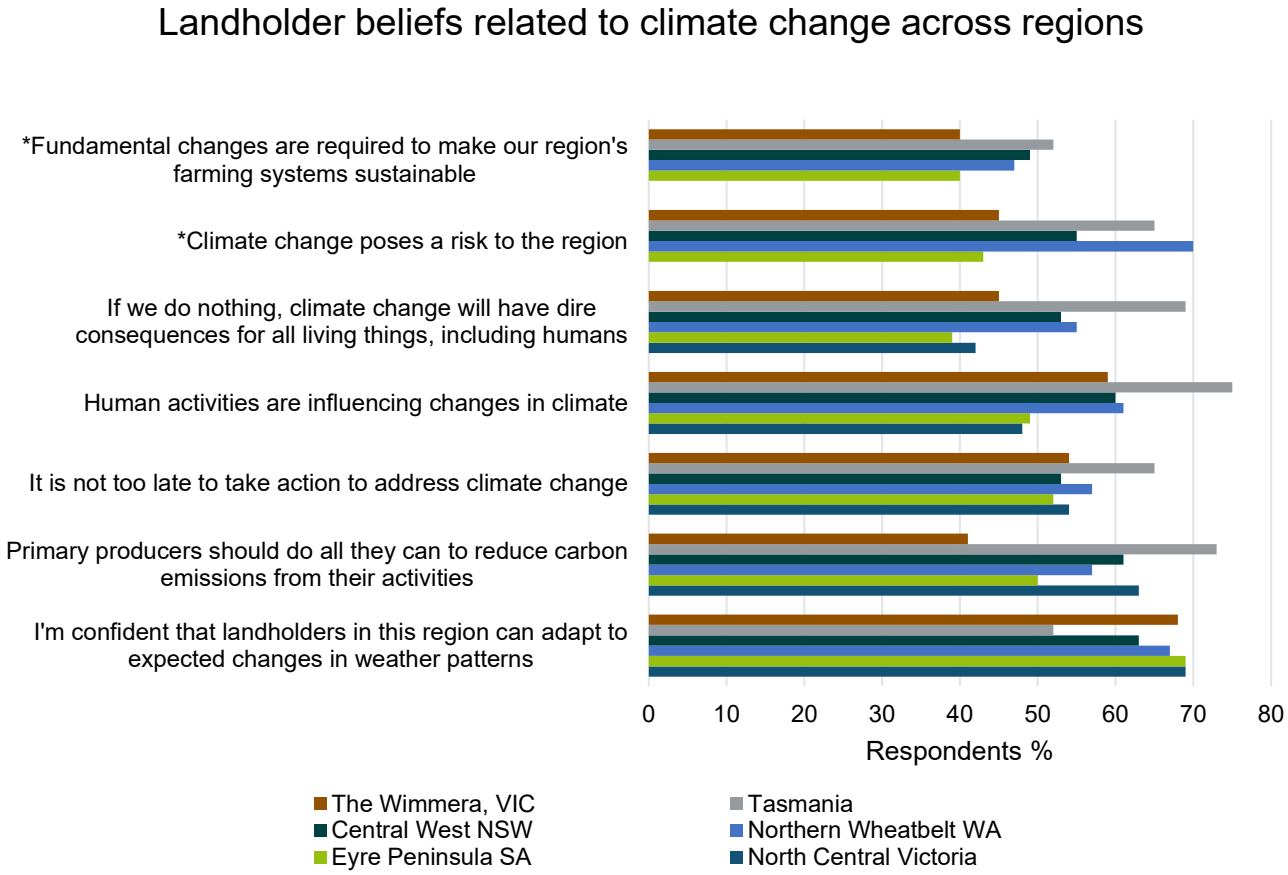


Figure 12: Percentage landholder climate change related beliefs across regions.
**Not all questions asked in all surveys.*

4.4. Practice implementation

Reported soil testing varied widely across regions, with 82% of WA farmers testing their soils, while less than half of Eyre Peninsula farmers were testing their soils (Table D). Almost three-quarters of the Victorian farmers were conducting soil-testing where they had applied ameliorants in the past. Local partners suggest that necessity leads to testing in areas prone to acidic soils.

Across the SA and WA surveys, the use of chemicals was reported to have risen for over a third of farmers (35 and 36% respectively), while a smaller, but still substantial proportion of farmers reported that they had decreased chemical use in recent times (21 and 28%). Statistical modelling with the SA survey data identified that farmers who felt 'adequately supported to conduct farming and land management activities' on their property were also more likely to have the financial capacity to be experimenting with new ideas.

In the Central West of NSW, full-time and part-time farmers reported that maintaining at least 70% groundcover was the most common practice implemented in the preceeding five years, for two thirds of farmers, followed by the lethal control of pest animals (62%), and the use of no-tillage techniques to establish crops or pastures (56%). For Tasmanian farmers there were four top practices implemented prior to 2017: soil testing; lime applications; perennial pastures; and tree planting. The most common practices in the current period (2017 – present), for almost half of farmers, were soil testing regimes and at least one application of lime, followed by sowing perennial pastures. In the Wimmera, Victoria, planting legumes, lucerne, clover and pulses stands out as the most common practice in the current period (2017 – present) for two-thirds of farmers, followed by the use of no-tillage techniques to establish crops or pastures (64%).

Table D: Management practices implemented in the last five years, across regions, for full-time (FT) and part-time (PT) farmers.

MANAGEMENT PRACTICE	North Central Victoria		Eyre Peninsula, SA		Northern Wheatbelt, WA		Central West, NSW		Tasmania		The Wimmera, Vic	
	FT	PT	FT	PT	FT	PT**	FT	PT	FT	PT	FT	PT
Lethal control of pest animals	80%	72%	64%	51%	67%	45%	64%	58%	-	-	-	-
Use of no- (or minimum) tillage techniques to establish crops or pastures #	75%	53%	58%	44%	62%	27%	58%	49%	41%	35%	63%	68%
Planting legumes or pulses*	-	-	52%	42%	70%	82%	50%	33%	50%	33%	68%	65%
Planting of trees and shrubs	70%	68%	31%	22%	50%	55%	40%	60%	39%	49%	35%	38%
Testing of soils for nutrient status #	73%	55%	49%	48%	82%	64%	58%	47%	69%	62%	55%	48%
Application of soil ameliorants other than fertiliser and lime	67%	40%	31%	31%	64%	20%	16%	28%	29%	19%	17%	18%
Sowing perennial pastures ##	58%	41%	24%	31%	24%	36%	57%	45%	61%	44%	29%	18%
Use of precision farming techniques	47%	26%	50%	39%	66%	10%	37%	17%	35%	16%	52%	33%

At least one lime application to arable land	51%	44%	19%	22%	75%	45%	46%	39%	67%	54%	37%	32%
Preparation of a nutrient budget for all/most of the property	32%	13%	26%	22%	41%	9%	21%	18%	58%	38%	35%	17%
Fencing of native bush/grasslands to manage stock	47%	47%	26%	20%	39%	18%	28%	36%	39%	37%	21%	27%
Use of time controlled, cell or rotational grazing #	42%	45%	25%	29%	21%	20%	25%	36%	35%	52%	14%	10%
Deep ripping of arable land	26%	17%	33%	17%	58%	20%	24%	8%	35%	16%	-	-
Farming activities that you consider to be regenerative*	-	-	14%	14%	17%	1%	18%	23%	14%	14%	9%	12%
Increase in chemical use*	-	-	35%	17%	36%	10%	-	-	22%	11%	-	-
Reduction of chemical use*	-	-	21%	27%	28%	50%	26%	28%	26%	40%	-	-
Organic farming*	-	-	3%	9%	3%	0%	3%	4%	5%	14%	-	-

*SA & WA surveys only. **small sample size. # Slightly modified question across surveys ## Lucerne only for Vic.

4.4.1. Landholder knowledge in relation to practices

Landholder knowledge on a range of items is displayed in Table E. The results across regions showed consistent trends that knowledge of current recommended best practice often correlated with increased uptake of the associated practices. Data for full-time farmers for North Central Victoria, Central West NSW, Tasmania and the Wimmera is provided due to the higher response rate of full-time farmers in these regions.

Table E: Self-assessed knowledge of landholders' land and soil management and practices for the study regions. Mean is out of 5. Percentage results are for those landholders rating their knowledge as 'Sound' or 'Very Sound'.

KNOWLEDGE TOPIC	North Central Victoria (with full-time farmer data)	Eyre Peninsula, SA	Northern Wheatbelt, WA	Central West, NSW	Tasmania	The Wimmera, Vic
Strategies to maintain ground cover to minimise erosion in this area	3.8	3.9	4.1	4	3.8	4
	91% (97%)	95%	97%	74% (87%)	64% (87%)	75 (84%)
Preparing a farm/property plan allocating land use according to land class	3.4	3.5	4	3.7	3.4	3.8
	76% (90%)	84%	96%	60% (75%)	49% (77%)	68% (82%)

The extent and type of biological activity in soils on your property	3	2.9	2.8	2.8	3.2	2.8
	70% (82%)	67%	61%	22% (28%)	28% (44%)	21% (21%)
The production benefits of applying biological soil supplements (e.g. compost, microbial inoculants)	3.4	3.2	3.3	3.4	3.5	3.4
	82% (90%)	76%	80%	44% (48%)	51% (58%)	44% (47%)
How to identify the main constraints to soil productivity	3.4	3.4	3.7	3.5	3.8	3.6
	78% (97%)	83%	89%	52% (68%)	64% (78%)	59% (76%)
The processes leading to soil structure decline	3.2	3.3	3.5	3.5	3.5	3.5
	76% (90%)	81%	82%	49% (64%)	49% (69%)	49% (53%)
How to use soil testing to prepare a nutrient budget that will increase soil productivity #	3	3.1	3.7	3.1	3.3	3.3
	63% (81%)	70%	83%	36% (47%)	42% (69%)	45% (58%)
How to establish perennial pastures in this area	3.6	3.2	3.2	-	-	3.4
	75% (92%)	76%	71%	-	-	46% (55%)
Time controlled, cell or rotational grazing strategies*	-	2.9	2.8	3.1	3.1	3.4
		69%	56%	35% (42%)	37% (56%)	49% (58%)
How to build soil organic matter/soil carbon	-	3.4	3.4	3.2	3.4	3.3
		85%	84%	41% (48%)	45% (61%)	46% (52%)
Regenerative agriculture and holistic farm management*	-	2.7	2.7	3	3	2.8
		57%	53%	30% (35%)	32% (48%)	24% (25%)
How to support the persistence of native grasses in this area	-	2.6	2.4	3.1	2.8	-
		56%	41%	30% (38%)	23% (30%)	-
How land in your district was used and managed before European settlement	2.4	2.5	2.4	2.4	2.3	2.6
	45% (48%)	47%	43%	14% (15%)	13% (18%)	33% (18%)
The Aboriginal groups/s connected to the area where your property is located	2.5	2.33	2.2	2.5	2	2.4
	48% (43%)	43%	37%	15% (15%)	6% (5%)	12% (7%)

* SA & WA surveys only. # Victoria survey includes additional words '…without the risk of high levels of nutrient run-off'

4.5. Farmer engagement

Survey respondents were asked what their top types of communication were for seeking information on topics related to the management of their property. There were a clear top four modes of communication used across regions, which were: field days, websites, newspapers and magazines.

While the mode of information varied across full-time and part-time farmer cohorts within each region, for all landholders, websites, newspapers and field days featured in the top four modes of information in all regions except for the Northern Wheatbelt. For landholders in North Central Victoria, the top three modes of information were magazines (58%), television (47%), and newspapers (53%). For the Northern Wheatbelt region in Western Australia, the top modes of information were field days (59%), magazines (59%) and websites (49%). Similarly, the Eyre Peninsula in South Australia had field days as the number one mode of information (56%), followed by websites (54%) and newspapers (53%). The Central West of NSW had newspapers (46%), websites (41%) and field days (38%) as their top three communication sources. The Wimmera, Victoria had websites (46%), newspapers (42%) and field days (39%) as their top three. Tasmania looked to websites (48%), field days (35%) and newspapers (33%) for their information (Figure 13).

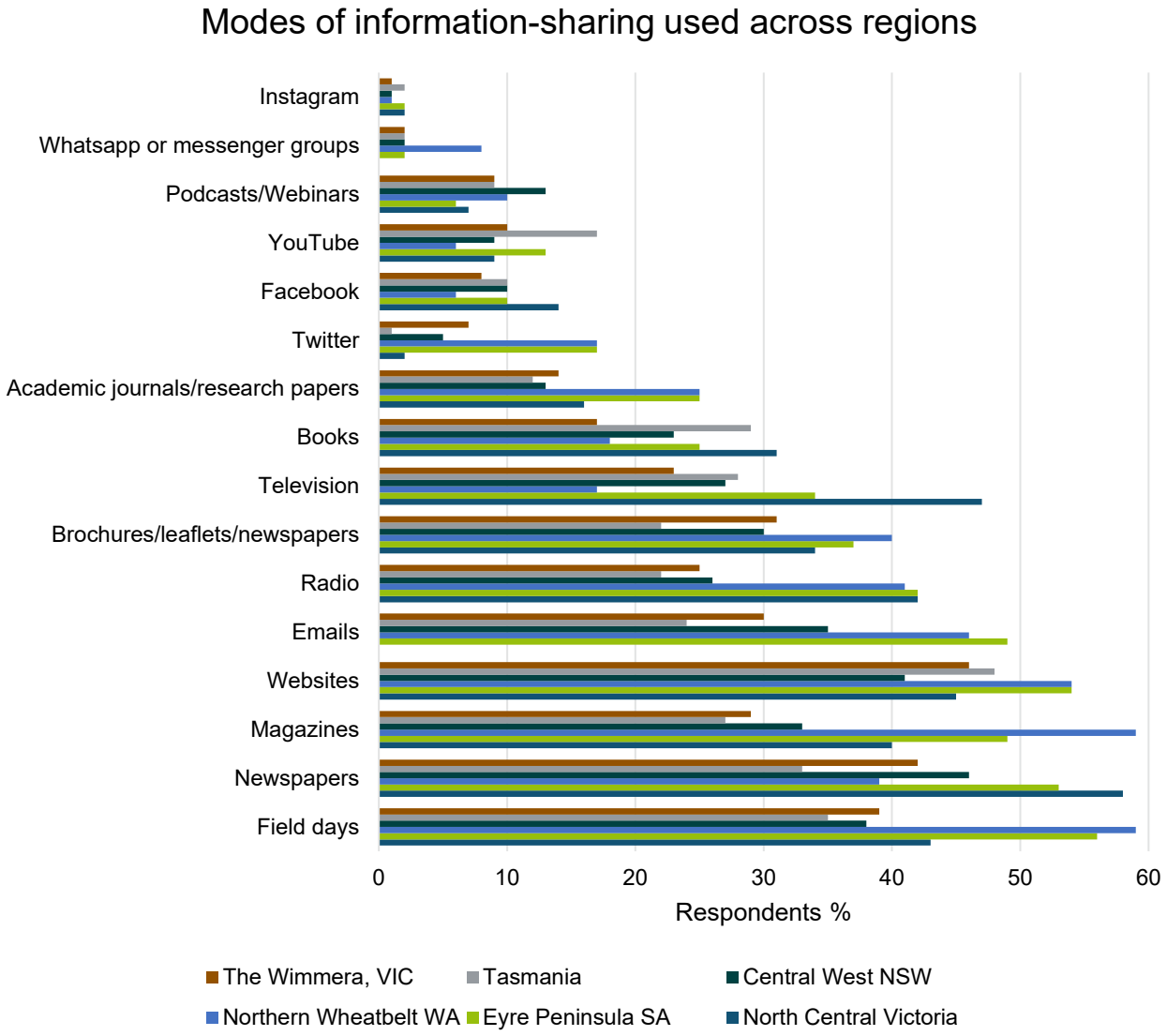


Figure 13: Percentage modes of information on agricultural practice and land management used across regions

In terms of the top organisational or individual source of knowledge, the top source for landholders across regions was 'Other Farmers' in all regions that included this as an option (i.e. Eyre Peninsula in South Australia (77%), Northern Wheatbelt region WA (70%), Central West NSW (63%), Tasmania (59%) and the Wimmera (62%)). Table F shows variation across regions in terms of key organisations and people that were used as important information sources, with individuals (i.e. people they know personally) taking a key role in knowledge-sharing within farming systems.

Table F: Sources of landholder information on agriculture and land management across regions

Source of Knowledge	North Central Victoria	Eyre Peninsula SA	Northern Wheatbelt WA	Central West, NSW	Tasmania	The Wimmera, Vic
Other farmers	-	77%	70%	63%	59%	62%
Friends/neighbours/relatives	55%	67%	48%	47%	44%	41%
Bureau of Meteorology	64%	59%	45%	33%	31%	33%
Independent agricultural consultants, agronomists or stock agents	45%	55%	53%	41%	31%	43%
Commercial agricultural consultants, agronomists or stock agents	45%	40%	43%	26%	27%	30%
Rural R&D organisations/corporations (e.g. GRDC)	20%	30%	21%	16%	5%	19%
Local farming/grower groups	-	44%	21%	7%	15%	26%
Regional NRM group or CMA	27%	33%	14%	9%	17%	11%
Universities/CSIRO	-	7%	11%	7%	10%	8%
Extension officers	8%	14%	6%	10%	7%	-
Commodity groups	8%	12%	6%	6%	4%	14%
Soil CRC	6%	5%	2%	2%	2%	2%
Local Council	18%	13%	4%	7%	6%	6%
Environmental organisations (e.g. Greening Australia, Landcare)	32%	14%	3%	16%	15%	8%
Government agencies & departments (DPIRD, PIRSA/SARDI)	24%	50%	22%	24%	18%	14%
Academic journals/research papers	15%	25%	22%	13%	12%	-
Knowledge from my own experience	-	-	-	59%	56%	57%
My intuition, gut feeling	-	-	-	28%	31%	-

Information use over time was explored in North Central Victoria, with survey results from 2014 and 2019 combined in Figure 14, to show a decrease in the use of traditional information sources, such as newspapers and mailouts, as well as friends, relatives and neighbours.

There was an expected increase in social media and other online modes of communication. There was also a notable increase in the use of private consultants, alongside a similar decline in the use of government agencies as a key information source.

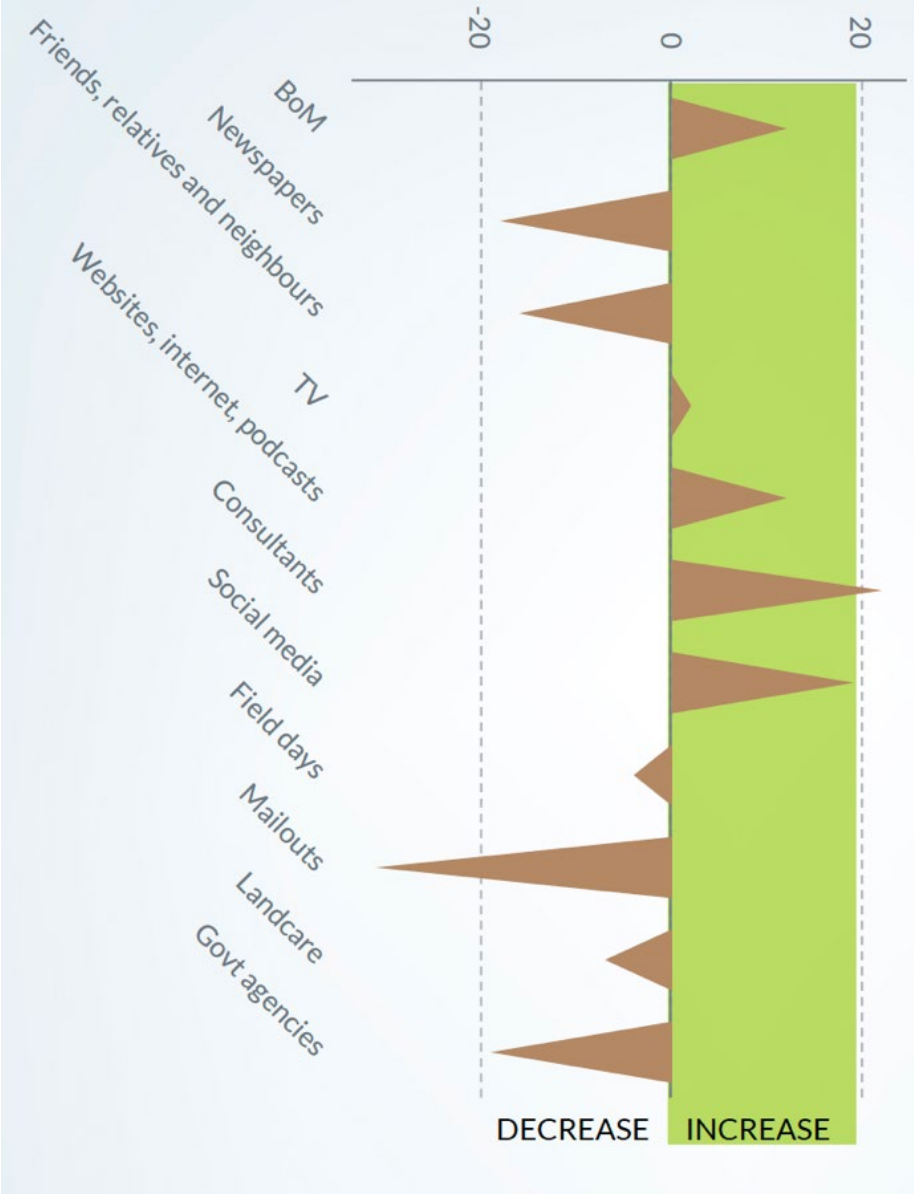


Figure 14: Percentage change in use of various information sources over time, using data from the 2014 & 2019 North Central CMA surveys

4.6. Landholder views on grower groups

Landholders were asked to share their views on the role of local grower or farming system groups, shown in Table G, with mostly consistent results across regions.

Table G: Views on organisational relationships across regions.

VIEW STATEMENT	North Central Victoria	Eyre Peninsula, SA	Northern Wheatbelt, WA	Central West NSW	Tasmania	The Wimmera, Vic
I feel a personal responsibility to be part of a local grower group (WA), research and development group (SA), or soil health group (Vic)	3	3.4	3.2	3.3	3.3	3.6
	41%	40%	38%	43%	46%	55%
Grower groups are the best way to drive and direct local research, development and extension*	-	3.9	3.6	3.5	3.4	-
		66%	54%	46%	33%	
I feel adequately supported to conduct farming and land management activities on my property*	-	3.7	3.4	3.8	3.6	3.6
		59%	52%	70%	51%	57%

* Question not included in some surveys.

4.7. Farm data and management

Data use and management was raised as a particular area of interest in the development of the South Australian and Western Australian surveys, and as such, several new questions were built in addition to some of the original core survey questions for these and subsequent surveys.

4.7.1. Northern Wheatbelt, Western Australia

The findings suggest that data is an important part of farm management, yet almost half of the Western Australian farmers surveyed (49%) reported internet connectivity as a barrier to using on-farm data. 66% of WA respondents agreed that decision-making needs to be strongly influenced by data and 62% agreed that they already have good systems in place to manage farm data. Soil testing was perceived as an integral element of data gathering, with 91% of full-time farmers agreeing that it is an essential step in understanding soil condition.

On-farm management was largely collaborative, as 79% of farmers include another person or people in their management decisions. Most often, this was their spouse/partner, family member, or an advisor such as an agronomist. 73% reported that they had other family members working full-time on their property.

4.7.2. Eyre Peninsula, South Australia

Respondents indicated that 61% of farmers have good systems in place to manage farm data, yet the absence or poor quality of important services and infrastructure (e.g. health, schools, internet) was the most important issue for farmers in this region (79%). Soil testing was perceived as an integral element of data gathering, with 83% of farmers agreeing that it is an essential step in understanding soil condition. While there was no specific data collected on the importance of data in

decision-making, 53% of farmers agreed that they have good systems in place to manage farm data.

On-farm management was largely collaborative, as 75% of farmers included another person or people in their management decisions. Over half (59%) reported that they had other family members working full-time on their property.

4.7.3. North Central Victoria

Survey information collected in relation to data management was limited. However, it was recorded that 80% agreed that there is an absence or poor quality of services and infrastructure (e.g. health, schools, internet) and 89% of full-time farmers agreed that soil testing is an essential step in understanding soil condition. While they were not asked whether someone else was included in their decision-making, 30% reported that they had other family members working full-time on their property.

4.7.4. Central West, NSW

Of this region's farmers, 59% agreed that data should strongly inform decision-making around farm management, and 56% agreed that they already have good systems in place to manage farm data, yet over half (53%) reported internet connectivity as a barrier to using on-farm data effectively.

Full-time farmers reported a higher level of knowledge on how to use data to inform land-management decisions than other landholder types. There was a consistently lower level of knowledge across practices for part-time farmers that could present an important opportunity for agricultural support organisations to target this group of land managers, who also played an important role in the productivity of approximately 8% of the land.

4.7.5. Tasmania

Among Tasmanian farmers, 64% believed that data should significantly influence decision-making in farm management, while 62% indicated confidence in their current systems for managing farm data. However, nearly 40% of respondents identified internet connectivity as a hindrance to effectively utilising on-farm data.

While there was a strong belief in the importance of soil testing, and a general confidence in working with numbers, soil testing was implemented by only 56% of farmers in the previous five years. This suggests that farmer capacity to use and apply this data has room for improvement, with 48% of farmers reporting having prepared a nutrient budget, and half of farmers having prepared a whole farm plan. Farmer belief in the importance of data for informing decision-making was also reduced (64%).

4.7.6. The Wimmera, Victoria

Farm-level business management in the Wimmera region of Victoria has a direct influence on land management decisions and carries significant implications for overall farm profitability. Among both full-time and part-time farmers, 63% agreed that data should play a strong role in informing farm management decisions. Furthermore, a substantial majority (86%) expressed confidence in their ability to make decisions based on data. However, more than half of respondents (58%) cited internet connectivity as a barrier to the effective use of on-farm data.

When asked about the indicators they use to assess soil and land health, most farmers identified soil testing as their primary tool. Nonetheless, many also emphasised the value of complementary methods such as visual inspection of soil conditions, observations of plant health, including the presence and type of weeds, and analysis of crop yields. This suggests that while scientific metrics are important, experiential and observational knowledge remains an integral component of land

assessment practices. While 84% of farmers agreed that soil testing is an essential step in understanding soil conditions, only 55% of farmers reported having tested their soils at least once in the last five years. When asked about soil testing frequency on their property, 41% of full-time and part-time farmers indicated that they tested every three to five years, 23% at least annually, 12% once, and 24% never.

4.8. The future of farming

4.8.1. Long-term plans

Landholders were asked to share their views on the long-term plans for their property, outlined in Table H, below.

Table H: Long-term plans across regions. Wording of succession planning for North Central Victoria, Northern Wheatbelt, WA and Tasmania was: 'Have family members interested in taking on your property in the future'

LONG TERM PLANS	North Central Victoria	Eyre Peninsula, SA	Northern Wheatbelt, WA	Central West, NSW	Tasmania	The Wimmera, Vic
Ownership of the property will stay within the family	66%	79%	72%	72%	71%	80%
Additional land will be purchased	26%	32%	33%	26%	19%	28%
I will move off the property around/soon after reaching retirement age	15%	30%	29%	20%	16%	22%
Additional land will be leased or share farmed	17%	23%	19%	26%	7%	23%
All or most of the property will be leased or share farmed	18%	21%	17%	10%	7%	24%
The enterprise mix will be changed to diversify income sources	23%	18%	22%	24%	19%	16%
A family member will seek additional off-property work to support the farm	21%	17%	12%	18%	21%	16%
The property will be sold	18%	14%	16%	17%	16%	14%
The property will be subdivided and a large part of the property sold	7%	6%	4%	5%	7%	7%

4.8.2. Differences by age

Data was analysed by dividing up the respondent data from full-time and part-time farmers into three age categories, as determined by established definitions of generations: Generation Y (born 1981-1996, referred to as Gen Y), Generation X (born 1965-1980, referred to as Gen X) and Baby Boomer and older (born prior to 1965, referred to as Baby Boomer+). The Baby Boomer+ generation was found to be the largest cohort of farmers in each region. South Australia, Central West NSW, the Wimmera Victoria and Tasmania data had sufficient responses from Gen Y farmers to include this data separately but for the two other regions, Gen X and Gen Y data was reported together.

The younger farmers across regions had consistently (and significantly) higher self-reported knowledge levels on a range of best practices, which often translated into increased uptake of farming best practice in comparison with the older groups. In North Central Victoria, the older groups were found more likely to be associated with Landcare and had better self-reported knowledge of a number of NRM practices than younger farmers.

On the Eyre Peninsula, Gen Y was significantly more open to risk than the older groups. All Gen Y respondents said they were open to new ideas about farming, and this age group was more interested than the older groups in taking up some sort of study/activity to improve their farm management skills. Gen Y was more likely to have completed a property management or whole farm plan. They were also found to be the most time-poor group, and less likely to participate in the wider agricultural community than older farmers. However, they were more likely to include others in their farm-management decisions. Gen Y was the only group for which every respondent had completed education to at least Year 10. They had the highest rates of both tertiary education (24%) and other post-secondary education (24%), and were significantly more confident with managing data and farm accounts. In comparison, 12% of Gen X and 8% of the Baby Boomer+ generation had tertiary qualifications.

As a group, the younger Northern Wheatbelt, WA cohort (56 years and under) were more likely to have increased their land tenure and owned, on average, more than twice the land than older survey respondents. This age group were more likely to view ‘internet connectivity’ as a barrier to the effective use of on-farm data.

In North Central CMA, values around wealth-generation emerged as significantly more important for younger farmers, whereas environmental values were stronger for the older farmers in this region. It was found that the younger Victorian farmers were more likely to use information sources such as the internet and Twitter, compared to older farmers preferring newspapers, radio and television.

In NSW, Tasmania, and the Wimmera in Victoria, one noted difference was in the levels of self-assessed knowledge between the groups. For all three areas, this higher level of reported knowledge translated into a higher rate of actual management practices, both for those that have been put in place and intended practice. In the Central West NSW the top practice was the preparation of a nutrient budget for all/most of the property, for which 17% of Gen X had implemented this and only 8% of Baby Boomers; while maintaining at least 70% ground cover had been implemented by only 30% of Gen Y, compared with 44% of the Baby Boomer group. In Tasmania, the two younger generation groups indicated a higher level of self-assessed knowledge on the topic ‘the role of soil carbon in maintaining soil health’ (Gen Y 57%; Gen X 75%; Baby Boomers+ 47%). In the Wimmera there was a significant difference between age groups for practices implemented, especially in the use of minimum or no-till practices (94% of Gen Y had implemented; 76% of Gen X had implemented; 60% of Baby Boomers+). In the Wimmera, the use of soil tests to understand soil conditions had been implemented by 82% of Gen Y, 62% of Gen X compared with 49% of the Baby Boomer+ group. Across regions, variations were found in terms of farmer age profiles, although it was generally more likely that the person responding to the survey for each property was an older male.

5. Discussion

Understanding farmer on-farm practices, priorities, beliefs and challenges can provide input into strategic planning, innovation and capacity building for our regional partners, the Soil CRC and agricultural practice within regions and across Australia (Bennett & Cattle, 2013). In broad terms, each of our regional partner groups has different priority areas, which form key elements of strategic planning cycles that usually take place over about a five year period. For example, in Victoria each NRM region develops a Regional Catchment Strategy every five years, which identifies regional NRM priorities and describes strategies to achieve those objectives. For the North Central CMA, the most recent was the 2020-2026 Regional Catchment Strategy, which was informed heavily by the results of the North Central CMA Social Benchmarking Report, an outcome of this project. Key environmental assets identifed in this region are soils, waterways, wetlands and native vegetation. On the Eyre Peninsula, the most recent Strategic Plan was released in 2021 (for the period 2021-2026), with their major foci identified via the Social Benchmarking Survey our team conducted in 2020.

Regional agricultural organisations typically have limited ability (i.e. agency) to accomplish their goals without the support of other stakeholders (e.g. both government and non-government organisations), especially rural property owners who own most rural land in the region and directly influence the condition of soil, waterways, wetlands and native vegetation. In turn, the condition of those environmental assets influences their livelihoods, wellbeing and wealth (including property values). Farmer decisions strongly influence soil health and productivity, with land and farm management being a complex activity. Landholder decisions are driven by a range of environmental, economic and social factors. This project has explored a range of social elements influencing landholder perspectives on a range of issues, and those factors influencing the acceptability of a number of best practices, new technologies and innovations.

A key finding of this project is heterogeneity across regions – there is great variety in terms of demographics, proportion of landholder types, information sources used, knowledge levels, and implementation of a range of practices for farmers across farming systems and regions. The report identified that having the ability to pass on a healthier environment to future generations is extremely important for landholders across regions. A detailed report on survey findings is available in the regional reports (https://soilcrc.com.au/resources/surveying-farm-practices/) and a webinar that summarises some of the results is available via the following link: https://soilcrc.com.au/resources/future-farmers-what-drives-their-decision-making/.

In Australia, while primary production is not the focus of all landholders, clearly agriculture is still considered to be the primary focus of land use (Groth & Curtis, 2017). This is unsurprisingly reflected in the Western Australian Northern Wheatbelt region, and the Eyre Peninsula region of South Australia, where the highest land use was cereal cropping, and the most common land use in North Central Victoria, the Wimmera Victoria and the Central West of NSW regions being pasture or grazing, and cropping and then pasture in the Wimmera (Figure 3). Less conventional land uses, such as farm forestry and farm-based tourism, did not feature as prominently in the results.

5.1. Values

This research considers the values of farmers across a range of different regions in Australia. The values attached to landholders' properties were similar across the regions (Figure 7), with the top value across five regions recorded as the 'ability to pass on a healthier environment to future generations' (all but Tasmania where this category was second to 'an attractive place in which to

live'). The focus on a healthier environment is probably not new, because as previously mentioned, most, if not all, farmers see themselves as responsible stewards of the land (Mendham et al., 2010).

Landholders value their properties as a place to raise and support their families, as well as a place to look after, while striving for a profitable business. Many significant differences emerged by generational group – including values, knowledge and best practice implementation – indicating potential for further investigation.

5.2. Participation

In terms of risk and openness to change, our research found that those identifying as early adopters are significantly more likely to be engaged in soil health groups and farming system groups. They are significantly more likely to adopt best practice and change their on-property operations to achieve both agricultural and ecological goals. They are more likely to take on cutting-edge innovations and respond to climate change by changing on-property operations to capture carbon and reduce carbon emissions. This drive towards innovation is typical in Australia where the need to remain productive and profitable is pushed forward by low and variable rainfall, and highly-weathered, degraded infertile soils (Bellotti & Rochecouste, 2014).

5.3. Challenges

In terms of on-farm challenges, water security was the most important issue on the Eyre Peninsula SA (81%), the Western Australian Northern Wheatbelt (78%), the Central West of NSW (75%), Tasmania (72%) and the Wimmera (75%). In North Central Victoria this question was focused on the importance of the quality of water in dams during drought (66%) and the movement of irrigation water away from their region (48%) (the third and eleventh most important issues respectively). This result would not be a surprise to experienced stakeholders given that Australia has always been challenged with high vulnerability to issues related to water saving and efficiency (Maraseni et al., 2012). The findings clearly indicate that water security is an important factor across all six regions.

Soil management challenges were fairly consistent across regions, with soil erosion a top issue, followed closely by the interrelated trifactor of low biological activity, declining nutrient status and low organic carbon. An interest in improving these elements is evident, with many farmers working to improve these soil issues. Regional data shows opportunities and levers for increased uptake of practices related to addressing these soil challenges, in relation to increasing knowledge associated with those practices, and improving confidence in the effectiveness of their implementation.

Additionally, beliefs around climate change varied across regions, with more widespread agreement that climate change is due to human activity, and that it is a risk to the region, in the Northern Wheatbelt, the Central West of NSW and Tasmania compared to the other regions. Regardless of these beliefs, changing weather patterns emerges as the most important regional challenge across Australian farming systems.

5.4. The future of farming

Our results show that (generational) age matters when engaging farmers, with significant differences found for a number of survey items by age, including values, knowledge, and the likely implementation of best practice. Our results also indicate that younger farmers need more support than they are currently receiving, which could relate to knowledge, financial, or social support. While

succession planning is underway in the regions studied, there is opportunity for further support and engagement to ensure those plans become more fully developed.

The results from the Victorian studies in particular (with the longitudinal data) show that a trend towards a multifunctional rather than purely production-based farming landscape is occurring. However, our results do not demonstrate a strong trend for farming landholders to sell rather than keep their farm in the hands of family. This contrasts with the findings of Mendham et al. (2010). Indeed, one of the most important long-term plans indicated by property owners in this study was the goal that ownership of the property would stay within the family.

6. Conclusion

6.1. Drivers of farmer decisions

The research undertaken in this project is contributing ongoing knowledge about Australia's changing on-farm practices, priorities, beliefs, and challenges, offering a snapshot of values, beliefs and attitudes of farmers. This can then be built upon to show how change may be occurring across regions when the Soil CRC follow-up surveys take place several years on.

Figure 15 was drawn together using strong connections emerging in the pairwise comparisons. This data shows the importance of having farmily working together on a farm, and how this has a strong link with increased sense of belonging, level of coping (wellbeing), and feeling supported. It also links strongly with effective succession planning and whole-farm planning. Additionally, whole-farm planning was closely linked to best practice implementation.

However, those best practices more closely linked to resilience-building (such as carbon-sequestration, increasing ground-cover and reducing emissions) were less likely to be implemented in the case that the farmer did not have high levels of concern and belief about climate change (Figure 15). It should be noted that this analysis was undertaken for the Wimmera dataset only, and needs to be applied across other, and broader datasets, prior to publishing in the academic literature (this work is in progress).

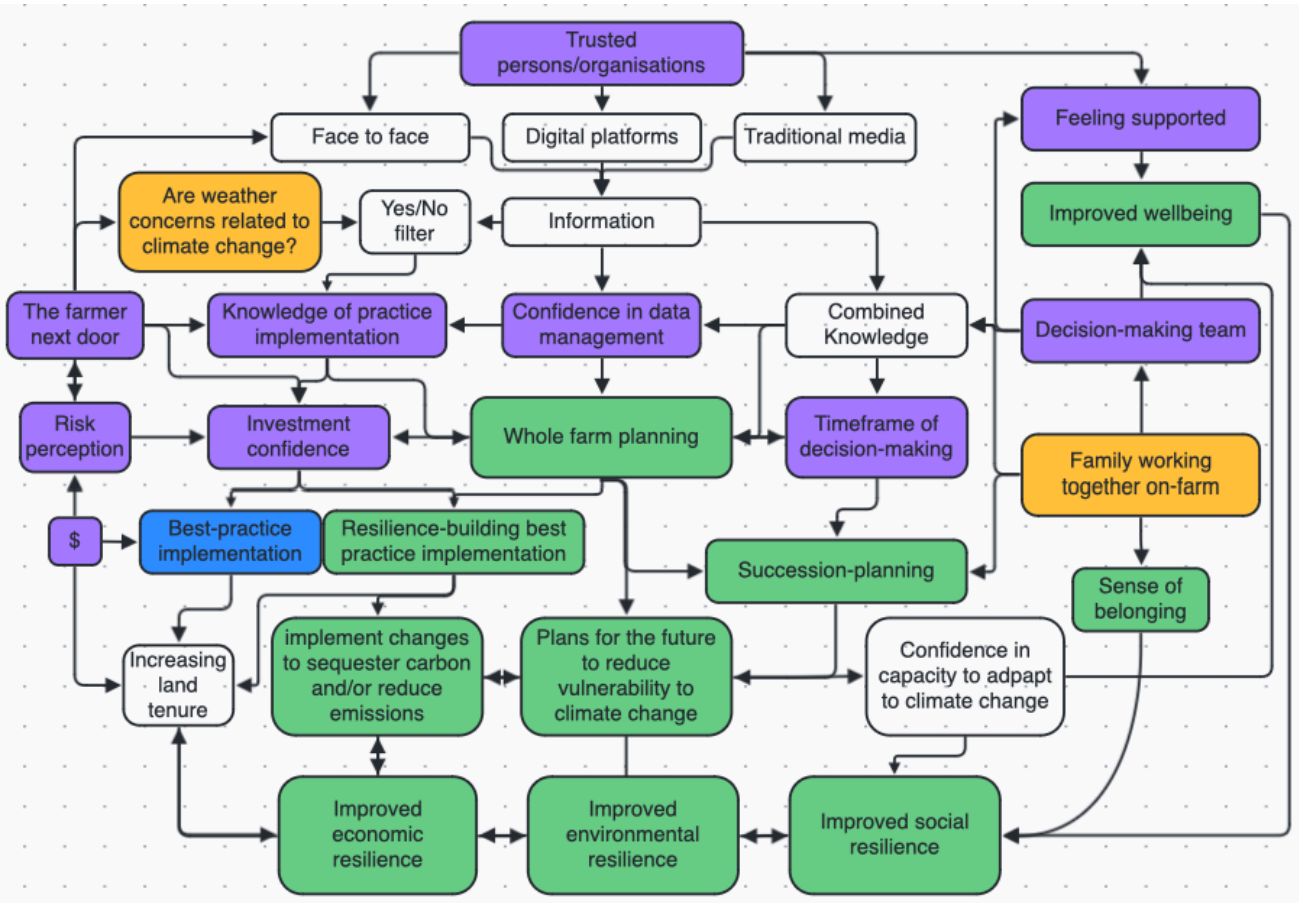


Figure 15: Strong linkages and connections within the Wimmera dataset, based on strong statistical links arising in the pairwise analysis.

The Soil CRC Social Benchmarking Surveys have been able to draw out important and useful information on a broad range of topics, reinforcing the importance of landholder values, beliefs and normative influences, but also highlighting the importance of trust and engagement approaches of information providers, whether they are agricultural organisations, local grower groups, NRM organisations and/or governments.

Decision-making processes continue to be complex, with different issues salient across regions, however, we are able to draw together some understandings of how the many influencing factors relate to each other, as shown in Figure 16.

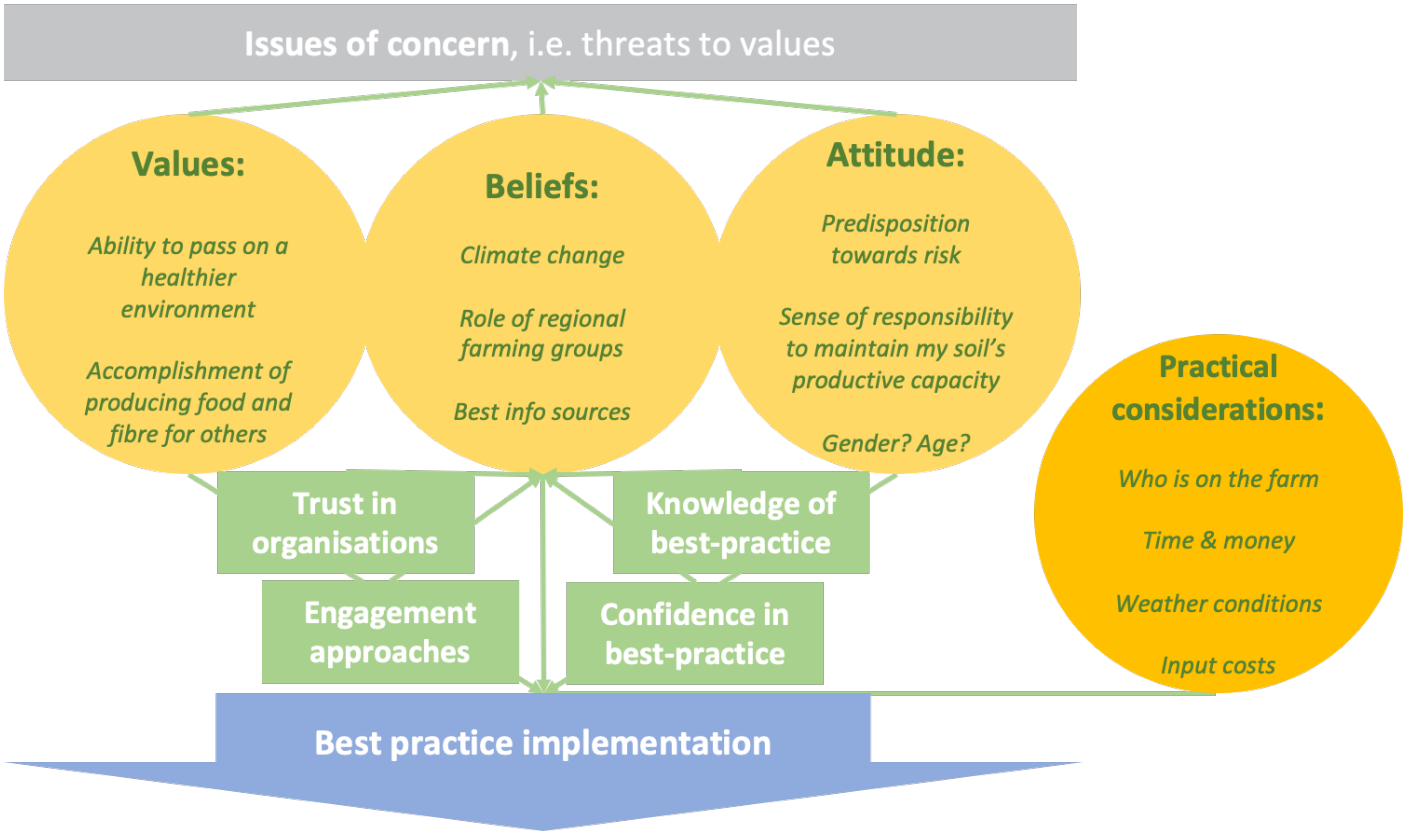


Figure 15: A schematic showing some of the key drivers of decision-making, building on values-beliefs-norms theory but demonstrating the complexity of relationships between values, trust, engagement approaches and knowledge

The surveys are helping us to better understand the highly-complex challenges and opportunities faced by Australian landholders, and we begin to draw together some national patterns of understanding on their challenges, aspirations and other influences on decision-making.

Importantly, our work can provide Australian farmers a clearer picture of what other farmers are doing across and between farming systems, while providing Soil CRC researchers and regional agricultural and NRM groups with an evidence-based direction for enhanced farming research and farmer support across and within agricultural regions.

7. Recommendations

Succession planning is absolutely key to resilience, this is an important priority to support farmers.

Supporting whole-farm planning links closely with best practice implmentation and improved farm resilience – this is an important priority for those supporting farmers.

Working as part of a farm-management team may lead to improved farm and land management outcomes, so encouraging broader participation in the decision-making team can be an important priority for those working to support farmers.

Farmers attending short courses, field days and formal education remain important for supporting best practice implementation, because knowledge is an important driver of best practice implementation.

Farmer networks are important for knowledge-sharing, but who are the champions? Who are the important information sources among farmers and where are they accessing their information from? This is a key opportunity for future study.

It is recommended that surveys be repeated to provide a longitudinal view of general changes over time. This will help to improve understanding of the values, beliefs, attitudes, and knowledge among rural landholders, and how they are influencing decisions regarding soil management.

Further analysis of the data is also recommended to enable national patterns of stability, change and transformation to be identifed and better understood.

8. References

Abadi, B., Yadollahi, A., Bybordi, A., & Rahmati, M. (2020). The contribution of diverse motivations for adhering to soil conservation initiatives and the role of conservation agriculture features in decision-making. *Agricultural Systems, 182*, 102849. http://dx.doi.org/10.1016/j.agsy.2020.102849

Allan, C., Beange, L., Bi. R., Cockfield, G., Dalhaus, P., Duan, S., Falepau, D., Friend, J., Higgins, V., Jenkins. A., Leith, P., Luke, H., Miles, M., Minkey, D., Pembleton, K., Saravanamuthu & K. Doran-Browne, N. (2018). *Scoping systems of acceptance of improved soil management, with a focus on decision support systems and tools*. Newcastle, Australia: Soil CRC.

Axelrod, L. J. (1994). Balancing personal needs with environmental preservation: identifying the values that guide decisions in ecological dilemmas. *Journal of Social Issues, 50*(3), 85-104. https://doi.org/10.1111/j.1540-4560.1994.tb02421.x

Barr, N. (2005). *The changing social landscape of rural Victoria*. Tatura, Victoria: Victorian Government.

Bellotti, B., & Rochecouste, J. F. (2014). The development of Conservation Agriculture in Australia—Farmers as innovators. *International Soil and Water Conservation Research*, *2*(1), 21-34. http://dx.doi.org/10.1016/S2095-6339(15)30011-3

Bennett, J. M., & Cattle, S. R. (2013). Adoption of soil health improvement strategies by Australian farmers: I. Attitudes, management and extension implications. *Journal of Agricultural Education and Extension, 19*(4), 407-426. http://dx.doi.org/10.1080/1389224X.2013.775954

Curtis, A., & Curtis, S. (2018). *Social research to motivate disengaged landowners. A report to the Victorian Serrated Tussock Working Party*. Decoy Marketing + Media. Albury, NSW.

Curtis, A., Byron, I., & MacKay, J. (2005). Integrating socio-economic and biophysical data to underpin collaborative watershed management. *Journal of the American Water Resources Association, 41*(3), 549-563. http://dx.doi.org/10.1111/j.1752-1688.2005.tb03754.x

Curtis, A., McDonald, S., Mendham, E., & Sample, R. (2008). *Understanding the social drivers for natural resource management in the Wimmera region*. Albury: Institute for Land, Water and Society.

Curtis, A., & Lefroy, T. (2010). Beyond threat and asset-based approaches to natural resource management in Australia. *Australasian Journal of Environmental Management 17*, 6-13. http://dx.doi.org/10.1080/14486563.2010.9725260

Curtis, A., Ross, H., Marshall, G.R., Baldwin, C., Cavaye, J., Freeman, C., Carr, A., and Syme, G. (2014). The great experiment with devolved NRM governance: lessons from community engagement in Australia and New Zealand since the 1980s. *Australasian Journal of Environmental Management* 21:2, 179-199. https://doi.org/10.1080/14486563.2014.935747

Curtis, A., and Mendham, E. (2015). The social drivers of natural resource management: North Central Victoria. Report to the North Central Catchment Management Authority. Institute for Land, Water and Society (Technical report 80) Charles Sturt University, Albury, NSW.

Curtis, A., & Mendham, E. (2017). *The social drivers of natural resource management: Wimmera. A report to the Wimmera Catchment Authority*. Charles Sturt University, Wagga Wagga, NSW.

de Groot, R., & Steg, L. (2007). Value orientations and environmental beliefs in five countries - validity of an instrument to measure egoistic, altruistic and biospheric value orientations. *Journal of Cross-Cultural Psychology, 38*(3), 318-332. http://dx.doi.org/10.1177/0022022107300278

Dillman, D. A. (1978). Mail and telephone surveys: the total design method. New York: John Wiley and Sons.

Elliott, A. C., & Woodward, W. A. (2007). Nonparametric Analysis Procedures. In Statistical Analysis Quick Reference Guidebook (pp. 191-207). Thousand Oaks: SAGE Publications.

Groth, T. M., Curtis, A., Mendham, E., & Toman, E. (2014). Farmer identity in multifunctional landscapes: using a collective identity construct to explore the nature and impact of occupational identity. *Australian Geographer, 45*(1), 71-86. http://dx.doi.org/10.1080/00049182.2014.869297

Groth, T. M., Curtis, A., Mendham, E., & Toman, E. (2017). Examining the agricultural producer identity: utilising the collective occupational identity construct to create a typology and profile of rural landholders in Victoria, Australia. *Journal of Environmental Planning and Management*, *60*(4), 628-646. http://dx.doi.org/10.1080/09640568.2016.1165189

Groth, T., Curtis, A., Mendham, E. A., & Toman, E. (2016). The utility of a collective identity construct to explore the influence of farming identity on natural resource management. *Society and Natural Resources, 29*(5) 508-602. http://dx.doi.org/10.1080/08941920.2015.1095376

Groth, T., & Curtis, A. (2017). Mapping farmer identity. Why? How? What it tells us? *Australian Geographer, 48*(3), 365-383. http://dx.doi.org/10.1080/00049182.2016.1265881

Holmes, J. (2006). Impulses towards a multifunctional transition in rural Australia: Gaps in the research agenda. *Journal of Rural Studies, 22*(2), 142-160. http://dx.doi.org/10.1016/j.jrurstud.2005.08.006

Leahy, J. E., & Anderson, D. H. (2008). Trust factors in community–water resource management agency relationships. *Landscape and Urban Planning, 87*(2), 100-107. http://dx.doi.org/10.1016/j.landurbplan.2008.05.004

Lockwood, M. (1999). Humans valuing nature: Synthesising insights from philosophy, psychology and economics. *Environmental Values*, *8*(3), 381-401. http://dx.doi.org/10.3197/096327199129341888

Luke, H., Cooke, P., Allan C., McDonald, S., & Alexanderson, M. (2023). Agriculture in the Wimmera: Rural Landholder Social Benchmarking Report 2023. ISBN: 978-0-6450707-7-4: https://soilcrc.com.au/resources/surveying-farm-practices/

Luke, H., Cooke, P., Allan C., McDonald, S., & Alexanderson, M. (2023). Agriculture in Tasmania: Rural Landholder Social Benchmarking Report 2023. ISBN: 978-0-6450707-6-7: https://soilcrc.com.au/resources/surveying-farm-practices/

Luke, H., Lake, W., Allan C., McDonald, S., & Alexanderson, M. (2022). Agriculture in Central West NSW: Rural Landholder Social Benchmarking Report 2022. ISBN: 978-0- 6450707-4-3: https://soilcrc.com.au/resources/surveying-farm-practices/

Luke, H., Baker, C., Allan, C., McDonald, S., & Alexanderson, M. (2021). Agriculture in The Northern Wheatbelt: Rural Landholder Social Benchmarking Report 2021. ISBN: 978-0-6450707-1-2: https://soilcrc.com.au/resources/surveying-farm-practices/

Luke, H., Baker, C., Allan, C., & McDonald, S. (2020). Agriculture on the Eyre Peninsula: Rural Landholder Social Benchmarking Report. ISBN: 978-0-6450707-0-5: https://soilcrc.com.au/resources/surveying-farm-practices/

Maraseni, T. N., Mushtaq, S., & Reardon-Smith, K. (2012). Climate change, water security and the need for integrated policy development: the case of on-farm infrastructure investment in the Australian irrigation sector. *Environmental Research Letters*, *7*(3), 034006. http://dx.doi.org/10.1088/1748-9326/7/3/034006

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust: Past, present and future. *Academy of Management Review, 20*(3), 709-734. http://dx.doi.org/10.5465/AMR.2007.24348410

Minato, W., Curtis, A., & Allan, C. (2010). Social norms and natural resource management in a changing community. *Journal of Environmental Policy & Planning*, *12*(4), 381-403. http://dx.doi.org/10.1080/1523908X.2010.531084

Meertens, R.M., & Lion, R. (2008). Measuring an individual's tendency to take risks: the Risk Propensity Scale. *Journal of Applied Social Psychology, 38*(6), 1506-1520. http://dx.doi.org/10.1111/j.1559-1816.2008.00357.x

McIntyre, N., Moore, J., & Yuan, M. (2008). A place-based, values centred approach to managing recreation on Canadian crown lands. *Society & Natural Resources*, 21, 657-670. http://dx.doi.org/10.1080/08941920802022297

Mendham, E., & Curtis, A. (2010). Taking over the reins: Trends and impacts of changes in rural property ownership. *Society & Natural Resources*, *23*(7), 653-668. http://dx.doi.org/10.1080/08941920801998893

Mendham, E., Gosnell, H., & Curtis, A. (2010). Agricultural land ownership change and natural resource management: comparing Australian and US case studies. In *Demographic Change in Australia's Rural Landscapes* (pp. 153-187). Springer, Dordrecht.

Pannell, D.J. (2011). Policy perspectives on changing land management pp 177-189. In D.J. Pannell, & F. Vanclay (Eds.), *Changing land management: adoption of new practices by rural landholders*. CSIRO Publishing, Melbourne, Australia.

Pannell, D. J., Marshall, G. R., Barr, N., Curtis, A., Vanclay, F., & Wilkinson, R. (2006). Understanding and promoting adoption of conservation technologies by rural landholders. *Journal of Experimental Agriculture*, *46*(11), 1407-1424. http://dx.doi.org/10.1071/EA05037

Schwartz, S. (1992). Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental psychology (Vol. 25)*. Orlando: Academic Press.

Schwartz, S. (1994). Are there universal aspects in the structure and content of human values? *Journal of Social Issues*, *50*(4), 19-45. https://doi.org/10.1111/j.1540-4560.1994.tb01196.x

Seymour, E., Curtis, A., Pannell, D., Allan, C., & Roberts, A. (2010). Understanding the role of assigned values in natural resource management. *Australasian Journal of Environmental Management, 17*, 142-153. http://dx.doi.org/10.1080/14486563.2010.9725261

Stimpson, K., Luke, H., & Lloyd, D. (2019). Understanding grower demographics, motivations and management practices to improve engagement, extension and industry resilience: a case study of the macadamia industry in the Northern Rivers, Australia. *Australian Geographer*, *50*(1), 69-90. http://dx.doi.org/10.1080/00049182.2018.1463832

Sharp, E., & Curtis, A. (2014). Can NRM agencies rely on capable and effective staff to build trust in the agency? *Australasian Journal of Environmental Management*, *21*(3), 1-13. http://dx.doi.org/10.1080/14486563.2014.881306

Smith, J. W., Leahy, J. E., Anderson, D. H., & Davenport, M. A. (2013). Community/agency trust and public involvement in resource planning. *Society & Natural Resources*, *26*(4), 452-471.

Stedman, R. C. (2002). Toward a social psychology of place: Predicting behavior from place-based cognitions, attitude, and identity. *Environment and behavior*, *34*(5), 561-581. http://dx.doi.org/10.1177/0013916502034005001

Stedman, R. (2016) Discussions during the 22nd International Symposium on Society and Resource Management. June 22-26, 2016. Houghton, Michigan, USA.

Stern, P. C. (2000). Toward a coherent theory of environmentally significant behaviour. *Journal of Social Issues*, *56*(3), 407-424. http://dx.doi.org/10.1111/0022-4537.00175

Stern, P. C., Dietz, T., & Kalof, L. (1993). Value orientations, gender and environmental concern. *Environmental Behavior*, *25*(5), 322-348. https://doi.org/10.1177/0013916593255002

Toman, E., Curtis, A.L., & E. Mendham. (2019) Same as it ever was? Stability and change over 15 years in a rural district in Southeastern Australia. *Society and Natural Resources*, *32*(1), 113-132. http://dx.doi.org/10.1080/08941920.2018.1505014

Appendix A – North Central Victoria Survey

SOiL CRC
Performance through collaboration

SURVEY NO.

Supporting landholders in the north central victoria region

RURAL LANDHOLDER SURVEY 2019




NORTH CENTRAL Catchment Management Authority
Connecting Rivers, Landscapes, People

Southern Cross University

Charles Sturt University

SUPPORTING LANDHOLDERS IN THE NORTH CENTRAL VICTORIA REGION

This survey is a vital part of efforts to understand the important social and economic factors shaping landholder decision making. Information you provide will guide implementation of the North Central Catchment Management Authority's (CMA) 2020-2026 Regional Catchment Strategy that supports landholders working to establish viable futures in the North Central CMA region.

Information provided will also inform the research activities of the Australian Government and industry funded Soil Cooperative Research Centre (Soil CRC), of which North Central CMA is a partner.

Surveys have been sent to a random selection of landholders covering small and large properties. There is no other way to obtain this property level information. This survey follows up a similar survey in 2014 and will provide insights into trends overtime.

We are seeking the views of the persons primarily responsible for managing the property. If you are not involved in the management of the property please forward the survey to the property manager or return the survey in the return envelope. We ask that you only provide information for property/s within the North Central CMA region.

It should take you about 25 minutes to complete the survey. There are no right or wrong answers and there is no need to think at great length about your responses. If you have any questions about the survey, please phone Dr Hanabeth Luke on 1800 317 503 or by email at Hanabeth.Luke@scu.edu.au

You are assured of complete confidentiality. Your name will never be placed on the survey or used in any of the reports. No group outside the research team will have access to the survey data. Information is published at the regional scale and individual data are never published.

Thank you for your assistance,

Professor Allan Curtis

Dr. Hanabeth Luke

1. WHY YOUR PROPERTY IS IMPORTANT TO YOU

The next set of statements seeks information about the reasons your property is important to you. *Examine each statement in the table and place the number for your response in each space provided for 'Your View'.*

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT	NOT APPLICABLE
1	2	3	4	5	6

WHY YOUR PROPERTY IS IMPORTANT TO YOU	YOUR VIEW
Sense of accomplishment from producing food and fibre for others	
Ability to pass on a healthier environment for future generations	
Sense of accomplishment from building/maintaining a viable business	
Opportunity to learn new things	
A place or base for recreation	
Working on the property is a welcome break from my normal occupation	
An asset that will fund my retirement	
A great place to raise a family	
A place where I can escape the pressures of life	
Native vegetation provides habitat for birds and animals	
An important source of household income	
An attractive place/area to live	
Provides a sense of belonging to a community	
The productive value of the soil on my property	
Native vegetation makes the property an attractive place to live	
An asset that is an important part of family wealth	

2. LONG-TERM PLANS FOR YOUR PROPERTY

Please indicate the possibility that your long-term plans for your property in the next 10 years will involve each of the choices in the table below. *Examine the response options underneath this paragraph. For each choice in the table, place the number of your response option in the 'Your view' column.*

RESPONSE OPTIONS:

HIGHLY UNLIKELY	UNLIKELY	UNSURE	LIKELY	HIGHLY LIKELY	NOT APPLICABLE
1	2	3	4	5	6

LIKELIHOOD YOUR LONG-TERM PLANS WILL INVOLVE	YOUR VIEW
Ownership of the property will stay within the family	
The property will be sold	
The property will be subdivided and a large part of the property sold	
I will move off the property around/soon after reaching age 65 years	
All or most of the property will be leased or share farmed	
Additional land will be purchased	
Additional land will be leased or share farmed	
The enterprise mix will be changed to diversify income sources	
The enterprise mix will be changed to more intensive enterprises	
The enterprise mix will be changed to less intensive enterprises	
Me or my spouse will seek additional off-property work	
Some part of property will be placed under a conservation covenant	

Do you have family members interested in taking on your property in the future? *Please tick your answer.*

○ Yes ○ No ○ Unsure/too early to know

If Yes, has your family agreed to a succession plan? *Please circle your answer.*

Not started Early stages Halfway Well advanced Completed/Ongoing

3. YOUR ASSESSMENT OF ISSUES

This set of statements seeks your opinion about the importance of a range issues that may be affecting your property and your local district. *Examine each statement in the table, then place the number of your response option in each space provided for 'Your view'.*

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT	NOT APPLICABLE / DON'T KNOW
1	2	3	4	5	6

IMPORTANCE OF ISSUES AFFECTING YOUR LOCAL DISTRICT	YOUR VIEW
Absence or poor quality of important services and infrastructure (e.g. health, schools, internet)	
The impact of pest plants and animals on native plants and animals	
Uncertain/low returns limiting capacity to invest in my property	
Less water being made available to support recreation on rivers and lakes	
Movement of irrigation water away from this region	
Dryland salinity undermining long-term productive capacity	
Irrigation salinity undermining long-term productive capacity	
Loss of native plants and animals in the landscape	
Nutrient run-off from rural properties affecting water quality	
Stock damage to native vegetation along waterways and in wetlands	
Risk to life and property from wildfires	
The effect of ground water extraction on stream flows during drought	
Non-agricultural land use (e.g. residential, solar, mining) encroaching on farming land	
Changes in weather patterns	
Dams on rural properties reducing run-off to natural waterways	
Modernisation of the irrigation system as part of water reform	
Crop weed resistance to herbicide	
Long-term negative impacts of property purchased by absentees	
Quality of water in farm dams during drought	
Public support for agricultural activities/practices, e.g. pesticide use, bare paddocks, mulesing	

IMPORTANCE OF SOIL RELATED ISSUES ON YOUR PROPERTY	YOUR VIEW
Soil erosion (e.g. by wind or water)	
Low permeability of sub soil	
Declining nutrient status of soils	
Soil acidity (lower pH) undermining productive capacity of soils	
Soil sodicity	
Low organic carbon in soils	
Low biological activity in soils	

4. THE PRINCIPLES THAT GUIDE YOUR LIFE

The next set of statements seeks information about the principles that guide your life. *Examine each statement in the table and place the number for your response in each space provided for 'Your View'.*

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT	NOT APPLICABLE
1	2	3	4	5	6

THE PRINCIPLES THAT GUIDE YOUR LIFE	YOUR VIEW
Looking after my family and their needs	
Working for the welfare of others	
Protecting the environment and preserving nature	
Being influential and having an impact on other people and events	
Fostering equal opportunities for all community members	
Preventing pollution and protecting natural resources	
Having power and being able to lead others	
Respecting the earth and living in harmony with other species	
Caring for the weak and correcting social injustice	
Creating wealth and striving for a financially profitable business	

5. YOUR KNOWLEDGE OF DIFFERENT TOPICS

In this section we would like you to provide an assessment of your knowledge for a number of different topics. *Examine the response options. For each choice in the table, place the number of your response in the 'Your view' column.*

RESPONSE OPTIONS:

NO KNOWLEDGE	VERY LITTLE KNOWLEDGE	SOME KNOWLEDGE	SOUND KNOWLEDGE (sufficient to act)	VERY SOUND KNOWLEDGE (can give a detailed explanation)	NOT APPLICABLE
1	2	3	4	5	6

YOUR KNOWLEDGE OF DIFFERENT TOPICS	YOUR VIEW
Preparing a farm/property plan allocating land use according to land class	
Which Aboriginal group is connected to the area where your property is located	
The role of understorey plants in maintaining native birds	
The role of logs & river-side vegetation in supporting native fish	
The extent and type of biological activity in soils on your property	
Strategies to maintain ground cover to minimise erosion in this area	
How to establish introduced perennial pastures (e.g. lucerne) in this area	
How to identify the main constraints to soil productivity on your property	
The production benefits of applying biological soil amendments and supplements (e.g. compost, manure, microbial inoculants)	
The processes leading to soil structure decline in this area	
The role of soil carbon in maintaining soil health	
The extent of native vegetation cover in the North Central region before European settlement	
How land in your district was used and managed before European settlement	
How to use soil testing to prepare a nutrient budget that will increase soil productivity without the risk of high levels of nutrient run-off	
The effect of fertiliser application on the persistence of native grasses in this area	

6. YOUR VIEWS

We would like to know how closely the statements presented below reflect your views. *Examine each statement in the table, then place the number for your response in the space provided for 'Your view'.*

RESPONSE OPTIONS:

STRONGLY DISAGREE	DISAGREE	UNSURE	AGREE	STRONGLY AGREE	NOT APPLICABLE / DON'T KNOW
1	2	3	4	5	6

STATEMENTS	YOUR VIEW
The increased allocation of water for the environment under the Murray-Darling Basin Plan will improve the health of waterways & wetlands	
Aboriginal people should be able to negotiate access with landholders to visit cultural sites	
The public should be able to access crown land managed by private landholders (e.g. unused roads)	
If landholders are informed in advance, it would be acceptable to cause minor floods for environmental purposes	
Landholders should be able to harvest rainfall on their property, even if that action impacts on others	
Primary producers should do all they can to reduce carbon emissions from their activities	
The cost of deep-tillage and subsoil modification are justified by increased production	
The benefits of stubble retention outweigh problems arising from the practice	
The costs of applying lime to address soil acidity are justified by increased production	
The costs of applying gypsum to address soil sodicity are justified by increased production	
The costs of establishing perennial pasture are justified by the returns	
The cost of willow removal is justified by improvements in the condition of river banks & river health	
Soil testing is an essential first step in understanding soil condition	
Intensive grazing for short periods is usually better for the health of native vegetation along waterways and wetlands than set stocking	
Fencing to manage stock access is necessary to protect the health of waterways & wetlands	
Improvements in bank stability & vegetation condition justify the costs of watering stock off-stream	
I feel a personal responsibility to be part of a soil health group	
I feel a personal responsibility to maintain my soil's productive capacity	
Biological activity is an important indicator of the productive capacity of soils	
I'm confident landholders in this region can adapt to expected changes in rainfall patterns	

7. PREFERRED SOURCES OF INFORMATION

In the past 12 months what have been your sources of information about topics related to the management of your property in the North Central Catchment? *Please place a tick besides any relevant sources of information in the table below.*

SOURCE OF INFORMATION		SOURCE OF INFORMATION	
Television	○	Facebook	○
Books	○	YouTube	○
Academic Journals	○	Twitter	○
Magazines	○	Instagram	○
North Central CMA	○	Internet	○
Victorian Farmers Federation	○	Landcare group/network	○
Bureau of Meteorology	○	Local Council	○
Water Authorities (e.g GMW, Coliban Water)	○	Mailed brochures/leaflets/community newsletters	○
Government agencies/departments	○	Rural R&D corporations (e.g. MLA, GRDC)	○
Soil Cooperative Research Centre (CRC)	○	Extension officers	○
Newspapers	○	Environmental organisations	○
Field days	○	Commodity groups	○
Radio	○	Friends/neighbours/relatives	○
Podcasts/Webinars	○	Agricultural consultants, agronomists and stock agents	○
Banks	○	Other – please specify	

For your selection/s above, please indicate the title/name of your preferred top source (e.g. radio station, paper or website)? _____

8. YOUR VIEWS ABOUT RISK, TRUST AND CLIMATE

In this section we would like to explore your views about the taking risks, trusting others, climate change and the North Central CMA. *For each statement in the table, place the number of your response in the 'Your view' column.*

RESPONSE OPTIONS:

STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	NOT APPLICABLE / DON'T KNOW
1	2	3	4	5	6

STATEMENTS	YOUR VIEW
You can't be too careful when dealing with people	
People are almost always interested only in their own welfare	
One has to be alert or someone is likely to take advantage of you	
I am an early adopter of new agricultural practices and technologies	
I prefer to avoid risks	
I really dislike not knowing what is going to happen	
I usually view risks as a challenge to embrace	
Human activities are influencing changes in climate	
It is not too late to take action to address climate change	
If we do nothing, climate change will have dire consequences for all living things, including humans	

Are you aware of the existence of the North Central CMA? ○ Yes ○ No

If Yes, please answer the next items. If no, please move to the next section.

STATEMENTS	YOUR VIEW
The North Central CMA keeps landholders' interests in mind when making decisions about waterways and wetlands management	
Sound principles guide North Central CMA decisions about waterways & wetlands management	
The North Central CMA is very knowledgeable about waterways & wetlands management	
I can rely on the North Central CMA to provide useful advice about waterways & wetlands management	
I can rely on the North Central CMA to provide appropriate financial assistance for waterways & wetlands management	

9. ENTERPRISE/ LAND USE MIX

This topic is seeking information about your current land use/enterprise mix. *Please place a tick besides any correct response in the 'Situation Now' column.* Please answer with the land you own and manage within the NC CMA region in mind.

ENTERPRISES / LAND USE ON YOUR PROPERTY IN 2019	SITUATION NOW	ENTERPRISES / LAND USE ON YOUR PROPERTY IN 2019	SITUATION NOW
Cropping	○	Irrigated agriculture	○
Pasture	○	Area of remnant native vegetation (e.g. trees, grasslands, wetlands)	○
Dairying	○	Farm forestry	○
Beef cattle	○	Other tree planting (e.g. shelter, habitat, erosion or recharge control, carbon)	○
Sheep for wool or meat	○	Farm-based tourism (e.g. farm stays, B&B)	○
Other commercial livestock enterprises (e.g. goats, pigs, deer, horse studs, poultry, alpaca, dogs)	○	Conservation covenant attached to property title (e.g. Trust For Nature)	○
Viticulture	○	Area set aside for living/recreation (e.g. gardens, pets, water bodies, vehicles)	○
Vegetation offsets	○	Carbon farming	○
Horticulture	○	Hay production for sale	○

10. OCCUPATIONAL IDENTITY

Please circle the descriptor/term that best describes your occupational identity:

Full-time farmer Part-time farmer Hobby farmer Non-farmer

11. MANAGEMENT PRACTICES ON YOUR PROPERTY

This section asks about practices undertaken on your main or 'home' property in the North Central region during the full period of your management; and the past 3 years.

Some actions may not be relevant to your situation. Please ignore those topics.
If you have owned your property for less than 12 months, please leave this topic and go to the next page.

We also want to know if the activities listed have been supported by resources from outside groups (e.g. North Central CMA, DEWLP, Greening Australia, Trust for Nature, Landcare). *Please place a tick where that is the correct response in the three columns.*

PRACTICES IMPLEMENTED ON YOUR MAIN OR "HOME" PROPERTY IN THE NORTH CENTRAL REGION	AT SOME TIME DURING PERIOD OF MANAGEMENT	PAST 3 YEARS (2017-2019)	RESOURCES PROVIDED BY OTHERS
Planted trees and shrubs (incl. direct seeding)	○	○	○
Fenced native bush/grasslands to manage stock access	○	○	○
Fenced waterways & wetlands to manage stock access	○	○	○
Established permanent grassed waterways in drainage lines	○	○	○
Established off-stream watering points	○	○	○
Established an irrigation tailwater reuse system	○	○	○
Used time controlled or rotational grazing	○	○	○
Sown lucerne	○	○	○
Sown perennial pastures other than lucerne	○	○	○
Used minimum or no tillage techniques to establish crops or pastures	○	○	○
Used precision farming techniques for cropping	○	○	○
Applied at least one lime application to arable land	○	○	○
Deep ripped arable land	○	○	○
Applied soil ameliorants other than fertiliser and lime (e.g. gypsum, organic manure)	○	○	○
Tested soils for nutrient status in paddocks where have applied fertiliser/soil conditioners in the past	○	○	○
Prepared a nutrient budget for all/most of the property	○	○	○
Prepared a habitat assessment for native plants	○	○	○
Each year have worked to control pest animals	○	○	○
Each year have worked to control non-crop weeds	○	○	○

12. BACKGROUND INFORMATION

BACKGROUND INFORMATION	PLEASE TICK OR FILL IN YOUR RESPONSE
What is the total area of rural land you own within the NC CMA region? (excluding land you manage but do not own)	_____ total Ha owned
Is this property your principal place of residence?	○ Yes ○ No
What area of additional land do you manage (lease/sharefarm/agist from others) within the NC CMA region (additional to the figure you provided above)?	_____ additional Ha managed
What is the longest period of time you or your family have owned or managed all/some part of your property?	_____ yrs
What area of your property is leased, share farmed or agisted by others?	_____ Ha
How many rural properties do you own? (including those within and outside of the NC CMA)?	_____ No. of properties
How many of these properties are within the NC CMA region?	_____ No. of properties

13. YOUR PROPERTY

This topic seeks information about you and your main or 'home' property.

BACKGROUND INFORMATION	PLEASE TICK OR FILL IN YOUR RESPONSE
Did you attend field days/farm walks/demonstrations focused on soil health in the past 12 months	○ Yes ○ No
Has this enterprise bought additional land to increase a landholding in this region in the past 20 years?	○ Yes ○ No
Have you subdivided or sold part of your existing property in this region in the past 20 years?	○ Yes No
Are other family members working full time on your property?	_____
Are you male or female?	○ M F
What is your age?	_____ yrs
What is your main occupation? (e.g. farmer, teacher, accountant, investor, retiree)	_____
In the past 5 years have you completed a short course relevant to property management? (e.g. financial planning, integrated pest management)	○ Yes No
Estimate the average number of hours per week that you worked on farming/property related activities over the past 12 months.	_____ hr/wk
Estimate the number of days that you were involved in paid off-property work in the past 12 months	_____

Did you attend field days/farm walks/demonstrations focused on native plants & animals in the past 12 months	○ Yes ○ No
Are you a member or involved with a local Landcare group?	○ Yes ○ No
Are you a member or involved with a local commodity group? (e.g. Better Beef, Best Wool, Birchip Cropping Group)	○ Yes ○ No
Are you a member or involved with a local soil health group?	○ Yes ○ No
In the past 12 months have you changed your financial or on-property operations as a result of considering climate change?	○ Yes ○ No
In the past 12 months have you changed your on-property operations as a result of considering opportunities to capture carbon (e.g. by revegetation, soil management)?	○ Yes ○ No
In the past 12 months have you changed your on-property operations as a result of considering opportunities to reduce carbon emissions (e.g. solar, wind, gravity systems)?	○ Yes ○ No
Have you prepared/are you preparing a property management or whole farm plan that involves a map or other documents that address the existing property situation and include future management and development plans?	○ Yes ○ No
Did you irrigate in the 2018/19 season?	○ Yes ○ No
If yes: Was surface water used	○ Yes ○ No
Was ground water was used	○ Yes ○ No
Did you earn income from agriculture on your property in the North Central region during 2018/19 financial year?	○ Yes ○ No
If yes, did your property return a net profit from agriculture (income exceeded all paid expenses before tax) in 2018/19?	○ Yes ○ No
If yes, was the net profit from agriculture in 2018/19 above $50,000?	○ Yes ○ No

Did you or your spouse receive a net off-property income (after expenses and before tax) last financial year (2018/2019)?

○ Yes, me ○ Yes, my spouse ○ No

If yes, was the total off-property income (before tax) for you and your partner last financial year (2018/2019) above $50,000? ○ Yes ○ No

OTHER COMMENTS AND **THANK YOU FOR YOUR TIME**

Do you have any other comments about any of the topics covered in the survey, or other aspects of land and water management in the North Central CMA region? Please use the space provided to write your comments or attach additional sheets. Your comments will be recorded by the research team.

We appreciate the time you have spent answering the questions. Please return the completed survey in the envelope provided that is addressed to Professor Curtis.

If you need assistance with the survey, or wish to make specific comments about it, please 1800 317 503 to contact Dr Hanabeth Luke.


NORTH CENTRAL CMA REGION
SWAN HILL
LAKE BOGA
Mallee CMA
KERANG
COHUNA
GUNBOWER CREEK
BIRCHIP
WYCHEPROOF
BOORT
ECHUCA
MITIAMO
CHARLTON
DONALD
AVOCA RIVER
RICHARDSON RIVER
North Central CMA
LODDON RIVER
BRIDGEWATER
Goulburn CMA
AVON RIVER
BENDIGO
BEALIBA
CAMPASPE RIVER
HEATHCOTE
STAWELL
AVOCA
MARYBOROUGH
CASTLEMAINE
Wimmera CMA
KYNETON
LANCEFIELD
KILMORE
CLUNES
DAYLESFORD
CRESWICK
MACEDON
Port Phillip CMA
GISBORNE
Glenelg CMA
Corangamite CMA
Legend
Main Watercourse
Main Waterbodies
Freeway; Highway
Arterial
Main Towns
North Central CMA
North Central Basins
Avoca River
Avon River
Campaspe River
Loddon River
Meters 1:1,177,659
22,500 11,250 0 22,500
NORTH CENTRAL
VICTORIA
GDA

Appendix B – Northern Wheatbelt, Western Australia Survey

SURVEY NO.

SUPPORTING LANDHOLDERS IN THE WEST AUSTRALIAN WHEATBELT

RURAL LANDHOLDER SURVEY 2020




SUPPORTING LANDHOLDERS IN THE WHEATBELT REGION

This comprehensive survey is a vital part of efforts to understand the important social and economic factors shaping landholder decision making. Information you provide will guide decision-making and strategic planning by WANTFA, the West Midlands Group, the Liebe Group and Wheatbelt NRM, all organisations working to support landholders to enable viable futures in the Wheatbelt region. Information will also be used to inform the activities of the Australian Soil Cooperative Research Centre.

Surveys are being sent to landholders with properties in the Wheatbelt, identified via ratepayer lists. Each survey has a serial number that links to the property, enabling us to spatially reference our survey results with soil and weather data. There is no other way to obtain this property level information. Our plans are to follow up this survey in about five years, to provide insights into trends over time.

We recognise that you may not be involved in decision making for this property. We are seeking the views of the person/s primarily responsible for managing the property. If you are not involved in the management of the property, please forward the survey to the property manager or return the survey in the postage-paid return envelope. We ask that you only provide information for property/s within the Wheatbelt region.

This voluntary survey should take approximately 25-40 minutes to complete. There are no right or wrong answers and there is no need to think at great length about your responses. If you have any questions about the survey, please contact Dr Hanabeth Luke on 1800 317 503 or by email at Hanabeth.Luke@scu.edu.au

You are assured of complete confidentiality. Your name will never be placed on the survey or used in any of the reports. No group outside the research team will have access to the survey data. Information is published at the regional scale and individual data is never published.

Thank you for your assistance,

Dr. Hanabeth Luke

1. OCCUPATIONAL IDENTITY

Please **circle** the descriptor/term that best describes your **occupational identity:**

Full-time farmer Part-time farmer Hobby farmer Non-farmer

Please circle the **Rainfall zone** most relevant to your main/home property:

○ Low (Under 325mm) ○ Medium (325-450mm) ○ High (Over 450mm)

What is your local government area? _____

2. ENTERPRISE/ LAND USE MIX

This topic is seeking **information about your current land use/enterprise mix.** *Please place a tick besides any correct response in the '**Situation Now**' column.* Please answer with the land you own and manage within the WA Wheatbelt region in mind.

ENTERPRISES / LAND USE ON YOUR PROPERTY IN 2020	SITUATION NOW	ENTERPRISES / LAND USE ON YOUR PROPERTY IN 2020	SITUATION NOW
Cereal	○	Horticulture	○
Legumes/Pulses	○	Irrigated agriculture	○
Oil seeds	○	Area of remnant native vegetation (e.g. trees, grasslands, wetlands)	○
Pasture	○	Farm forestry	○
Dairying	○	Other tree planting (e.g. shelter, habitat, erosion or recharge control, carbon)	○
Beef cattle	○	Farm-based tourism (e.g. farm stays, B&B)	○
Sheep for wool	○	Heritage agreement/covenant	○
Sheep for meat	○	Area set aside for living/recreation (e.g. gardens, pets, ocean access, vehicles)	○
Other commercial livestock enterprises (e.g. goats, pigs, deer, horse studs, poultry, alpaca, dogs)	○	Other (please specify):	○
Viticulture	○		

3. YOUR ASSESSMENT OF ISSUES

This set of statements seeks your opinion about the importance of a **range of issues that may be affecting your property and your local district.** *Examine each statement in the table, then place the number of your response option in each space provided for* ***'Your view'****.*

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT
1	2	3	4	5

IMPORTANCE OF ISSUES AFFECTING YOUR LOCAL REGION	YOUR VIEW
Absence of important services and infrastructure (e.g. health, schools, internet, phone coverage). **For example:**	
Risk to life and property from wildfires	
Availability of water for livestock	
Dry, salinised land undermining long-term productive capacity	
Long-term negative impacts of property purchased by absentees or corporate farms	
The impact of pest plants and/or animals on native plants and animals	
Loss of native plants and animals in the landscape	
Water security	
Changes in weather patterns	
Public support/opposition for agricultural practices (e.g. GMs, animal welfare, pesticide use)	
Herbicide resistance	
Non-agricultural land use (e.g. residential, wind farms, mining) encroaching on farming land **Please specify:**	
Declining soil health and/or soil productivity	

IMPORTANCE OF ISSUES AFFECTING YOUR PROPERTY	YOUR VIEW
Uncertain/low returns limiting capacity to invest in my property	
Impact of temperature extremes on farm productivity (e.g. frost, heat damage)	
The impact of weeds or feral animals or over-abundant native species on productivity **Please indicate the most important:**	
Secondary impacts of previous amelioration strategies **If important, please indicate amelioration strategy:**	

3. YOUR ASSESSMENT OF ISSUES (CONT.)

IMPORTANCE OF SOIL RELATED ISSUES ON YOUR PROPERTY	YOUR VIEW
Soil erosion (e.g. due to wind or water)	
Non-wetting soils	
Declining nutrient status of soils	
Salinity undermining productive capacity of soils	
Soil acidity (lower pH) undermining productive capacity of soils	
Soil sodicity	
Low organic carbon in soils	
Low biological activity in soils	
Soil-borne diseases	
Chemical residue in soils	
Effects of pesticide use on soil biota	
Soil (re)compaction	
Gravels and duplex soil amelioration	

4. THE PRINCIPLES THAT GUIDE YOUR LIFE

The next set of statements seeks information about the **principles that guide your life**. *Please number each.*

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT
1	2	3	4	5

THE PRINCIPLES THAT GUIDE YOUR LIFE	YOUR VIEW
Looking after my family/loved-ones and their needs	
Preventing pollution and protecting natural resources	
Being influential and having an impact on people and events	
Fostering equal opportunities for all community members	
Respecting the earth and living in harmony with nature	
Caring for the weak/vulnerable and correcting social injustice	
Creating wealth and striving for a financially profitable business	

5. WHY YOUR PROPERTY IS IMPORTANT TO YOU

The next set of statements seeks information about the **reasons your property is important to you**. *Examine each statement in the table and place the number for your response in the space provided for **'Your View'**.*

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT
1	2	3	4	5

WHY YOUR PROPERTY IS IMPORTANT TO YOU	YOUR VIEW
Sense of accomplishment from producing food and fibre for others	
Ability to pass on a healthier environment for future generations	
Sense of accomplishment from building/maintaining a viable business	
Provides opportunities to learn new things	
A place or base for recreation	
An asset that will fund my retirement	
A great place to raise a family	
Its native vegetation provides habitat for birds and animals	
An important source of household income	
An attractive place/area to live	
Provides a sense of belonging to a community	
Provides a sense of belonging to a place	
My property is an important part of who I am	
The productive value of the soil on my property	
Native plants and animals make the property an attractive place to live	
An asset that is an important part of family wealth	
Other? Please specify:	

6. YOUR KNOWLEDGE OF DIFFERENT TOPICS

In this section we would like you to provide **an assessment of your knowledge** for a number of different topics. *Examine the response options. For each choice in the table, place the number of your response in the **'Your view'** column.*

RESPONSE OPTIONS:

NO KNOWLEDGE	VERY LITTLE KNOWLEDGE	SOME KNOWLEDGE	SOUND KNOWLEDGE (sufficient to act)	VERY SOUND KNOWLEDGE (can give a detailed explanation)	NOT APPLICABLE
1	2	3	4	5	6

YOUR KNOWLEDGE OF DIFFERENT TOPICS	YOUR VIEW
Preparing a farm/property plan allocating land use according to land/soil characteristics	
The Aboriginal group/s connected to the area where your property is located	
The role of remnant vegetation in supporting the natural ecosystem	
Strategies to maintain ground cover to minimise erosion in this area	
Options and strategies to (re)establish perennial pastures (e.g. Lucerne/native grasses) in this area	
How to identify the main constraints to soil productivity on your property	
The production benefits of applying biological soil supplements (e.g. compost, manure, microbial inoculants)	
The processes leading to soil structure decline in this area	
The role of soil carbon in maintaining soil health	
How to build soil organic matter/soil carbon	
How land in your district was used and managed before European settlement	
How to use soil testing to prepare a nutrient budget that will increase soil productivity	
Regenerative agriculture and/or holistic farm management	
How to support the persistence of native grasses in this area	
Farming practices that can lead to more nutrient-dense food	
How to (re)introduce more legumes/pulses into your enterprise mix	
Time controlled, holistic or cell grazing strategies	
The role of on-farm biodiversity for supporting soil and landscape health	
Existing data analysis tools to support on-farm decision-making	
The extent and type of biological activity in soils on your property	

7. YOUR VIEWS & EXPERIENCE

We would like to know **how closely the statements presented below reflect your views**. *Examine each statement in the table, then place the number for your response in the space provided for '**Your view**'.*

RESPONSE OPTIONS:

STRONGLY DISAGREE	DISAGREE	UNSURE/ DON'T KNOW	AGREE	STRONGLY AGREE
1	2	3	4	5

STATEMENTS	YOUR VIEW
The benefits of stubble retention outweigh problems arising from the practice If relevant, how do you manage your stubble?	
The costs of applying lime to balance soil acidity is justified by increased production	
The costs of establishing perennial pasture are justified by the returns	
Soil testing is an essential step in understanding soil condition	
Biological activity is an important indicator of the productive capacity of soils	
Fencing to manage stock access is an essential element of protecting waterways and native vegetation	
I feel a personal responsibility to be part of a local grower group	
I feel a personal responsibility to maintain the productive capacity of my soil	
There is adequate compensation or support provided for conservation activities on my farm	
Pathway to market for my produce is clear	
I usually include another person or people in my on-farm management decisions If yes, please indicate who (i.e. spouse, agronomist):	
I have good systems in place to manage my farm data	
Decision-making needs to be strongly influenced by data	
Internet connectivity is a barrier to my using on-farm data more effectively	
I feel confident working with numbers and managing my farm accounts	
Most years I'm satisfied with my farm's productivity given the seasonal conditions experienced	
I am coping well with the associated stresses and challenges of managing my farm	
Grower groups are the best way to drive and direct local research, development and extension	
I am interested in learning more about regenerative/holistic farming approaches	
Adopting regenerative/holistic farming practices is justified by the returns	

7. YOUR VIEWS & EXPERIENCE (CONT.)

STATEMENTS	YOUR VIEW
I'm confident that landholders in this region can adapt to expected changes in rainfall patterns	
Primary producers should do all they can to reduce carbon emissions from their activities	
Fundamental changes are required to make farming systems more resilient in our region	
I feel adequately supported to conduct farming and land management activities on my property	
I would like to use less chemicals on my farm but it is too difficult in practice	
I have a preferred decision-making tool that I regularly use **If yes, please indicate the name of tool:**	

OPEN QUESTIONS

What is your main source of support for your agricultural and land management activities (e.g. grower groups, friends)?

What sort of support would enhance your agricultural and land management activities?

Which group/organisation/department do you think would be the most appropriate to provide this support?

Is there a particular technology/tool/innovation that would support your farm management goals?

Are you a member of WANTFA?	○ No	○ Yes	○ I was a member
Are you a member of/associated with your regional NRM group?	○ No	○ Yes	○ I was previously
Are you a member of the West Midlands group?	○ No	○ Yes	○ I was a member
Are you a member of the Liebe group?	○ No	○ Yes	○ I was a member

STRONGLY DISAGREE	DISAGREE	UNSURE/ DON'T KNOW	AGREE	STRONGLY AGREE
1	2	3	4	5

STATEMENTS (please indicate the extent to which you agree with the following, for the corresponding groups)	WANTFA	Regional NRM group	Local grower group (eg. West Midlands Group, Liebe)
Provides valuable information about soil, agronomy, farm management and/or natural resource management			
Can be relied on to keep landholders' interests in mind when making decisions about research priorities			
Should play an advocacy role/lobby on behalf of my community's needs in regards to research, development & extension (R,D & E)			

What would you most like to see from these groups?

Local Grower Group:

WANTFA:

Regional NRM group:

8. TOP SOURCES OF INFORMATION

In the past 12 months, what have been your **top** sources of **information about topics related to the management of your property in the WA Wheatbelt region?** *Please place a tick besides relevant sources in the table below.*

MODE OF INFORMATION		ORGANISATION/PERSONS	
Television	○	Other farmers	○
Books	○	West Midlands Group	○
Magazines	○	Liebe Group	○
Newspapers	○	WANTFA	○
Email(s)	○	Regional NRM group (eg. Wheatbelt NRM, NACC)	○
Radio	○	Local Council	○
Field days	○	Department of Primary Industries and Regional Development (DPIRD)	○
Websites	○	Soil CRC	○
Instagram	○	Rural R&D corporations (e.g. GRDC)	○
Twitter	○	Extension officers	○
Brochures/leaflets/newsletters	○	Environmental organisations (e.g. Greening Australia)	○
YouTube	○	Commodity groups	○
Podcasts	○	Friends/neighbours/relatives	○
Academic journals/research papers	○	Universities/CSIRO	○
Facebook	○	Bureau of Meteorology	○
Whatsapp or Messenger groups	○	**Independent** agricultural consultants, agronomists or stock agents	○
Other	○	**Commercial** agricultural consultants, agronomists or stock agents	○

For your selection/s above, please indicate the title of your preferred top source: (e.g. name of newspaper or website)

9. YOUR VIEWS ABOUT RISK, TRUST AND CLIMATE

In this section we would like to explore your **views about the taking risks, trusting others, and climate change**. *For each statement in the table, place the number of your response in the '**Your view**' column.*

RESPONSE OPTIONS:

STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
1	2	3	4	5

STATEMENTS	YOUR VIEW
You can't be too careful when dealing with people	
I am usually an early adopter of new agricultural practices and technologies	
People are almost always interested only in their own welfare	
My farm is doing ok the way the things are, I see no reason to change	
I prefer to avoid risks	
I am open to new ideas about farming and land management	
I usually view risks as a challenge to embrace	
Financially, I can afford to take a few risks and experiment with new ideas	
I have sufficient time available to consider changing my practices	
Climate change poses a risk to the region	
Human activities are influencing changes in climate	
It is not too late to take action to address climate change	
If we do nothing, climate change will have dire consequences for all living things, including humans	

10. MANAGEMENT PRACTICES ON YOUR PROPERTY

This section asks about **practices undertaken** on your main or 'home' property in the WA Wheatbelt region during the full period of your management; and the past 5 years. ***Tick all relevant:*** *Some actions may not be relevant to your situation; please ignore those topics.*

PRACTICES IMPLEMENTED ON YOUR MAIN OR "HOME" PROPERTY IN THE WHEATBELT REGION	**AT SOME POINT (prior to 2015)**	**PAST 5 YEARS (2015-present)**	**INTEND TO IMPLEMENT IN NEXT 5 YEARS**
Planting of trees and shrubs (incl. direct seeding)	○	○	○
Fencing of native bush/grasslands to manage stock access	○	○	○
Use of time-controlled, cell, or holistic grazing	○	○	○
Sowing perennial pastures	○	○	○
Use of no-tillage techniques to establish crops or pastures	○	○	○
Use of precision farming techniques	○	○	○
At least one lime application to arable land	○	○	○
Deep ripping of arable land	○	○	○
Application of soil ameliorants other than fertiliser and lime (e.g. gypsum, organic manure)	○	○	○
Testing of soils for nutrient status	○	○	○
Preparation of a nutrient budget for all/most of the property	○	○	○
Lethal control of pest animals	○	○	○
Reduction of chemical use	○	○	○
Increase in chemical use	○	○	○
Plant legumes/pulses	○	○	○
Organic farming. **List certification scheme, if applicable:**	○	○	○
Farming practices you consider to be regenerative **Example/s:**	○	○	○

What is the most important influence on your soil health?

11. YOUR PROPERTY AND YOU

BACKGROUND INFORMATION	PLEASE TICK OR FILL IN YOUR RESPONSE
What is the total area of land you own in the WA Wheatbelt region? (excluding land you manage but do not own)	_____ total Ha owned
Is this Wheatbelt property your principal place of residence?	◯ No ◯ Yes
What area of additional land do you manage (lease/sharefarm/agist from others) in the WA Wheatbelt region (additional to the figure you provided above)?	_____ Additional Ha managed
How long have you or your family owned or managed all/some part of your property?	_____ yrs
How many rural properties do you own **within** the WA Wheatbelt?	_____ No. of properties
What area of your property is leased, share farmed or agisted by others?	_____ Ha

INFORMATION ABOUT YOU AND YOUR MAIN OR 'HOME' PROPERTY	PLEASE TICK OR FILL IN YOUR RESPONSE
Has this enterprise bought additional land in this region in the past 20 years?	◯ No ◯ Yes
Have you subdivided or sold part of your property in this region over the past 20 years?	◯ No ◯ Yes
Estimate the number of **hours per week** that you **worked on farming/property** related activities **(average over the past 12 months).**	_____ **hrs/week**
What is your **age?**	_____ years

What is your gender? ◯ Male ◯ Female ◯ Non-Binary

What is your main occupation (e.g., farmer, teacher, investor, retiree)? _____

What is the highest level of formal education you have completed?

◯ Trained in life but no formal quals ◯ Year 10 ◯ Year 12 ◯ Vocational Certificate ◯ Tertiary/Uni

Are other **family members** working on your property **on a daily or weekly basis?** **If yes**, please indicate who they are: ◯ Spouse/partner ◯ Children ◯ Parent/s ◯ Sibling/s ◯ Other/s	◯ No ◯ Yes
Have you prepared/are you preparing a property management or whole farm plan that involves a map or other documents that address the existing property situation and include future management and development plans?	◯ No ◯ Yes
Is any proportion of your land presently lost to production due to soil problems? If yes, how many hectares have been lost due to soil _____Ha **Please specify the issue:**	◯ No ◯ Yes

11. YOUR PROPERTY AND YOU (CONT.)

INFORMATION ABOUT YOU AND YOUR MAIN OR 'HOME' PROPERTY	PLEASE TICK OR FILL IN YOUR RESPONSE
In the past 12 months have you changed your financial or on-property operations as a result of seasonal changes in weather patterns?	◯ No ◯ Yes
In the past 12 months have you changed your operations to increase the soil carbon on your property (e.g. by revegetation, soil management)	◯ No ◯ Yes
In the past 12 months have you changed your on-property operations as a result of considering opportunities to reduce carbon emissions (e.g. generating wind power, improved practices)	◯ No ◯ Yes
Did you earn income from agriculture on your Wheatbelt property during 2018/2019 financial year? Did your Wheatbelt property return a net profit during the 2018/2019 financial year? If yes, was your net 2018/2019 agricultural income above $50,000?	◯ No ◯ Yes ◯ No ◯ Yes ◯ No ◯ Yes
Did you or your spouse/partner receive a net off-property income (after expenses and before tax) in the financial year (2018/2019)?	◯ No ◯ Yes, me ◯ Yes, my partner
If yes, was the total off-property income for you and/or your spouse above $50,000?	◯ No ◯ Yes
In the 2018/2019 financial year, what percentage of you (and your spouse's) income was earned off farm? (eg from shares, rental income, employment, other business)	_____ %
Estimate the number of **days** you were involved in **paid off-property** work in the **past 12 months**	_____ days per year
Has your WA Wheatbelt property returned a net profit over the last 10 years? (i.e. income exceeded all expenses before tax, on balance, over the 10 year period)	◯ No ◯ Yes
In the past 5 years have you or your partner **completed a short course/workshop** relevant to property management? (e.g. financial planning, integrated pest management)	◯ No ◯ Yes, me ◯ Yes, my partner
In the last 12 months, did you attend field days, farm walks and demonstrations focused on soil health and productivity?	◯ No ◯ Yes

If you ticked no to attending field days/farm walks/demonstrations, what may have prevented you?

In the last **12 months**, what was the most important influence on your profitability?

What has been the top influence on your **profitability** over the last **ten years**?

Over the last 10 years, if there is a particular **practice change** that has played a major role in your farm's profitability, **please describe:**

In the **next 10 years**, what would you see as likely being your **biggest challenge and/or opportunity**?

12. LONG TERM PLAN OPTIONS

Please indicate the possibility that your **long-term plans** for your property in the **next 10 years** will involve each of the choices in the table below. *Examine the response options underneath this paragraph. For each choice in the table, place the number of your response option in the '**Your view**' column.*

RESPONSE OPTIONS:

HIGHLY UNLIKELY	UNLIKELY	UNSURE	LIKELY	HIGHLY LIKELY
1	2	3	4	5

LIKELIHOOD YOUR LONG-TERM PLANS WILL INVOLVE	YOUR VIEW
Ownership of the property will stay within the family	
The property will be sold	
The property will be subdivided and a large part of the property sold	
I will move off the property around/soon after reaching retirement age	
All or most of the property will be leased or share farmed	
Additional land will be purchased	
Additional land will be leased or share farmed	
The enterprise mix will be changed to diversify income sources	
The enterprise mix will be changed to more intensive enterprises	
The enterprise mix will be changed to less intensive enterprises	
A family member will seek additional off-property work to support the farm	
Some part of my property will be set aside for conservation purposes	
Buying property outside of my current area to mitigate increased seasonal variability	

Do you have **family members interested in taking on your property in the future**? *Please tick your answer.*

○ Yes ○ No ○ Unsure/too early to know

If Yes, has your family agreed to a **succession plan**? *Please circle your answer.*

Not started Early stages Halfway Well advanced Completed/Ongoing

OTHER COMMENTS AND **THANK YOU FOR YOUR TIME**

Do you have any other comments about any of the topics covered in the survey, or other aspects of land and water management in the WA Wheatbelt region? Please use the space provided to write your comments or attach additional sheets. Your comments will be recorded by the research team.

We appreciate the time you have spent answering the questions. **Please return the completed survey in the postage-paid envelope provided**

If you need assistance with the survey, or wish to make specific comments about it, please contact Dr Hanabeth Luke via **1800 317 503**.

Appendix C – Eyre Peninsula, South Australia Survey

SOIL CRC
Performance through collaboration

SURVEY NO.

AGRICULTURE ON THE EYRE PENINSULA

RURAL LANDHOLDER SURVEY 2020

Southern Cross University
School of Environment, Science and Engineering

Charles Sturt University

Government of South Australia
Eyre Peninsula Natural Resources Management Board

LEADA
Lower Eyre Agricultural Development Association

SUPPORTING LANDHOLDERS ON THE EYRE PENINSULA

his regional survey is a vital part of efforts by local farming groups to understand the important social and economic factors shaping landholder decision making. Information you provide will guide decision-making by Agricultural Innovation & Research EP (AIR EP, which is the new entity driving farmer-driven research, development and extension on the Eyre Peninsula, formed from a merger of EPARF & LEADA (Eyre Peninsula Agricultural Research Foundation and Lower Eyre Agricultural Association) and Eyre Peninsula Natural Resource Management Board. Aggregated information arising from this survey will be used to inform the research activities of the Australian Government and industry funded Soil CRC, of which AIR EP is a partner.

There is no other way to obtain this property level information. We plan to follow up this survey in five years, to provide insights into trends over time.

We recognise that you may not be involved in decision making for this property. We are seeking the views of the persons primarily responsible for managing the property. If you are not involved in the management of the property, please forward the survey to the property manager or return the survey in the stamped return envelope. We ask that you only provide information for property/s within the Eyre Peninsula region.

Survey forms have been sent to all landholders on the Eyre Peninsula (with properties bigger than 10Ha). It should take approximately 25-40 minutes to complete. There are no right or wrong answers and you do not have to answer every question. If you have any questions about the survey, please phone Dr Hanabeth Luke on **1800 317 503** or by email at Hanabeth.Luke@scu.edu.au

You are assured of complete confidentiality. Your name will never be placed on the survey form or used in any of the reports. No group outside the research team will have access to the survey data. Information is published at the regional scale and individual data is never published.

Thank you for your assistance,

Dr. Hanabeth Luke

1. OCCUPATIONAL IDENTITY

Please **circle** the descriptor/term that best describes your **occupational identity:**

Full-time farmer Part-time farmer Hobby farmer Non-farmer

2. ENTERPRISE/ LAND USE MIX

This topic is seeking information about your current land use/enterprise mix on the land you own and manage within the Eyre Peninsula region. *Please **tick** any correct response in the 'Situation Now' column.*

ENTERPRISES / LAND USE ON YOUR PROPERTY IN 2020	SITUATION NOW	ENTERPRISES / LAND USE ON YOUR PROPERTY IN 2020	SITUATION NOW
Cropping	○	Irrigated agriculture	○
Pasture	○	Remnant native vegetation (e.g. trees, grasslands, wetlands)	○
Dairying	○	Farm forestry	○
Beef cattle	○	Other tree planting (e.g. shelter, habitat, erosion or recharge control, carbon)	○
Sheep for wool	○	Farm-based tourism (e.g. farm stays, B&B)	○
Sheep for meat	○	Heritage agreement/covenant	○
Other commercial livestock enterprises (e.g. goats, pigs, deer, horse studs, poultry, alpaca, dogs)	○	Area set aside for living/recreation (e.g. gardens, pets, ocean access)	○
Viticulture	○	**Other - please specify**	○
Horticulture	○		

Please indicate your rainfall zone:

○ Low ○ Medium ○ High

3. YOUR ASSESSMENT OF ISSUES

This set of statements seeks your opinion about the importance of a range of issues that may be affecting your property and your local district. *Examine each statement in the table, then place the number of your response option in each space provided for* ***'Your view'***.

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT	NOT APPLICABLE
1	2	3	4	5	6

IMPORTANCE OF ISSUES AFFECTING YOUR LOCAL REGION	YOUR VIEW
Absence of important services and infrastructure (e.g. health, schools, internet, phone coverage)	
Support for new and young farmers	
Uncertain/low returns limiting capacity to invest in my property	
Herbicide resistance	
Risk to life and property from wildfires	
The availability of water for livestock	
Dry salinised land (magnesia patches) undermining long-term productive capacity	
Long-term negative impacts of properties being owned by absentees or corporate farms	
The impact of pest plants and/or animals on native plants and animals	
Loss of native plants and animals in the landscape	
Water security	
Changes in weather patterns	
Public support/opposition to agricultural practices (e.g. pesticide use, soil loss, mulesing)	
The impact of weeds or over-abundant native plant species on productivity **Please indicate the most important species:**	
The impact of feral animals or over-abundant native animal species on productivity **Please indicate the most important:**	
Non-agricultural land use (e.g. residential, solar, wind farms, mining) encroaching on farming land **Please specify:**	

3. YOUR ASSESSMENT OF ISSUES (CONT.)

IMPORTANCE OF SOIL RELATED ISSUES ON YOUR PROPERTY	YOUR VIEW
Soil erosion due to wind or water (circle either if one is more important)	
Low permeability of subsoil	
Declining nutrient status of soils	
Soil acidity (lower pH) undermining productive capacity of soils	
Soil sodicity	
Low organic carbon in soils	
Low biological activity in soils	
Soil borne-diseases	
Phosphorus availability in calcareous soils	
Chemical residue in soils	
Effects of pesticide use on soil biota	
Secondary impacts of previous amelioration strategies **If important, please indicate amelioration strategy:**	

4. THE PRINCIPLES THAT GUIDE YOUR LIFE

The next set of statements seeks information about the **principles that guide your life**. *Please number.*

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT
1	2	3	4	5

THE PRINCIPLES THAT GUIDE YOUR LIFE	YOUR VIEW
Looking after my family/loved-ones and their needs	
Preventing pollution and protecting natural resources	
Being influential and having an impact on people and events	
Fostering equal opportunities for all community members	
Respecting the earth and living in harmony with nature	
Caring for the weak/vulnerable and correcting social injustice	
Creating wealth and striving for a financially profitable business	

5. WHY YOUR PROPERTY IS IMPORTANT TO YOU

The next set of statements seeks information about the reasons your property is important to you. *Examine each statement in the table and place the number for your response in the space provided for **'Your View'**.*

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT
1	2	3	4	5

WHY YOUR PROPERTY IS IMPORTANT TO YOU	YOUR VIEW
Sense of accomplishment from producing food and fibre for others	
Ability to pass on a healthier and more sustainable farm for future generations	
Sense of accomplishment from building/maintaining a viable business	
Opportunity to learn new things	
A place or base for recreation	
An asset that will fund my retirement	
A great place to raise a family	
A place where I can escape the pressures of life	
The native vegetation on the property provides habitat for birds and animals	
An important source of household income	
An attractive place/area to live	
Provides a sense of belonging to a community	
The productive value of the soil on my property	
Native vegetation makes the property an attractive place to live	
An asset that is an important part of family wealth	
Other? Please specify:	

6. YOUR KNOWLEDGE OF DIFFERENT TOPICS

In this section we would like you to provide **an assessment of your knowledge** for a number of different topics. *Examine the response options. For each choice in the table, place the number of your response in the **'Your view'** column.*

RESPONSE OPTIONS:

NO KNOWLEDGE	VERY LITTLE KNOWLEDGE	SOME KNOWLEDGE	SOUND KNOWLEDGE (sufficient to act)	VERY SOUND KNOWLEDGE (can give a detailed explanation)
1	2	3	4	5

YOUR KNOWLEDGE OF DIFFERENT TOPICS	YOUR VIEW
Preparing a farm/property plan allocating land use according to land class	
Which Aboriginal group is connected to the area where your property is located	
The role of understorey plants in supporting the natural ecosystem	
The extent and type of biological activity in soils on your property	
Strategies to maintain ground cover to minimise erosion in this area	
How to establish perennial pastures (e.g. Lucerne or native grasses) in this area	
How to identify the main constraints to soil productivity on your property	
The production benefits of applying biological soil supplements (e.g. compost, manure, microbial inoculants)	
The processes leading to soil structure decline in this area	
How to build soil organic matter/soil carbon	
The extent of native vegetation cover in the Eyre Peninsula region before European settlement	
How land in your district was used and managed before European settlement	
How to use soil testing to prepare a nutrient budget that will increase soil productivity	
Regenerative agriculture and holistic farm management	
How to support the persistence of native grasses in this area	
Potential applications of 'virtual fencing'	
The EP Soil moisture probe network	
Farming practices that can lead to more nutrient-dense food	
Time controlled, cell or rotational grazing strategies	

7. YOUR VIEWS & EXPERIENCE

We would like to know **how closely the statements presented below reflect your views**. *Examine each statement in the table, then place the number for your response in the space provided for '**Your view**'.*

RESPONSE OPTIONS:

STRONGLY DISAGREE	DISAGREE	UNSURE	AGREE	STRONGLY AGREE	DON'T KNOW	NOT APPLICABLE
1	2	3	4	5	6	7

STATEMENTS	YOUR VIEW
The cost of deep-tillage and subsoil modification are justified by increased production	
The benefits of stubble retention outweigh problems arising from the practice	
The costs of applying lime to address soil acidity are justified by increased production	
The costs of applying gypsum to address soil sodicity are justified by increased production	
The costs of establishing perennial pasture are justified by the returns	
Soil testing is an essential first step in understanding soil condition	
I'm confident that landholders in this region can adapt to expected changes in weather patterns	
Fencing to manage stock access is an essential part of the work required to protect the health of waterways and native vegetation	
Biological activity is an important indicator of the productive capacity of soils	
I feel a personal responsibility to be part of a local research and development group	
I feel a personal responsibility to maintain my soil's productive capacity	
There is adequate compensation or support for conservation activities on my farm	
I usually include another person or people in my on-farm management decisions **If yes, please indicate who** (i.e. spouse, agronomist):	
I am interested in learning more about alternative/holistic farming approaches	
I have the time available to be involved in the wider agricultural community (i.e. field days, meetings)	
I have good systems in place to manage my farm data	
I would like to do some sort of study/activity to improve my farm management skills	

7. YOUR VIEWS & EXPERIENCE (CONT.)

STATEMENTS	YOUR VIEW
I would like to use less chemicals on my farm but it is too difficult in practice	
I am coping well with the associated stresses & challenges of managing my farm	
Most years I am satisfied with the income from my farm	
Fundamental changes are required to make our region's farming systems sustainable	
Our on-farm income is enough for about everything we want with some left over for savings	
Grower groups are the best way to drive and direct local research, development and extension	
I feel confident working with numbers and managing my farm accounts	
Primary producers should do all they can to reduce carbon emissions from their activities	
I feel adequately supported to conduct farming and land management activities on my property	

QUESTIONS

What is your main source of support for your agricultural and land management activities (e.g. grower groups, friends, consultants)?

What sort of support would enhance your agricultural and land management activities?

Which group/organisation/department do you think would be most appropriate to provide this support?

Are you aware of the existence of EPARF and/or LEADA? ○ Yes ○ No ○ I'm a member

Do you know that EPARF & LEADA have amalgamated to form AIR EP to drive farmer-led research and innovation? ○ Yes ○ No

STATEMENTS (please indicate the extent to which you agree with the following)	YOUR VIEW
EPARF/LEADA provide valuable information about soil agronomy and farm management	
I can rely on LEADA and/or EPARF (now AIR EP) to keep landholders' interests in mind when making decisions about research priorities	
AIR EP should play an advocacy role/lobby on behalf of the EP agricultural community's needs in regards to Research, Development & Extension (R, D & E)	
AIR EP should drive local R,D & E but nothing more	

What would you most like to see from AIR EP?

8. TOP SOURCES OF INFORMATION

In the past 12 months what have been your sources of **information about topics related to the management of your property on the Eyre Peninsula?** *Please place a tick besides relevant sources in the table below.*

SOURCE OF INFORMATION		SOURCE OF INFORMATION	
Television	○	PIRSA/SARDI	○
Books	○	LEADA	○
Magazines	○	EPARF	○
Newspapers	○	Local farming groups (e.g. Ag Bureau, Landcare)	○
Email	○	Other farmers	○
Local Radio	○	Local Council	○
National/State radio	○	Universities/CSIRO	○
Field days	○	Eyre Peninsula NRM	○
Websites	○	Bureau of Meteorology	○
Instagram	○	Rural R&D organisations (e.g. GRDC, MLA, AWI, SANTFA)	○
Twitter	○	Direct contact with researchers/extension officers	○
Brochures/leaflets/newsletters	○	Environmental organisations, eg. Greening Australia	○
YouTube	○	Commodity groups	○
Podcasts	○	Friends/neighbours/relatives	○
Journals (research papers)	○	**Independent** agricultural consultants, agronomists or stock agents	○
Facebook	○	**Commercial** agricultural consultants, agronomists or stock agents	○
Whatsapp or Messenger groups	○	Soil CRC	○
EP Farming Systems Summary	○	**For your selection/s above, please indicate the title/ name of your preferred top source** (e.g. radio station, paper, organisation or website)	
Other – please specify	○		

9. YOUR VIEWS ABOUT RISK, TRUST AND CLIMATE

In this section we would like to explore your **views about the taking risks, trusting others, and climate change**.
*For each statement in the table, place the number of your response in the '**Your view**' column.*

RESPONSE OPTIONS:

STRONGLY DISAGREE	DISAGREE	UNSURE	AGREE	STRONGLY AGREE	NOT APPLICABLE
1	2	3	4	5	6

STATEMENTS	YOUR VIEW
People are almost always interested only in their own welfare	
I am usually an early adopter of new agricultural practices and technologies	
You can't be too careful when dealing with people	
I prefer to avoid risks	
This may not be the best farm around but there is no real need to change	
I really dislike not knowing what is going to happen	
I am open to new ideas about farming	
I usually view risks as a challenge to embrace	
Financially, I can afford to take a few risks and experiment with new ideas	
I don't have enough time to consider changing my practices	
Climate change poses a risk to the region	
Human activities are influencing changes in climate	
It is not too late to take action to address climate change	
If we do nothing, climate change will have dire consequences for all living things, including humans	

10. MANAGEMENT PRACTICES ON YOUR PROPERTY

This section asks about **practices undertaken** on your main or 'home' property in the Eyre Peninsula region previously, as well as those intended for the future. *Tick all where relevant: Some actions may not be relevant to your situation; please ignore those topics.*

PRACTICES IMPLEMENTED ON YOUR MAIN OR "HOME" PROPERTY IN THE EYRE PENINSULA REGION	AT SOME POINT (prior to 2015)	PAST 5 YEARS (2015-2020)	INTEND TO IMPLEMENT IN NEXT 5 YEARS
Planting of trees and shrubs (incl. direct seeding)	○	○	○
Fencing of native bush/grasslands to manage stock access	○	○	○
Use of time controlled, cell or rotational grazing	○	○	○
Sowing perennial pastures	○	○	○
Use of no-tillage techniques to establish crops or pastures	○	○	○
Use of precision farming techniques	○	○	○
At least one lime application to arable land	○	○	○
Deep ripping of arable land	○	○	○
Application of soil ameliorants other than fertiliser and lime (e.g. gypsum, organic manure)	○	○	○
Testing of soils for nutrient status in paddocks where have applied fertiliser/soil conditioners in the past	○	○	○
Preparation of a nutrient budget for all/most of the property	○	○	○
Planting legumes or pulses	○	○	○
Lethal control of pest animals	○	○	○
Dry sowing	○	○	○
Reduction of chemical use	○	○	○
Increase in chemical use	○	○	○
Organic farming (whether certified or not)	○	○	○
Farming activities that you consider to be regenerative practice/s **For example:**	○	○	○

What is the most important influence on your soil health?

In the last 12 months, what was the most important influence on your profitability?

What was the most important non-weather related influence on your profitability, in the last 12 months?

11. YOUR PROPERTY AND YOU

BACKGROUND INFORMATION	PLEASE TICK OR FILL IN YOUR RESPONSE
What is the total area of rural land you own on the Eyre Peninsula? (excluding land you manage but do not own)	_____ total Ha owned
Is your Eyre Peninsula property your principal place of residence?	◯ Yes ◯ No
What area of additional land do you manage (lease/sharefarm/agist from others) on the Eyre Peninsula (additional to the figure you provided above)?	_____ additional Ha managed
How long have you or your family owned or managed all/some part of your property?	_____ yrs
What area of your property is leased, share farmed or agisted by others?	_____ Ha
How many rural properties do you own? (within and outside of the Eyre Peninsula)?	_____ No. of properties
How many of these properties are on the Eyre Peninsula?	_____ No. of properties

INFORMATION ABOUT YOU AND YOUR MAIN OR 'HOME' PROPERTY	PLEASE TICK OR FILL IN YOUR RESPONSE
Has this enterprise bought **additional land** in this region in the past 20 years?	◯ Yes ◯ No
Have you **subdivided or sold** part of your property in this region in the past 20 years?	◯ Yes ◯ No
Are other **family members** working on your property on a **daily or weekly basis**? If yes, please indicate who they are (e.g. daughter) **1.** _____ **2.** _____ **3.** _____	◯ Yes ◯ No
What is your gender? ◯ Male ◯ Female	◯ Non-binary
What is your age?	_____ **yrs**
What is the highest level of formal education you have completed?	
What is your main occupation (e.g. farmer, teacher, investor, retiree)?	
In the past 5 years have you or your partner/spouse completed a short course/workshop relevant to property management? (e.g. financial planning, integrated pest management)	◯ Me ◯ My partner
Estimate the number of **hours per week** that you worked on farming/property related activities (average over the past 12 months).	
Have you prepared/are you preparing a property management or whole farm plan that involves a map or other documents that address the existing property situation and include future management and development plans?	◯ Yes ◯ No
Are you a member or involved with any industry group? (e.g. Livestock SA, Grain Producers SA)	◯ Yes ◯ No
In the past 12 months have you changed your financial or on-property operations as a result of seasonal changes in weather patterns?	◯ Yes ◯ No

In the past 12 months have you changed your operations to increase the soil carbon on your property (e.g. by revegetation, soil management)	○ Yes ○ No
In past 12 months have you changed your on-property operations as a result of considering opportunities to reduce carbon emissions (e.g. generating solar and/or wind power, increased power use efficiency, improved grazing practices, improved nitrogen use efficiency)	○ Yes ○ No
Is any part of your land presently lost to production due to soil problems? a) If yes, what is the approximate proportion of your property? _____ **b) Please specify the issue/s:**	○ Yes ○ No
Did you earn income from agriculture on your Eyre Peninsula property during the 2018/2019 financial year?	○ Yes ○ No
If yes, did your Eyre Peninsula property return a net profit during the 2018/2019 financial year? (i.e. income exceeded all expenses before tax)	○ Yes ○ No
If yes, was your net 2018/2019 agricultural income above $50,000?	○ Yes ○ No
Did you or your spouse/partner receive a net off-property income (after expenses and before tax) last financial year (2018/2019)?	○ Yes, me ○ Yes, my partner ○ No
If yes, was the total off-property income for you or your partner above $50,000?	○ Yes ○ No
Estimate the number of days that you were involved in paid off-property work in the past 12 months	
Has your Eyre Peninsula property returned a net profit over the last 10 years? (i.e. income exceeded all expenses before tax, on balance, over the 10 year period)	○ Yes ○ No
In the last financial year, what percentage of you (and your spouse's) income was earned off-farm? (eg from shares, rental income, employment, other business)	
Did you attend field days/farm walks/demonstrations focused on soil health & productivity in the past 12 months?	○ Yes ○ No

If you ticked no to attending field days/farm walks/demonstrations, what may have prevented you from attending?

What has been the most important influence on your **profitability** over the last **ten years**?

Over the last 10 years, is there a particular **practice change** that has played a major role in your farm's profitability?
Please describe:

In the **next 10 years**, what would you see as likely being your **biggest challenge and/or opportunity**?

12. LONG-TERM PLANS FOR YOUR PROPERTY

Please indicate the possibility that your **long-term plans** for your property in the **next 10 years** will involve each of the choices in the table below. *Examine the response options underneath this paragraph. For each choice in the table, place the number of your response option in the '**Your view**' column.*

RESPONSE OPTIONS:

HIGHLY UNLIKELY	UNLIKELY	UNSURE	LIKELY	HIGHLY LIKELY	NOT APPLICABLE
1	2	3	4	5	6

LIKELIHOOD YOUR LONG-TERM PLANS WILL INVOLVE	YOUR VIEW
Ownership of the property will stay within the family	
The property will be sold	
The property will be subdivided and a large part of the property sold	
I will move off the property around/soon after reaching retirement age	
All or most of the property will be leased or share farmed	
Additional land will be purchased	
Additional land will be leased or share farmed	
The enterprise mix will be changed to diversify income sources	
The enterprise mix will be changed to more intensive enterprises	
The enterprise mix will be changed to less intensive enterprises	
A family member will seek additional off-property work to support the farm	
Some part of my property will be set aside for conservation purposes	
Buying property outside of my current area to mitigate increased seasonal variability	

Do you have **family members interested in taking on your property in the future**? *Please tick your answer.*

○ Yes ○ No ○ Unsure/too early to know

If Yes, has your family agreed to a **succession plan**? *Please circle your answer.*

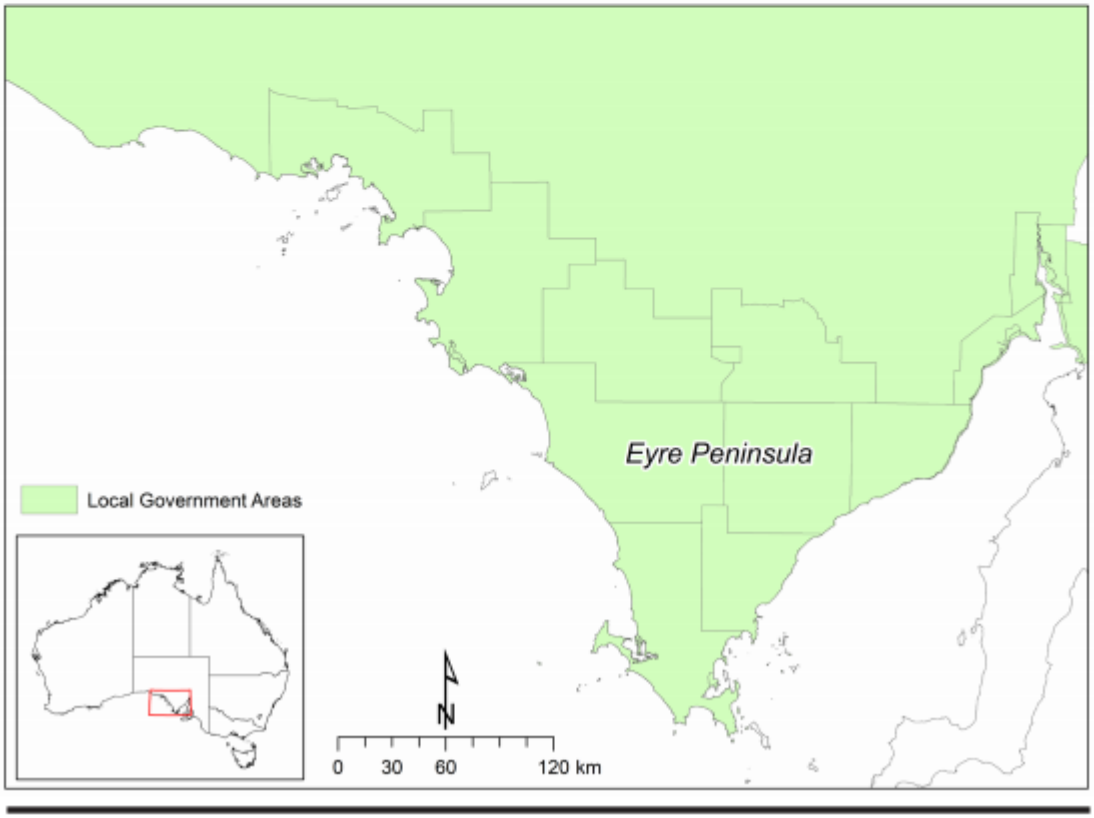
Not started Early stages Halfway Well advanced Completed/Ongoing

OTHER COMMENTS AND **THANK YOU FOR YOUR TIME**

Do you have any other comments about any of the topics covered in the survey, or other aspects of land and soil management in the Eyre Peninsula region? Please use the space provided to write your comments or attach additional sheets. Your comments will be recorded by the research team.

We appreciate the time you have spent answering the questions. **Please return the completed survey in the stamped envelope provided.**

If you need assistance with the survey, or wish to make specific comments about it, please contact Dr Hanabeth Luke via **1800 317 503**.



Appendix C – Eyre Peninsula – Same issue.

Appendix D – The Central West, New South Wales Survey

SURVEY NO.

SUPPORTING LANDHOLDERS IN CENTRAL WEST NSW

RURAL LANDHOLDER SURVEY 2021

SUPPORTING LANDHOLDERS IN CENTRAL WEST NSW

This comprehensive survey is a vital part of efforts to understand the important social and economic factors shaping landholder decision making in Central West New South Wales. Information you provide will guide decision-making and strategic planning by Central West Farming Systems and Central West Local Land Services, organisations working to support landholders to have viable futures in your region. Information will also be used to inform the activities of the Australian Soil Cooperative Research Centre (Soil CRC).

Surveys are being sent to landholders with properties in the Central West region of NSW, identified via ratepayer lists. Each survey has a serial number that links to the property, enabling us to spatially reference our survey results with soil and weather data. **No property or person will ever be identifiable in our reporting.** Our plans are to follow up this survey in about five years, to provide insights into trends over time.

We recognise that you may not be involved in decision making for this property. We are seeking the views of the person/s primarily responsible for managing the property. If you are not involved in the management of the property, please forward the survey to the property manager or return the survey in the postage-paid return envelope. We ask that you only provide information for your property/s within the Central West region.

This voluntary survey should take approximately 25-45 minutes to complete. There are no right or wrong answers and there is no need to think at great length about your responses. If you have any questions about the survey, please contact Dr Hanabeth Luke on 1800 317 503 or by email at Hanabeth.Luke@scu.edu.au

You are assured of complete confidentiality. Your name will never be placed on the survey or used in any of the reports. No group outside the research team will have access to the survey data. Information is published at the regional scale and individual data is never published.

Thank you for your assistance,

Dr. Hanabeth Luke
Senior Lecturer & Soil CRC Project Leader
Faculty of Science & Engineering,
Southern Cross University

1. OCCUPATIONAL IDENTITY

Please circle the descriptor/term that best describes your **occupational identity:**

Full-time farmer Part-time farmer Hobby farmer Non-farmer

Please circle the rainfall zone most relevant to your main/home property:

LOW (Under 350mm) MEDIUM (350-500mm) HIGH (Over 500mm)

2. ENTERPRISE / LAND USE MIX

This topic is seeking **information about your current land use/enterprise mix.** *Please place a tick besides any correct response in the* ***'Situation Now'*** *column.* Please answer with the land you own and manage in the Central West region in mind.

ENTERPRISES / LAND USE ON YOUR PROPERTY IN 2021	SITUATION NOW	ENTERPRISES / LAND USE ON YOUR PROPERTY IN 2021	SITUATION NOW
Cereal	○	Horticulture	○
Legumes/Pulses	○	Irrigated agriculture	○
Oil Seeds	○	Area of remnant native vegetation (e.g. trees, grasslands, wetlands)	○
Pasture	○	Farm forestry	○
Dairying	○	Other tree planting (e.g. shelter, habitat, erosion or recharge control)	○
Beef cattle	○	Farm-based tourism (e.g. farm stays, B&B)	○
Sheep	○	Heritage agreement/covenant	○
Bee keeping	○	Area set aside for living/recreation (e.g. gardens, pets, vehicles)	○
Other commercial livestock enterprises (e.g. goats, pigs, deer, horse studs, poultry, alpaca, dogs)	○	Carbon Farming	○
Viticulture	○	Cover crops	○
Cotton	○	Other (please specify):	○

3. YOUR ASSESSMENT OF ISSUES

This set of statements seeks your opinion about the importance of a **range of issues that may be affecting your property and your local district.** *Examine each statement in the table, then place the number of your response option in each space provided for* ***'Your view'.***

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT	NOT APPLICABLE
1	2	3	4	5	6

IMPORTANCE OF ISSUES AFFECTING YOUR LOCAL DISTRICT	YOUR VIEW
Absence of important services and sufficient infrastructure (e.g. phone, schools, internet, roads & transport) **For example:**	
Risk to life and property from wildfires	
Water holding capacity of soils	
Long-term negative impacts of property purchased by absentees or corporate farms	
The impact of pest plants and/or animals on native plants and animals	
Loss of native plants and animals in the landscape	
Risk to life and property from flooding	
Water security	
Changes in weather patterns	
Public support/opposition for agricultural practices (e.g. GMs, animal welfare, pesticide use)	
Herbicide resistance	
Non-agricultural land use (e.g. residential, solar farms, mining) encroaching on farming land **Please specify:**	
Declining soil health and/or soil productivity	

IMPORTANCE OF ISSUES ON YOUR PROPERTY	YOUR VIEW
Uncertain/low returns limiting capacity to invest in my property	
Impact of temperature extremes on farm productivity (e.g. frost, heat damage)	
The impact of weeds on productivity **Please indicate the most important:**	
The impact of feral animals or over-abundant native animal species on productivity **Please indicate the most important:**	
The activities of neighbouring landholders (eg. such as overspray, building dams) **Please provide an example:**	

THE IMPORTANCE OF SOIL-RELATED ISSUES ON YOUR PROPERTY	YOUR VIEW
Soil erosion (e.g. due to wind or water)	
Declining nutrient status of soils	
Salinity undermining productive capacity of soils	
Soil acidity (lower pH) undermining productive capacity of soils	
Soil sodicity undermining productive capacity of soils	
Low level of organic carbon in soils	
Low level of biological activity in soils	
Soil-borne diseases	
Chemical residue in soils	
Effects of pesticide use on soil biota	
Soil (re)compaction	
Increasing nitrogen (N) input	

4. THE PRINCIPLES THAT GUIDE YOUR LIFE

The next set of statements seeks information about the **principles that guide your life.** *Please number each.*

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT
1	2	3	4	5

THE PRINCIPLES THAT GUIDE YOUR LIFE	YOUR VIEW
Looking after my family/loved-ones and their needs	
Preventing pollution and protecting natural resources	
Being influential and having an impact on people and events	
Fostering equal opportunities for all community members	
Respecting the earth and living in harmony with nature	
Caring for the weak/vulnerable and correcting social injustice	
Creating wealth and striving for a financially profitable business	

5. WHY YOUR PROPERTY IS IMPORTANT TO YOU

The next set of statements seeks information about the **reasons your property is important to you.** Examine each statement in the table and place the number for your response in each space provided for ***'Your view'***.

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT
1	2	3	4	5

WHY YOUR PROPERTY IS IMPORTANT TO YOU	YOUR VIEW
Sense of accomplishment from producing food and fibre for others	
Ability to pass on a healthier environment for future generations	
Sense of accomplishment from building/maintaining a viable business	
Provides opportunities to learn new things	
A place or base for recreation	
An asset that will fund my retirement	
A great place to raise a family	
Its native vegetation provides habitat for birds and animals	
An important source of household income	
An attractive place/area to live	
Provides a sense of belonging to a community	
Provides a sense of belonging to a place	
My property is an important part of who I am	
The productive value of the soil on my property	
Native plants and animals make the property an attractive place to live	
An asset that is an important part of family wealth	

6. YOUR KNOWLEDGE OF DIFFERENT TOPICS

In this section we would like you to provide **an assessment of your knowledge** for a number of different topics. Examine the response options. For each choice in the table, place the number of your response in the ***'Your view'*** column..

RESPONSE OPTIONS:

NO KNOWLEDGE	VERY LITTLE KNOWLEDGE	SOME KNOWLEDGE	SOUND KNOWLEDGE (sufficient to act)	VERY SOUND KNOWLEDGE (can give a detailed explanation)	NOT APPLICABLE
1	2	3	4	5	6

YOUR KNOWLEDGE OF DIFFERENT TOPICS	YOUR VIEW
Preparing a farm/property plan allocating land use according to land/soil characteristics	
The Aboriginal group/s who are connected to the area where your property is located	
The role of remnant vegetation in supporting the natural ecosystem	
Strategies to maintain ground cover to minimise erosion in this area	
Options and strategies to (re)establish perennial pastures (e.g. Lucerne/native grasses) in this area	
How to identify the main constraints to soil productivity on your property	
The benefits of applying biological soil supplements (e.g. compost, manure, microbial inoculants)	
The processes leading to soil structure decline	
Market mechanisms that support carbon farming	
The role of soil carbon in maintaining soil health	
How to build soil organic matter/soil carbon	
How land in your district was used and managed before European settlement	
How to use soil testing to prepare a nutrient budget that will increase soil productivity	
Regenerative agriculture and/or holistic farm management	
How to support the persistence of native grasses in this area	
Emerging and/or cutting-edge agricultural technologies	
How to (re)introduce more legumes/pulses into your enterprise mix	
Time controlled, holistic or cell grazing strategies	
The role of on-farm biodiversity for supporting soil and landscape health	
How to apply precision-farming techniques	
The extent and type of biological activity in soils on your property	

7. YOUR VIEWS & EXPERIENCE

We would like to know **how closely the statements presented below reflect your views.** Examine each statement in the table, then place the number for your response in the space provided for ***'Your view'.***

RESPONSE OPTIONS:

STRONGLY DISAGREE	DISAGREE	NEUTRAL/ DON'T KNOW	AGREE	STRONGLY AGREE	NOT APPLICABLE
1	2	3	4	5	6

STATEMENTS	YOUR VIEW
The benefits of stubble retention outweigh problems arising from the practice	
If relevant, how do you usually manage your stubble? ◯ cool burning ◯ hot burning ◯ full retention ◯ incorporation ◯ other	
The costs of applying lime to balance soil acidity is justified by increased production	
The costs of establishing perennial pasture are justified by the returns	
Soil testing is an essential step in understanding soil condition	
Biological activity is an important indicator of the productive capacity of soils	
Fencing to manage stock access is an essential element of protecting waterways and native vegetation	
I feel a personal responsibility to be part of a local farming systems group	
I feel a personal responsibility to maintain the productive capacity of my soil	
There is adequate compensation or support provided for improving soil carbon on my farm	
I usually include another person or people in my on-farm management decisions	
If yes, please indicate who (i.e. agronomist, partner):	
I have good systems in place to manage my farm data	
Decision-making needs to be strongly influenced by data	
Internet or mobile phone connectivity is a barrier to my using on-farm data more effectively	
I feel confident working with numbers and managing my farm accounts	
Most years I'm satisfied with my farm's productivity given the seasonal conditions experienced	
I am coping well with the associated stresses and challenges of managing my farm	
Farming systems groups are the best way to drive and direct local research, development and extension	
I am interested in learning more about regenerative/holistic farming approaches	
I'm confident that adopting regenerative/holistic farming practices is justified by the returns	

STATEMENTS	YOUR VIEW
I'm confident that landholders in this region can adapt to expected changes in rainfall patterns	
Primary producers should do all they can to reduce carbon emissions from their activities	
Fundamental changes are required to make farming systems in our region more resilient	
I'm confident that my land is in a better condition than when I took on the management of this farm	
I feel adequately supported to conduct farming and land management activities on my property	

OPEN QUESTIONS

What is your main source of support for your agricultural and/or land management activities (e.g grower groups, friends)?

What is the most important influence on your soil health?

What testing/indicators do you use to assess soil/land health?

Approximately, how often are your soils tested?

◯ At least annually ◯ Every 3-5 years ◯ Once ◯ Never

Where do you soil test?

◯ One preferred location ◯ Systematically in one paddock ◯ Systematically in many paddocks

To a depth of (tick one only): ◯ 0-10cm ◯ 0-15cm ◯ 0- 30cm ◯ Deeper than 30cm

If you don't soil-test, why not?

Are you a member of Central West Farming Systems (CWFS)? ◯ No ◯ Yes ◯ I was previously

Please use the following response options to respond to the statements below:

STRONGLY DISAGREE	DISAGREE	NEUTRAL/ DON'T KNOW	AGREE	STRONGLY AGREE	NOT APPLICABLE
1	2	3	4	5	6

STATEMENTS (indicate the extent to which you agree with the following)	CWFS	LOCAL LAND SERVICES
Provides valuable information about soil, agronomy, farm management and/or natural resource management		
Can be relied on to keep landholders' interests in mind when making decisions about research priorities		
Should play an advocacy role/lobby on behalf of my community's needs in regards to research, development & extension (R,D & E)		

What would you most like to see from your local farming systems group?

If you used to be, but are no longer a member, could you please explain why?

8. PREFERRED SOURCES OF INFORMATION

In the past 12 months, what have been your **top** sources of **information about topics related to the management of your property in the Central West region?** *Please place a tick besides your key sources in the table below.*

MODE OF INFORMATION		ORGANISATION/PERSONS	
Television	○	Other farmers	○
Books	○	Central West Farming Systems Group	○
Magazines	○	Local Land Services	○
Newspapers	○	Landcare	○
Emails	○	RDA	○
Radio	○	Local Council	○
Field days	○	Department of Primary Industries (DPI)	○
Websites	○	Soil CRC	○
Instagram	○	Rural R&D corporations (e.g. GRDC)	○
Twitter	○	Environmental organisations (e.g. Greening Australia)	○
Brochures/leaflets/newsletters	○	Commodity groups	○
YouTube	○	Friends/neighbours/relatives	○
Podcasts	○	Universities/CSIRO	○
Academic journals/research papers	○	Bureau of Meteorology	○
Facebook	○	**Independent** agricultural consultants, agronomists or stock agents	○
Whatsapp or Messenger groups	○	**Commercial** agricultural consultants, agronomists or stock agents	○
My intuition/gut feeling	○	Other grower groups	○
Extension officers	○	My own knowledge from my own experiences	○

For your selection/s above, please indicate the title of your preferred top source (e.g. name of newspaper or website)

_____

9. YOUR VIEWS ABOUT RISK, TRUST AND CLIMATE

In this section we would like to explore your **views about taking risks, trusting others and climate change.** For each statement in the table, place the number of your response in the ***'Your view'*** column.

RESPONSE OPTIONS:

STRONGLY DISAGREE	DISAGREE	NEUTRAL/ DON'T KNOW	AGREE	STRONGLY AGREE
1	2	3	4	5

STATEMENTS	YOUR VIEW
You can't be too careful when dealing with people	
I am usually an early adopter of new agricultural practices and technologies	
People are almost always interested only in their own welfare	
I trust my own intuition over other information when there is risk involved	
My farm is doing ok the way the things are, I see no reason to change	
I prefer to see evidence of local success before trying a new practice	
I prefer to avoid risks	
I am open to new ideas about farming and land management	
I usually view risks as a challenge to embrace	
I won't take a risk if my gut/intuition says no	
Financially, I can afford to take a few risks and experiment with new ideas	
I have sufficient time available to consider changing my practices	
Climate change poses a risk to the region	
Human activities are influencing changes in climate	
It is not too late to take action to address climate change	
If we do nothing, climate change will have dire consequences for all living things, including humans	

10. MANAGEMENT PRACTICES ON YOUR PROPERTY

This section asks about **practices undertaken** on your main or 'home' property in the Central West region during the full period of your management; and the past 5 years. *Tick all relevant.*
Some actions may not be relevant to your situation: Please ignore those topics.

PRACTICES IMPLEMENTED ON YOUR MAIN OR "HOME" PROPERTY IN THE CENTRAL WEST REGION	AT SOME POINT PRIOR TO 2015	PAST 5 YEARS (2015-present)	INTEND TO IMPLEMENT IN NEXT 5 YEARS
Planting of trees and shrubs (incl. direct seeding)	○	○	○
Fencing of native bush/grasslands to manage stock access	○	○	○
Use of time-controlled, cell, or holistic grazing	○	○	○
Sowing perennial pastures	○	○	○
Use of minimum or no-tillage techniques	○	○	○
Use of precision farming techniques for cropping	○	○	○
At least one lime application to arable land	○	○	○
At least one gypsum application to arable land	○	○	○
Application of biological soil supplements (eg. compost-tea, effluent)	○	○	○
Deep ripping of arable land	○	○	○
Maintaining at least 70% groundcover (in non-drought years)	○	○	○
Testing of soils to understand soil condition	○	○	○
Preparation of a nutrient budget for all/most of the property	○	○	○
Lethal control of pest animals	○	○	○
Reduction of chemical/fertiliser use	○	○	○
Increase in chemical/fertiliser use	○	○	○
Plant legumes/pulses	○	○	○
Pasture cropping	○	○	○
Multi-species pasture cropping	○	○	○
Value-add processes (eg on-farm processing, retail)	○	○	○
Organic farming	○	○	○
Carbon farming	○	○	○
Farming practices you consider to be regenerative **Example/s:**	○	○	○

11. YOUR PROPERTY AND YOU

BACKGROUND INFORMATION	PLEASE TICK OR FILL IN YOUR RESPONSE
What is the total area of land you own in the Central West region? (excluding land you manage but do not own)	_____ total Ha owned
Is this Central West property your principal place of residence?	◯ No ◯ Yes
What area of additional land do you manage (lease/sharefarm/agist from others) in the Central West region (additional to the figure you provided above)?	_____ additional Ha managed
How long have you or your family owned or managed all/some part of your property?	_____ years
How many rural properties do you own **within** the Central West region?	_____ No. of properties
What area of your property is leased, share farmed or agisted by others?	_____Ha

INFORMATION ABOUT YOU AND YOUR MAIN OR 'HOME' PROPERTY	PLEASE TICK OR FILL IN YOUR RESPONSE
Has this enterprise bought additional land in this region in the past 20 years?	◯ No ◯ Yes
Have you subdivided or sold part of your property in this region over the past 20 years?	◯ No ◯ Yes
Estimate the number of **hours per week** that you **worked on farming/property** related activities **(average over the past 12 months)**.	_____ hrs/week
What is your **age**?	_____ years
What is your gender? ◯ Male ◯ Female ◯ Non-binary	
Do you identify as Aboriginal and/or Torres Strait Islander?	◯ No ◯ Yes
What is your main occupation (e.g., farmer, teacher, investor, retiree)? _____	
What is the highest level of formal education you have completed? ◯ Trained in life but no formal quals ◯ Year 10 ◯ Year 12 ◯ Vocational Certificate ◯ Tertiary/Uni	
Are other **family members** working on your property **on a daily or weekly basis?** **If yes, please indicate who they are and their approximate age:** ◯ Partner ____ ◯ Child/ren ____ ◯ Parent/s ____ ◯ Sibling/s ____ ◯ Other/s ____	◯ No ◯ Yes
Have you prepared/are you preparing a property management or whole farm plan that involves a map or other documents that address the existing property situation and include future management and development plans?	◯ No ◯ Yes
Is any proportion of your land presently lost to production due to soil problems? If yes, how many hectares have been lost due to soil _____Ha **Please specify the issue:**	◯ No ◯ Yes

11. YOUR PROPERTY AND YOU (CONT)

INFORMATION ABOUT YOU AND YOUR MAIN OR 'HOME' PROPERTY	PLEASE TICK OR FILL IN YOUR RESPONSE
In the past 12 months have you changed your financial or on-property operations as a result of seasonal changes in weather patterns?	◯ No ◯ Yes
In the past 12 months have you changed your operations to increase the soil carbon on your property (e.g. by revegetation, soil management)	◯ No ◯ Yes
In the past 12 months have you changed your on-property operations as a result of considering opportunities to reduce carbon emissions ((e.g. generating wind power, improved grazing practices)	◯ No ◯ Yes
Did you earn income from agriculture on your Central West NSW property during 2019/2020 financial year?	◯ No ◯ Yes
Did your Central West NSW property return a net profit during the 2019/2020 financial year? (i.e. income exceeded all expenses before tax)	◯ No ◯ Yes
If yes, was your net 2019/2020 agricultural income above $50,000?	◯ No ◯ Yes
Did you or your spouse/partner receive a net off-property income (after expenses and before tax) in the financial year (2019/2020)?	◯ No ◯ Yes, me ◯ Yes, my partner
If yes, was the total off-property income for you and/or your spouse above $50,000?	◯ No ◯ Yes
In the 2019/2020 financial year, what percentage of you (and your spouse's) income was earned off farm? (eg. from shares, rental income, employment, other business)	____%
Estimate the number of **days** you were involved in paid off-property work in the **past 12 months**	____days per year
Has your Central West NSW property returned a net profit over the last 10 years? (i.e. income exceeded all expenses before tax, on balance, over the 10 year period)	◯ No ◯ Yes
In the past 5 years have you or your partner completed a short course/workshop relevant to property management? (e.g. financial planning, integrated pest management)	◯ No ◯ Yes, me ◯ Yes, my partner
In the last 12 months, did you attend field days, farm walks and demonstrations focused on soil health and productivity?	◯ No ◯ Yes

On average, what time-frame influences your strategic decisions on the farm? (tick all that apply)

◯ Opportunistic ◯ Seasonal ◯ Year to year ◯ Up to 5 years ◯ 6-20years ◯ Over 20 years ◯ Over 100 yrs

In the last **12 months**, what **management decision** was the most important influence on your **profitability**?

Over the last **10 years**, what **management decision** was the most important influence on your **profitability**?

In the **next 10 years**, what would you see as likely being your **biggest challenge and/or opportunity**?

Is there a **particular technology/tool/innovation/knowledge** that would support your farm management goals?

12. LONG-TERM PLANS FOR YOUR PROPERTY

Please indicate the possibility that your **long-term plans** for your property in the **next 10 years** will involve each of the choices in the table below. Examine the response options underneath this paragraph. For each choice in the table, place the number of your response option in the ***'Your view'*** column.

RESPONSE OPTIONS:

HIGHLY UNLIKELY	UNLIKELY	UNSURE	LIKELY	HIGHLY LIKELY
1	2	3	4	5

LONG TERM PLAN OPTIONS	YOUR VIEW
Ownership of the property will stay within the family	
The property will be sold	
The property will be subdivided and a large part of the property sold	
I will move off the property around/soon after reaching retirement age	
All or most of the property will be leased or share farmed	
Additional land will be purchased	
Additional land will be leased or share farmed	
The enterprise mix will be changed to diversify income sources	
The enterprise mix will be changed to more intensive enterprises	
The enterprise mix will be changed to less intensive enterprises	
A family member will seek additional off-property work to support the farm	
Some part of my property will be set aside for conservation purposes	
Buying property outside of my current area to mitigate increased seasonal variability	

Is this a corporate-owned farm? Please tick your answer. ◯ No ◯ Yes

Do you have **family members interested in taking on your property in the future**? Please tick your answer.

◯ Yes ◯ No ◯ Unsure/too early to know

If Yes, has your family agreed to a **succession plan**? Please circle your answer.

Not started Early stages Halfway Well advanced Completed/Ongoing

OTHER COMMENTS AND THANK YOU FOR YOUR TIME

Do you have any other comments about any of the topics covered in the survey, or other aspects of land and water management in the Central West region? Please use the space provided to write your comments or attach additional sheets. Your comments will be recorded by the research team.

We appreciate the time you have spent answering the questions. **Please return the completed survey in the postage-paid envelope provided.**

If you need assistance with the survey, wish to make specific comments about it, or receive a copy of results, please contact Dr Hanabeth Luke via **1800 317 503**.

If you would like to be contacted as a part of further research, please write your email address or other contact here:

Appendix E – Tasmania Survey

SOIL CRC
Performance through collaboration

SURVEY NO.

SUPPORTING LANDHOLDERS IN TASMANIA

TASMANIAN RURAL LANDHOLDER SURVEY 2022

Southern Cross University
Charles Sturt University
NRM North
nrm SOUTH
SFS
Cradle Coast NRM
CRADLE COAST AUTHORITY

TASMANIAN RURAL LANDHOLDER SURVEY 2022

This comprehensive questionnaire is a vital part of efforts to understand the important social and economic factors shaping landholder decision making in Tasmania.

Information you provide will influence how support and information is provided by organisations working with landholders to provide the best outcomes for Tasmanian farmers and landholders. Information collected will also be used to inform the activities of the Australian Soil Cooperative Research Centre (Soil CRC).

We recognise that you may not be involved in decision making for this property. We are seeking the views of the person/s primarily responsible for managing the property. If more than one, you may fill it in together. If you are not involved in the management of the property, please forward this on to the property manager or return it in the postage-paid return envelope. We ask that you only provide information for your property/s in Tasmania.

Questionnaires are being sent to a random sample of landholders with properties in Tasmania, identified via The LIST. Each survey has a serial number that links to the property, enabling us to spatially reference our survey results with soil and weather data (spatial information derived from LISTmap, State of Tasmania). **No specific property or person will ever be identifiable in our reporting.** Our plans are to follow up this survey in about five years, to provide insights into trends over time.

This voluntary survey should take approximately 30-50 minutes to complete. There are no right or wrong answers and there is no need to think at great length about your responses. If you have any questions about the survey, please contact Dr Hanabeth Luke on 1800 317 503 or by email at Hanabeth.Luke@scu.edu.au

You are assured of complete confidentiality. Your name will never be placed on the survey or used in any of the reports. No group outside the research team will have access to the survey data. Information is published at the regional scale and individual data is never published.

Thank you for your assistance,

Dr. Hanabeth Luke
Senior Lecturer & Soil CRC Project Leader
Faculty of Science & Engineering,
Southern Cross University

1. OCCUPATIONAL IDENTITY

Please **circle** the descriptor/term that best describes your **occupational identity:**

Full-time farmer Part-time farmer Hobby farmer Non-farmer

Please circle the **rainfall zone** most relevant to your main/home property:

LOW (Under 600mm) MEDIUM (601-2000mm) HIGH (Over 2001mm)

2. ENTERPRISE / LAND USE MIX

This section is seeking **information about your current land use/enterprise mix.** *Please place a tick besides any relevant response in the 'Situation Now' column.* Please answer with the **land you own and manage** in Tasmania in mind.

ENTERPRISES / LAND USE ON YOUR PROPERTY IN 2022	SITUATION NOW	ENTERPRISES / LAND USE ON YOUR PROPERTY IN 2022	SITUATION NOW
Cereal	○	Horticulture: seed crop	○
Oil Seed	○	Horticulture: orchard	○
Pasture	○	Horticulture: other	○
Dairying	○	Irrigated agriculture	○
Beef cattle	○	Area of remnant native vegetation (e.g. trees, grasslands, wetlands)	○
Sheep	○	Farm forestry	○
Beekeeping	○	Other tree planting (e.g. shelter, habitat, erosion or recharge control)	○
Other commercial livestock enterprises (e.g. goats, pigs, deer, horses, poultry, alpaca, dogs)	○	Farm-based tourism (e.g. farm stays, B&B)	○
Viticulture	○	Heritage agreement/covenant	○
Horticulture: protected (eg. berries)	○	Growing under contract	○
Horticulture: vegetable	○	Other (please specify):	○

3. YOUR ASSESSMENT OF ISSUES

This set of statements seeks your opinion about the importance of a **range of issues that may be affecting your local district and your property.** *Examine each statement in the table individually, then place the number of your response option in each space provided for* ***'Your View'***.

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT	NOT APPLICABLE
1	2	3	4	5	6

IMPORTANCE OF ISSUES AFFECTING YOUR LOCAL DISTRICT	YOUR VIEW
Absence of important services and sufficient infrastructure (e.g. phone, schools, internet, roads) **Please specify:**	
Risk to life and property from bushfires/wildfires	
Risk to life and property from flooding	
Long-term negative impacts of property purchased by absentees	
The impact of pest plants and/or animals on native plants and animals	
Loss of native plants and animals in the landscape	
Water security	
Opportunites for irrigation	
Changes in weather patterns	
Public support/opposition for agricultural practices (e.g. GMOs, animal welfare, pesticide use)	
Herbicide resistance	
Non-agricultural land use (e.g. residential, solar farms, mining) encroaching on farming land **Please specify:**	
Declining soil health and/or soil productivity	

IMPORTANCE OF ISSUES ON YOUR PROPERTY	YOUR VIEW
The impact of weeds on productivity **Please indicate the most important:**	
The impact of feral animals or over-abundant native animal species on productivity **Please indicate the most important:**	
The activities of neighbouring landholders (eg. such as overspray, building dams) **Example:**	

IMPORTANCE OF ISSUES ON YOUR PROPERTY	YOUR VIEW
Uncertain returns limiting capacity to invest in my property	
Impact of temperature extremes on farm productivity (e.g. frost, heat damage)	
Soil erosion (e.g. due to wind or water)	
Declining nutrient status of soils, therefore increased inputs required	
Salinity undermining productive capacity of soils	
Soil acidity (lower pH) undermining productive capacity of soils	
Soil sodicity undermining productive capacity of soils	
Low level of organic carbon in soils	
Low level of biological activity in soils	
Soil-borne diseases	
Chemical residue in soils	
Effects of pesticide use on soil biota	
Water quality	
Waterlogging undermining productive capacity of soils	

4. THE PRINCIPLES THAT GUIDE YOUR LIFE

The next set of statements seeks information about the **principles that guide your life.** *Please number each.*

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT
1	2	3	4	5

THE PRINCIPLES THAT GUIDE YOUR LIFE	YOUR VIEW
Looking after my family/loved-ones and their needs	
Preventing pollution and protecting natural resources	
Being influential and having an impact on people and events	
Fostering equal opportunities for all community members	
Respecting the earth and living in harmony with nature	
Caring for the weak/vulnerable and correcting social injustice	
Creating wealth and striving for a financially profitable business	

5. WHY YOUR PROPERTY IS IMPORTANT TO YOU

The next set of statements seeks information about the **reasons your property is important to you.** *Examine each statement in the table and place the number for your response in each space provided for* ***'Your View'****.*

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT
1	2	3	4	5

WHY YOUR PROPERTY IS IMPORTANT TO YOU	YOUR VIEW
Sense of accomplishment from producing food and fibre for others	
Ability to pass on a healthier environment for future generations	
Sense of accomplishment from building/maintaining a viable business	
Provides opportunities to learn new things	
A place or base for recreation	
An asset that will fund my retirement	
A great place to raise a family	
Its native vegetation provides habitat for birds and animals	
An important source of household income	
An attractive place/area to live	
Provides a sense of belonging to a community	
Provides a sense of belonging to a place	
My property is an important part of who I am	
The productive value of the soil on my property	
Native plants and animals make the property an attractive place to live	
An asset that is an important part of family wealth	

Could you please outline/list your main goal/s in relation to your property/farm?

.....

.....

.....

6. YOUR KNOWLEDGE OF DIFFERENT TOPICS

In this section we would like you to provide **an assessment of your knowledge** for a number of different topics. *Examine the response options. For each choice in the table, place the number of your response in the **'Your View'** column.*

RESPONSE OPTIONS:

NO KNOWLEDGE	VERY LITTLE KNOWLEDGE	SOME KNOWLEDGE	SOUND KNOWLEDGE (sufficient to act)	VERY SOUND KNOWLEDGE (can give a detailed explanation)	NOT APPLICABLE
1	2	3	4	5	6

YOUR KNOWLEDGE OF DIFFERENT TOPICS	YOUR VIEW
Preparing a farm/property plan allocating land use according to land/soil characteristics	
The Aboriginal group/s who are connected to the area where your property is located	
The role of remnant vegetation in supporting the natural ecosystem	
Strategies to maintain ground cover to minimise erosion in this area	
Options and strategies to (re)establish perennial pastures (e.g. lucerne/native grasses) in this area	
How to identify the main constraints to soil productivity on your property	
The benefits of applying biological soil supplements (e.g. compost, manure, microbial inoculants)	
The processes leading to soil health decline	
Market mechanisms that support carbon farming (eg. carbon credits)	
The role of soil carbon in maintaining soil health	
How to build soil organic matter/soil carbon	
How land in your district was used and managed before European settlement	
How to use soil testing to inform soil productivity planning processes (e.g. nutrient budget)	
Regenerative agriculture and/or holistic farm management	
How to support the persistence of native grasses in this area	
Emerging and/or cutting-edge agricultural technologies	
Time controlled, holistic or cell grazing strategies	
The role of on-farm biodiversity for supporting soil and landscape health	
The extent and type of biological activity in soils on your property	
Managing soil salinity	
Managing waterlogging	

7. YOUR VIEWS & EXPERIENCE

We would like to know **how closely the statements presented below reflect your views/experience.** *Examine each statement in the table, then place the number for your response in the space provided for* ***'Your view'***.

RESPONSE OPTIONS:

STRONGLY DISAGREE	DISAGREE	NEUTRAL/ DON'T KNOW	AGREE	STRONGLY AGREE	NOT APPLICABLE
1	2	3	4	5	6

STATEMENTS	YOUR VIEW
The benefits of stubble retention outweigh problems arising from the practice	
I am confident managing my farm in the face of increasing change and uncertainty	
The costs of applying lime to balance soil acidity is justified by increased production	
The costs of establishing perennial pasture are justified by the returns	
Soil testing is an essential step in understanding soil condition	
Biological activity is an important indicator of the productive capacity of soils	
Fencing to manage stock access is an essential element of protecting waterways and native vegetation	
I feel a personal responsibility to be part of a local farming systems group	
I feel a personal responsibility to maintain the productive capacity of my soil	
There is adequate compensation or support provided for improving soil carbon on my farm	
I usually include another person or people in my on-farm management decisions **If agree, please indicate who** (i.e. agronomist, partner):	
I have good systems in place to manage my farm data	
Decision-making needs to be strongly influenced by data	
Internet or mobile phone connectivity is a barrier to my using on-farm data more effectively	
I feel confident working with numbers and managing my farm accounts	
Most years I'm satisfied with my farm's productivity given the seasonal conditions experienced	
I am coping well with the associated stresses and challenges of managing my farm	
Farming systems groups are the best way to drive local research, development and extension	
I am interested in learning more about regenerative/holistic farming approaches	
I'm confident that adopting regenerative/holistic farming practices is justified by the returns	
I'm confident that landholders in this region can adapt to expected changes in rainfall patterns	

STATEMENTS	YOUR VIEW
Primary producers should do all they can to reduce carbon emissions from their activities	
Fundamental changes are required to make farming systems in our region more resilient	
I'm confident that my land is in a better condition than when I took on the management of this farm	
I feel adequately supported to conduct farming and land management activities on my property	

OPEN QUESTIONS

What/who is your main source of support for your agricultural and/or land management activities?

What is the most important influence on your soil health?

What are your soil management goals?

What testing/indicators do you use to assess soil/land health?

Approximately, how often are your soils tested?

◯ At least annually ◯ Every 3-5 years ◯ Once ◯ Never

Where are your soils tested?

◯ One preferred location ◯ Systematically in one paddock ◯ Systematically in many paddocks ◯ Contract directed

To a depth of (tick one only): ◯ 0-10cm ◯ 15cm ◯ 16-30cm ◯ Deeper than 30cm

If you don't soil-test, why not?

Please use the following response options to respond to the statements below:

STRONGLY DISAGREE	DISAGREE	NEUTRAL/ DON'T KNOW	AGREE	STRONGLY AGREE	NOT APPLICABLE
1	2	3	4	5	6

STATEMENTS (indicate the extent to which you agree with the following)	NRE (Gov)	Natural Resource Management organisations (NRMs)	Southern Farming Systems (SFS)
Provides valuable information about soil, agronomy, farm management and/or natural resource management			
Can be relied on to keep landholders' interests in mind when making decisions about research priorities			
Should play an advocacy role/lobby on behalf of my community's needs in regards to research, development & extension (R,D & E)			

What would you most like to see from your local NRMs/NRE/SFS?

8. PREFERRED SOURCES OF INFORMATION

In the past 12 months, what have been your **top sources of information about topics related to the management of your property in the Tasmania region?** *Please place a tick besides your key sources in the table below.*

MODE OF INFORMATION		ORGANISATION/PERSONS	
Television	○	Other farmers	○
Books	○	Southen Farming Systems	○
Magazines	○	NRMs/NRE	○
Newspapers	○	Landcare	○
Emails	○	RDA	○
Radio	○	Local Council	○
Field days	○	Department of Primary Industries, Parks, Water and Environment (DPIPWE/NRE Tas)	○
Websites	○	Soil CRC	○
Instagram	○	Rural R&D corporations (e.g. GRDC)	○
Twitter	○	Environmental organisations (e.g. Greening Australia)	○
Brochures/leaflets/newsletters	○	Commodity groups	○
YouTube	○	Friends/neighbours/relatives	○
Podcasts	○	Universities/ TIA/CSIRO	○
Academic journals/research papers	○	Bureau of Meteorology	○
Facebook	○	**Independent** agricultural consultants, agronomists or stock agents	○
Whatsapp or Messenger groups	○	**Commercial** agricultural consultants, agronomists or stock agents	○
My intuition/gut feeling	○	Other farming system/grower groups	○
Extension officers	○	My own knowledge from my own experiences	○

For your selection/s above, please indicate the title of your preferred top source (e.g. *name* of newspaper or website)

.....

9. YOUR VIEWS ABOUT RISK, TRUST AND CLIMATE

In this section we would like to explore your **views about taking risks, trusting others and climate change.**
*For each statement in the table, place the number of your response in the **'Your view'** column.*

RESPONSE OPTIONS:

STRONGLY DISAGREE	DISAGREE	NEUTRAL/ DON'T KNOW	AGREE	STRONGLY AGREE
1	2	3	4	5

STATEMENTS	YOUR VIEW
You can't be too careful when dealing with people	
I am usually an early adopter of new agricultural practices and technologies	
People are almost always interested only in their own welfare	
I trust my own intuition over other information when there is risk involved	
This may not be the best farm around, but I see no reason to change	
I prefer to see evidence of local success before trying a new practice	
I prefer to avoid risks	
I am open to new ideas about farming and land management	
I usually view risks as a challenge to embrace	
I won't take a risk if my gut/intuition says no	
Financially, I can afford to take a few risks and experiment with new ideas	
I have sufficient time available to consider changing my practices	
CLIMATE CHANGE	
Climate change poses a risk to the region	
Human activities are influencing changes in climate	
It is not too late to take action to address climate change	
If we do nothing, climate change will have dire consequences for all living things, including humans	

10. MANAGEMENT PRACTICES ON YOUR PROPERTY

This section asks about **practices undertaken** on your main or 'home' property in Tasmania during the full period of your management; and the past 5 years. *Tick all relevant.*
Some actions may not be relevant to your situation: Please ignore those topics.

PRACTICES IMPLEMENTED ON YOUR MAIN OR "HOME" PROPERTY IN THE TASMANIA REGION	AT SOME POINT PRIOR TO 2017	PAST 5 YEARS (2017-present)	INTEND TO IMPLEMENT/ CONTINUE IN NEXT 5 YEARS
Planting of trees and shrubs (incl. direct seeding)	○	○	○
Removal of an area of trees and shrubs	○	○	○
Fencing of native bush/grasslands to manage stock access	○	○	○
Use of time-controlled, cell, or holistic grazing	○	○	○
Sowing perennial pastures	○	○	○
Use of no-tillage techniques to establish crops or pastures	○	○	○
Use of precision farming techniques for cropping	○	○	○
At least one lime application to arable land	○	○	○
At least one gypsum application to arable land	○	○	○
Application of biological soil supplements (eg. compost-tea, effluent)	○	○	○
Deep ripping of arable land	○	○	○
Maintaining at least 70% groundcover (in non-drought years)	○	○	○
Testing of soils to understand soil condition	○	○	○
Preparation of a fertiliser budget/plan for all/most of the property	○	○	○
Integrated pest management	○	○	○
Reducing chemical/fertiliser use	○	○	○
Increasing chemical/fertiliser use	○	○	○
Plant legumes/pulses	○	○	○
Pasture cropping	○	○	○
Multi-species pasture cropping	○	○	○
Value-add processes (eg. on-farm processing, retail)	○	○	○
Organic farming	○	○	○
Carbon farming	○	○	○
Farming practices you consider to be regenerative **Example/s:**	○	○	○

11. YOUR PROPERTY AND YOU

BACKGROUND INFORMATION	PLEASE TICK OR FILL IN YOUR RESPONSE
In hectares, what is the total area of land you own in Tasmania? (excluding land you manage but do not own)	..... total Ha owned
Is this Tasmanian property your principal place of residence?	◯ No ◯ Yes
What area of additional land do you manage (lease/sharefarm/agist from others) in Tasmania (additional to the figure you provided above)?	..... additional Ha managed
How long have you or your family owned or managed all/some part of your property?	..... years
How many rural properties do you own **within** Tasmania?	..... No. of properties
What area of your property is leased, share farmed or agisted by others?	..... Ha

INFORMATION ABOUT YOU AND YOUR MAIN OR 'HOME' PROPERTY	PLEASE TICK OR FILL IN YOUR RESPONSE
Has this enterprise bought additional land in this region in the past 20 years?	◯ No ◯ Yes
Have you subdivided or sold part of your property in this region over the past 20 years?	◯ No ◯ Yes
Estimate the number of **hours per week** that you worked on farming/property related activities (average over the past 12 months).	..... hrs/week
What is your age?	..... years
What is your gender (tick both if filling this in together)? ◯ Male ◯ Female ◯ Non-binary	
Do you identify as Aboriginal and/or Torres Strait Islander?	◯ No ◯ Yes
What is your main occupation (e.g., farmer, teacher, investor, retiree)?	
What is the highest level of formal education you have completed? ◯ Trained in life but no formal quals ◯ Year 10 ◯ Year 12 ◯ Vocational Certificate ◯ Tertiary/Uni	
Are other **family members** working on your property on a daily or weekly basis? **If yes, please indicate who they are:** ◯ Partner ◯ Child/ren ◯ Parent/s ◯ Sibling/s ◯ Other/s	◯ No ◯ Yes
Have you prepared/are you preparing a property management or whole farm plan that involves a map or other documents that address the existing property situation and include future management and development plans?	◯ No ◯ Yes
Is any proportion of your land presently lost to production due to soil problems? If yes, how many hectares have been lost ..... Ha **Please specify the issue:**	◯ No ◯ Yes

11. YOUR PROPERTY AND YOU (CONT)

INFORMATION ABOUT YOU AND YOUR MAIN OR 'HOME' PROPERTY	PLEASE TICK OR FILL IN YOUR RESPONSE
In the past 12 months have you changed your financial or on-property operations as a result of seasonal changes in weather patterns?	◯ No ◯ Yes
In the past 12 months have you changed your operations to increase the soil carbon on your property (e.g. generating wind power, improved grazing practices)	◯ No ◯ Yes
In the past 12 months have you changed your on-property operations as a result of considering opportunities to reduce carbon emissions (e.g. generating wind power, improved grazing practices)	◯ No ◯ Yes
Did you earn income from agriculture on your Tasmanian property during the 2020/2021 financial year?	◯ No ◯ Yes
Did your Tasmanian property return a net profit during the 2020/2021 financial year? (i.e. income exceeded all expenses before tax)	◯ No ◯ Yes
If yes, was your net 2020/2021 agricultural income above $50,000?	◯ No ◯ Yes
Did you or your spouse/partner receive a net off-property income (after expenses and before tax) in the financial year (2020/2021)?	◯ No ◯ Yes, me ◯ Yes, my partner
If yes, was the total off-property income for you and/or your spouse above $50,000?	◯ No ◯ Yes
In the 2020/2021 financial year, what percentage of you and your spouse's income was earned off farm? (eg. from shares, rental income, employment, other business)	..... %
Estimate the number of **days** you were involved in paid **off-property** work in the **past 12 months**	..... days per year
Has your Tasmanian property returned a net profit over the last 10 years? (i.e. income exceeded all expenses before tax, on balance, over the 10 year period)	◯ No ◯ Yes
In the past 5 years have you or your partner completed a short course/workshop relevant to property management? (e.g. financial planning, integrated pest management)	◯ No ◯ Yes, me ◯ Yes, my partner
In the last 12 months, did you attend field days, farm walks and demonstrations focused on soil health and productivity?	◯ No ◯ Yes

On average, what time-frame influences are most critical to your strategic decisions on the farm? (tick all that apply)
◯ Opportunistic ◯ Seasonal ◯ Year to year ◯ Up to 5 years ◯ 6-20years ◯ Over 20 years ◯ Over 100 yrs

In the last **12 months**, what **management decision** was the most important influence on your **profitability?**

.....

Over the last **10 years**, what **management decision** was the most important influence on your **profitability?**

.....

In the **next 10 years**, what would you see as likely being your biggest **challenge** and/or **opportunity?**

.....

Is there a **particular technology/tool/innovation/knowledge** that would support your farm management goals?

.....

12. LONG-TERM PLANS FOR YOUR PROPERTY

Please indicate the possibility that your long-term plans for your property in the **next 10 years** will involve each of the choices in the table below. *Examine the response options underneath this paragraph. For each choice in the table, place the number of your response option in the **'Your view'** column.*

RESPONSE OPTIONS:

HIGHLY UNLIKELY	UNLIKELY	UNSURE	LIKELY	HIGHLY LIKELY
1	2	3	4	5

LONG TERM PLAN OPTIONS	YOUR VIEW
Ownership of the property will stay within the family	
The property will be sold	
The property will be subdivided and a large part of the property sold	
I will move off the property around/soon after reaching retirement age	
All or most of the property will be leased or share farmed	
Additional land will be purchased	
Additional land will be leased or share farmed	
The enterprise mix will be changed to diversify income sources	
The enterprise mix will be changed to more intensive enterprises	
A family member will seek additional off-property work to support the farm	
Some part of my property will be set aside for conservation purposes	
Buying property outside of my current area to mitigate increased seasonal variability	

Is this a corporate-owned farm? Please tick your answer. ◯ No ◯ Yes

Do you have **family members interested in taking on your property in the future**? Please tick your answer.

◯ No ◯ Yes ◯ Unsure/too early to know

If Yes, does your family have a **succession plan** underway? Please circle your answer.

Not started Early stages Halfway Well advanced Completed/Ongoing

OTHER COMMENTS AND THANK YOU FOR YOUR TIME

Do you have any other comments about any of the topics covered in the survey, or other aspects of land and water management in Tasmania? Please use the space provided to write your comments or attach additional sheets. Your comments will be recorded by the research team.

We appreciate the time you have spent answering the questions. **Please return the completed survey in the postage-paid envelope provided**.

If you need assistance with the survey, wish to make specific comments about it, or receive a copy of results, please contact Dr Hanabeth Luke via **1800 317 503**.

If you would like to be contacted as a part of further research, please write your email address or other contact here:

Appendix F – The Wimmera, Victoria Survey

SURVEY NO.

SUPPORTING LANDHOLDERS IN THE WIMMERA

RURAL LANDHOLDER SURVEY 2023

SUPPORTING LANDHOLDERS IN THE WIMMERA

This comprehensive survey is a vital part of efforts to understand the important social and economic factors shaping landholder decision making in the Wimmera region. Your contribution will guide the Board and staff who develop and implement strategies, programs and activities for the Wimmera Catchment Management Authority (WCMA) and the Australian Soil Cooperative Research Centre (Soil CRC), who are co-funders of this survey. Similar surveys were undertaken in 2002, 2007, 2012 and 2017. There is no other way to obtain this property level information.

Surveys are being sent to landholders with properties in the Wimmera region, identified via ratepayer lists. Each survey has a serial number that links to the property, enabling us to spatially reference our survey results with soil and weather data. **No property or person will ever be identifiable in our reporting.** Our plans are to follow up this survey in about five years, to provide insights into trends over time.

We recognise that you may not be involved in decision making for this property. We are seeking the views of the person/s primarily responsible for managing the property. If you are not involved in the management of the property, please forward the survey to the property manager or return the survey in the postage-paid return envelope. We ask that you only provide information for your property/s within the Wimmera region.

This voluntary survey should take between 30-50 minutes to complete. There are no right or wrong answers and there is no need to think at great length about your responses. If you have any questions about the survey, please contact Dr Hanabeth Luke on 1800 317 503 or by email at Hanabeth.Luke@scu.edu.au

You are assured of complete confidentiality. Your name will never be placed on the survey or used in any of the reports. No group outside the research team will have access to the raw survey data. Information is published at the regional scale and individual data is never published.

Thank you for your assistance,

Dr. Hanabeth Luke
Senior Lecturer & Soil CRC Project Leader
Faculty of Science & Engineering,

Southern Cross University

1. OCCUPATIONAL IDENTITY

Please **circle** the descriptor/term that best describes your **occupational identity:**

Full-time farmer | Part-time farmer | Hobby farmer | Non-farmer

Who participates in decision making for your property? *(Please **circle** the most important)*

Mostly just me	Me and my partner	Multi-generations of my family	Property manager	Property manager and me	Agronomist

2. ENTERPRISE / LAND USE MIX

This topic is seeking **information about your current land use/enterprise mix.** *Place a tick besides any correct response in the **'Situation now'** column.* Please answer with the land you own/manage in the Wimmera in mind.

ENTERPRISES / LAND USE ON YOUR PROPERTY IN 2022	SITUATION NOW	ENTERPRISES / LAND USE ON YOUR PROPERTY IN 2022	SITUATION NOW
Cereal	○	Irrigated agriculture	○
Legumes/pulses	○	Area of remnant native vegetation (e.g. trees, grasslands, wetlands)	○
Oil seed	○	Farm forestry	○
Pasture	○	Other tree planting (e.g. shelter, habitat, erosion or recharge control)	○
Dairying	○	Farm-based tourism (e.g. farm stays, B&B)	○
Beef cattle	○	Heritage agreement/covenant with the Wimmera CMA or other organisation	○
Sheep	○	Area set aside for living/recreation (e.g. gardens, pets, vehicles)	○
Bee keeping	○	Broadacre farming	○
Other commercial livestock enterprises (e.g. goats, pigs, deer, horse studs, poultry, alpaca, dogs)	○	Dryland pasture	○
Viticulture	○	Other **(please specify):**	○
Horticulture	○	.....	

3. YOUR ASSESSMENT OF ISSUES

This set of statements seeks your opinion about the importance of a **range of issues that may be affecting your property and your local district.** *Examine each statement in the table, then place the number of your response option in each space provided for* ***'Your view'.***

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT	NOT APPLICABLE
1	2	3	4	5	6

IMPORTANCE OF ISSUES AFFECTING YOUR LOCAL DISTRICT	YOUR VIEW
Absence of important services and sufficient infrastructure (e.g. phone, schools, internet, roads & transport) **If important, please provide an example:**	
Risk to life and property from wildfires	
Long-term negative impacts of property purchased by non-farmers or absentees	
The impact of pest plants and/or animals on native plants and animals	
Loss of native plants and animals in the landscape (e.g. due to cropping or draining wetlands)	
Water security	
Changes in weather patterns	
Public opposition for agricultural practices (e.g. GMs, animal welfare, pesticide use)	
Declining soil health and/or soil productivity	
Land use change/conflicting land use (e.g. solar, mining, residential) impacting/encroaching on farmland. **If important to you, please provide an example:**	
Salinity, nutrient or chemical runoff threatening water quality in rivers/ streams/ wetlands	
Impact of reduced water flows on the long-term health of rivers/ streams/ wetlands	
Loss of paddock trees	
Stock damage to native vegetation/ rivers/ streams/ wetlands	
Reduced opportunities for recreation as lakes dry out	

IMPORTANCE OF ISSUES ON YOUR PROPERTY	YOUR VIEW
Uncertain returns limiting capacity to invest in my property	
Impact of temperature extremes and/or changing rainfall patterns on farm productivity	
Weed resistance to herbicides, pesticides and/or fungicides	
The activities of neighbouring landholders (e.g. such as overspray, building dams) **If important, please provide an example:**	
The impact of weeds and pest animals (including overabundant native species) on productivity	

IMPORTANCE OF ISSUES ON YOUR PROPERTY	YOUR VIEW
Impact of farm dams or groundwater extraction further up the catchment	
Lack of skilled labour to undertake important on-property work	
On-farm impact of poor management of pest plants and animals on public land	
Soil erosion (e.g. due to wind or water)	
Declining nutrient status of soils	
Salinity undermining productive capacity of soils	
Soil acidity (lower pH) undermining productive capacity of soils	
Low level of organic carbon in soils	
Low level of biological activity in soils	
Soil-borne diseases	
Effects of pesticide use on soil biota	
Water holding capacity of soils	
Rising input costs	

4. THE PRINCIPLES THAT GUIDE YOUR LIFE

The next set of statements seeks information about the **principles that guide your life.** *(Please number each)*

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT
1	2	3	4	5

THE PRINCIPLES THAT GUIDE YOUR LIFE	YOUR VIEW
Looking after my family/loved-ones and their needs	
Preventing pollution and protecting natural resources	
Being influential and having an impact on people and events	
Fostering equal opportunities for all community members	
Respecting the earth and living in harmony with nature	
Caring for the weak/vulnerable and correcting social injustice	
Creating wealth and striving for a financially profitable business	

5. WHY YOUR PROPERTY IS IMPORTANT TO YOU

The next set of statements seeks information about the **reasons your property is important to you.** *Examine each statement in the table and place the number for your response in each space provided for* ***'Your View'***.

RESPONSE OPTIONS:

NOT IMPORTANT	MINIMAL IMPORTANCE	SOME IMPORTANCE	IMPORTANT	VERY IMPORTANT
1	2	3	4	5

WHY YOUR PROPERTY IS IMPORTANT TO YOU	YOUR VIEW
Sense of accomplishment from producing food and fibre for others	
Ability to pass on a healthier environment for future generations	
Sense of accomplishment from building/maintaining a viable business	
Provides opportunities to learn new things	
A place or base for recreation	
An asset that will fund my retirement	
A great place to raise a family	
Its native vegetation provides habitat for birds and animals	
An important source of household income	
An attractive place/area to live	
Provides a sense of belonging to a community	
Provides a sense of belonging to a place	
My property is an important part of who I am	
The productive value of the soil on my property	
Native plants and animals make the property an attractive place to live	
An asset that is an important part of family wealth	
Contributing to the local economy by providing work and supporting local businesses	

6. YOUR KNOWLEDGE OF DIFFERENT TOPICS

In this section we would like you to provide **an assessment of your knowledge** for a number of different topics. Examine the response options. For each choice in the table, place the number of your response in the ***'Your view'*** column.

RESPONSE OPTIONS:

NO KNOWLEDGE	VERY LITTLE KNOWLEDGE	SOME KNOWLEDGE	SOUND KNOWLEDGE (sufficient to act)	VERY SOUND KNOWLEDGE (can give a detailed explanation)	NOT APPLICABLE
1	2	3	4	5	6

YOUR KNOWLEDGE OF DIFFERENT TOPICS	YOUR VIEW
Preparing a farm/property plan allocating land use according to land/soil characteristics	
The Aboriginal group/s who are connected to the area where your property is located	
Strategies to maintain groundcover to minimise erosion in this area	
Options and strategies to (re)establish perennial pastures (e.g. lucerne/native grasses) in this area	
How to identify the main constraints to soil productivity on your property	
The benefits of applying biological soil supplements (e.g. compost, manure, microbial inoculants)	
The processes leading to declining soil health or structure in this area	
Market mechanisms that support carbon farming	
How to build soil organic matter/soil carbon	
How land in your district was used and managed before European settlement	
How to use soil testing to prepare a nutrient budget that will increase soil productivity	
Regenerative agriculture and/or holistic farm management	
The location of Aboriginal cultural sites in your district (e.g. scar trees, middens)	
The role of wetlands and native vegetation for filtering water entering rivers, lakes or streams	
The role of microbiology (e.g. bacteria & fungi) in soil health	
The use of stock containment areas, or time controlled, holistic or cell grazing strategies	
The extent and type of biological activity in soils on your property	
How to (re)introduce more legumes/pulses into your enterprise mix	
Laws and regulations that apply to the management of rural properties	
How to use soil moisture-probe data to make decisions about crop or pasture management	
How to effectively manage subsurface soil constraints (e.g. compaction, water holding capacity)	
How to protect and improve the health of native vegetation, waterways and wetlands	

7. YOUR VIEWS & EXPERIENCE

We would like to know **how closely the statements presented below reflect your views.** Examine each statement in the table, then place the number for your response in the space provided for ***'Your view'***.

RESPONSE OPTIONS:

STRONGLY DISAGREE	DISAGREE	NEUTRAL/ DON'T KNOW	AGREE	STRONGLY AGREE	NOT APPLICABLE
1	2	3	4	5	6

STATEMENTS	YOUR VIEW
The benefits of stubble retention outweigh problems arising from the practice	
If relevant, which of the following do you use to manage your stubble: ◯ cool burning ◯ hot burning ◯ full retention ◯ incorporation ◯ other	
The costs of applying lime to balance soil acidity is justified by increased production	
The costs of establishing perennial pasture are justified by the returns	
Soil testing is an essential step in understanding soil condition	
Biological activity is an important indicator of the productive capacity of soils	
Fencing to manage stock access is an essential element of protecting waterways and native vegetation	
I feel a personal responsibility to be part of a group working to improve land/natural resource management	
I feel a personal responsibility to maintain the productive capacity of my soil	
There is adequate compensation or support provided for improving soil carbon on my property	
There is adequate compensation or support provided for good land/soil stewardship	
Decision-making needs to be strongly influenced by data/scientific evidence	
Internet or mobile phone connectivity is a barrier to my using on-farm data more effectively	
Most years I'm satisfied with my farm's productivity given the seasonal conditions experienced	
I am coping well with the associated stresses and challenges of managing my farm	
I am interested in learning more about regenerative/holistic farming approaches	
I'm confident that adopting regenerative/holistic farming practices is justified by the returns	
Landholders should have the right to harvest water that falls on their property, even if it impacts others	
The public should have the right to access rivers/ streams/ wetlands on private land	
It is fair that the community expects land managers to not cause foreseeable harm to the environment	
Reduced production in the short-term is justified where there are long term benefits	
I am confident making management decisions based on the data from my farm	

STATEMENTS	YOUR VIEW
Overall, I find that I am increasing synthetic fertiliser/chemical inputs per hectare	
I'm confident that landholders in this region can adapt to expected changes in rainfall patterns	
I'm confident that my land is in a better condition than when I took on the management of this farm	
I feel adequately supported to conduct farming and land management activities on my property	

OPEN QUESTIONS

What is your main source of support for your agricultural and/or land management activities (e.g. gov, groups, friends)?

What is the most important influence on your soil health?

What testing/indicators do you use to assess soil/land health?

Approximately, how often are your soils tested? ◯ At least annually ◯ Every 3-5 years ◯ Once ◯ Never

Where are your soils tested? ◯ One preferred location ◯ Systematically in one paddock ◯ Systematically across paddocks

To a usual depth of *(tick one only)*: ◯ 0-15cm ◯ 0-30cm ◯ Deeper than 30cm

If you don't soil-test, why not?

Are you aware of the existence of the Wimmera CMA? ◯ No ◯ Yes

Please use the following response options to respond to the statements below:

STRONGLY DISAGREE	DISAGREE	NEUTRAL/ DON'T KNOW	AGREE	STRONGLY AGREE	NOT APPLICABLE
1	2	3	4	5	6

STATEMENTS (indicate the extent to which you agree with the following)	YOUR VIEW
The Wimmera CMA provides valuable information about soil, land, water and natural resource management (NRM).	
The Wimmera CMA can be relied on to keep landholders' interests in mind when making decisions about land, water and NRM.	
I can rely on the Wimmera CMA to provide appropriate financial assistance for land, water and NRM.	
Sound principles guide Wimmera CMA's decisions about land, water and NRM.	
In the past 5 years, did government programs or Wimmera CMA provide financial support for work on your property? ◯ No ◯ Yes, as part of a community grant ◯ Yes, through a specific grant to you as a landholder	

What kind of support would you most like to see from the Wimmera CMA?

8. PREFERRED SOURCES OF INFORMATION

In the past 12 months, what have been your **top** sources of **information about topics related to the management of your property in the Wimmera?** *Please place a tick besides your key sources in the table below.*

MODE OF INFORMATION		ORGANISATION/PERSONS	
Television	○	Other farmers	○
Books	○	Wimmera CMA	○
Magazines	○	Farming systems group (e.g Birchip, Southern Farming Systems)	○
Newspapers	○	Landcare group/ network / coordinator	○
Emails	○	Local Council	○
Radio	○	Ag Vic	○
Field days	○	Soil CRC	○
Websites	○	Rural R&D corporations (e.g. GRDC)	○
Instagram	○	Environmental organisations (e.g. Greening Australia)	○
Twitter	○	Commodity groups (e.g. MLA, AWL)	○
Brochures/leaflets/newsletters	○	Friends/neighbours/relatives	○
YouTube	○	Universities/CSIRO	○
Podcasts	○	Bureau of Meteorology	○
Academic journals/research papers	○	**Independent** agricultural consultants, agronomists or stock agents	○
Facebook	○	**Commercial** agricultural consultants, agronomists or stock agents	○
Whatsapp or Messenger groups	○	Victorian Farmers / National Farmers Federation	○
Extension officers	○	My own knowledge from my own experiences	○
Short courses	○	Other	○

For your selection/s above, please indicate the title of your preferred top source (e.g. name of newspaper or website)

.....

9. YOUR VIEWS ABOUT RISK, TRUST AND CLIMATE

In this section we would like to explore your **views about taking risks, trusting others and climate change.**
*For each statement in the table, place the number of your response in the **'Your view'** column.*

RESPONSE OPTIONS:

STRONGLY DISAGREE	DISAGREE	NEUTRAL/ DON'T KNOW	AGREE	STRONGLY AGREE
1	2	3	4	5

STATEMENTS	YOUR VIEW
You can't be too careful when dealing with people	
I am usually an early adopter of new agricultural practices and technologies	
People are almost always interested only in their own welfare	
This may not be the best farm around, but I see no reason to change	
I prefer to see evidence of local success before trying a new practice	
I prefer to avoid risks	
I am open to new ideas about farming and land management	
I usually view risks as a challenge to embrace	
Financially, I can afford to take a few risks and experiment with new ideas	
I have sufficient time available to consider changing my practices	
Climate change poses a risk to the region	
Human activities are influencing changes in climate	
It is not too late to take action to address climate change	
If we do nothing, climate change will have dire consequences for all living things, including humans	
Primary producers should do all they can to reduce carbon emissions from their activities	
Landholders should manage their properties in expectation of a highly variable climate	
Fundamental changes are required to make farming systems in our region more resilient	

10. MANAGEMENT PRACTICES ON YOUR PROPERTY

This section asks about **practices undertaken** on your main or 'home' property in the Wimmera during the full period of your management; and the past 5 years. *Tick all relevant.*
Some actions may not be relevant to your situation: Please ignore those topics.

PRACTICES CARRIED OUT ON YOUR MAIN OR "HOME" PROPERTY IN THE WIMMERA	AT SOME POINT PRIOR TO 2017	PAST 5 YEARS (2017-present)	INTEND TO IMPLEMENT/ CONTINUE IN NEXT 5 YEARS
Planting of trees and shrubs (incl. direct seeding) for environmental purposes (e.g. shelterbelts, pollination, wildlife corridors)	○	○	○
Removal of an area of trees and/or shrubs	○	○	○
Fencing of native bush/grasslands to manage stock access	○	○	○
Use of time-controlled, cell, or holistic grazing	○	○	○
Sowing perennial pastures	○	○	○
Use of no-tillage or minimum tillage techniques	○	○	○
Used precision-farming techniques	○	○	○
At least one lime application to arable land	○	○	○
Application of biological soil supplements (e.g. compost-tea, effluent)	○	○	○
Maintaining at least 70% groundcover (in non-drought years)	○	○	○
Testing of soils to understand soil condition	○	○	○
Preparation of a nutrient budget for all/most of the property	○	○	○
Plant legumes (e.g. lucerne, clover, pulses)	○	○	○
Use of stock containment areas	○	○	○
Encourage native grasses/grains to grow at scale	○	○	○
Value-add processes (e.g. on-farm processing, retail)	○	○	○
Carbon farming	○	○	○
Farming practices you consider to be regenerative **If important, provide an example:**	○	○	○
Brown or green manure crops	○	○	○
Multi-species pastures	○	○	○
Fencing erected to manage stock access to rivers/ streams/wetlands	○	○	○
Number of off-stream stock watering points established	○	○	○
Cover crops	○	○	○

11. YOUR PROPERTY AND YOU

BACKGROUND INFORMATION	PLEASE TICK OR FILL IN YOUR RESPONSE
What is the total area of land you own in the Wimmera region? (excluding land you manage but do not own)	..... total Ha owned
Is this Wimmera property your principal place of residence?	◯ No ◯ Yes
What area of additional land do you manage (lease/sharefarm/agist from others) in the Wimmera (additional to the figure you provided above)?	..... additional Ha managed
How long have you or your family owned or managed all/some part of your property?	..... years
How many rural properties do you own **within** the Wimmera?	..... No. of properties
What area of your property is leased, share farmed or agisted by others?	..... Ha

INFORMATION ABOUT YOU AND YOUR MAIN OR 'HOME' PROPERTY	PLEASE TICK OR FILL IN YOUR RESPONSE
Has this enterprise bought additional land in this region in the past 20 years?	◯ No ◯ Yes
Have you subdivided or sold part of your property in this region over the past 20 years?	◯ No ◯ Yes
Estimate the number of **hours per week** that you **worked on farming/property** related activities **(average over the past 12 months)**.	..... hrs/week
What is your **age?**	..... years
What is your gender (tick both if filling this in together)? ◯ Male ◯ Female ◯ Non-binary	
Do you identify as Aboriginal and/or Torres Strait Islander?	◯ No ◯ Yes
What is your main occupation (e.g., farmer, teacher, investor, retiree)?	
What is the highest level of formal education you have completed? ◯ Trained in life but no formal quals ◯ Year 10 ◯ Year 12 ◯ Vocational Certificate ◯ Tertiary/Uni	
Are other **family members** working on your property **on a daily or weekly basis?** **If yes, please indicate who they are:** ◯ Spouse/partner ◯ Children ◯ Parents ◯ Siblings ◯ Others	◯ No ◯ Yes
Have you prepared/are you preparing a property management or whole farm plan that involves a map or other documents that address the existing property situation and include future management and development plans?	◯ No ◯ Yes
Is any proportion of your land presently lost to production due to soil problems? If yes, how many hectares have been lost? ..... Ha **Please specify the issue:**	◯ No ◯ Yes
Did you irrigate in 2021?	◯ No ◯ Yes
IF YES: How much surface water was used?	..... ML
How much groundwater was used?	..... ML

11. YOUR PROPERTY AND YOU (CONT)

INFORMATION ABOUT YOU AND YOUR MAIN OR 'HOME' PROPERTY	PLEASE TICK OR FILL IN YOUR RESPONSE
In the past 12 months have you changed your financial or on-property operations as a result of seasonal changes in weather patterns?	◯ No ◯ Yes
In the past 12 months have you changed your operations to increase the soil carbon on your property (e.g. by revegetation, soil management)	◯ No ◯ Yes
In the past 12 months have you changed your on-property operations as a result of considering opportunities to reduce carbon emissions (e.g. generating wind power, improved grazing practices)	◯ No ◯ Yes
Did you earn income from agriculture on your Wimmera property during the 2020/2021 financial year?	◯ No ◯ Yes
Did your Wimmera property return a net profit during the 2020/2021 financial year? (i.e. income exceeded all expenses before tax)	◯ No ◯ Yes
If yes, was your net 2020/2021 agricultural income above $50,000?	◯ No ◯ Yes
Did you or your spouse/partner receive a net off-property income (after expenses and before tax) in the financial year (2020/2021)?	◯ No ◯ Yes, me ◯ Yes, my partner
If yes, was the total off-property income for you and/or your spouse above $50,000?	◯ No ◯ Yes
In the 2020/2021 financial year, what percentage of you (and your spouse's) income was earned off farm? (e.g. from shares, rental income, employment, other business)	..... %
Estimate the number of **days** you were involved in paid off-property work in the past 12 months	..... days per year
Has your Wimmera property returned a net profit over the last 10 years? (i.e. income exceeded all expenses before tax, on balance, over the 10 year period)	◯ No ◯ Yes
In the past 5 years have you or your partner completed a short course/workshop relevant to property management? (e.g. financial planning, integrated pest management, whole farm planning)	◯ No ◯ Yes, me ◯ Yes, my partner
In the last 12 months, did you attend field days, webinars, farm walks and other activities focused on soil health and productivity?	◯ No ◯ Yes

What is the longest time-frame you consider when making strategic decisions on your farm/land?
◯ Opportunistic ◯ Seasonal ◯ Year to year ◯ Up to 5 years ◯ 6-20 years ◯ Over 20 years ◯ Over 100 years

In the last **12 months**, what **management decision** was the most important influence on your **profitability?**

Over the last **10 years**, what **management decision** was the most important influence on your **profitability?**

In the **next 10 years**, what would you see as likely being your **biggest challenge and/or opportunity?**

Is there a **particular technology/tool/innovation/knowledge** that would support your farm management goals?

12. LONG-TERM PLANS FOR YOUR PROPERTY

Please indicate the possibility that your **long-term plans** for your property in the **next 10 years** will involve each of the choices in the table below. Examine the response options underneath this paragraph. For each choice in the table, place the number of your response option in the ***'Your view'*** column.

RESPONSE OPTIONS:

HIGHLY UNLIKELY	UNLIKELY	UNSURE	LIKELY	HIGHLY LIKELY
1	2	3	4	5

LONG TERM PLAN OPTIONS	YOUR VIEW
Ownership of the property will stay within the family	
The property will be sold	
The property will be subdivided and a large part of the property sold	
I will move off the property around/soon after reaching retirement age	
All or most of the property will be leased or share farmed	
Additional land will be purchased	
Additional land will be leased or share farmed	
The enterprise mix will be changed to diversify income sources	
The enterprise mix will be changed to more intensive enterprises	
A family member will seek additional off-property work to support the farm	
Some part of my property will be set aside for conservation purposes	
Buying property outside of my current area to mitigate increased seasonal variability	

Is this a corporate-owned farm? *(Please tick your answer)* ◯ No ◯ Yes

What proportion of your property contains an area of remnant, restored or planted native vegetation or wetland?

◯ 0% ◯ 1-25% ◯ 26-50% ◯ 51-75% ◯ 76-100%

Do you have family members interested in taking on your property in the future? *(Please tick your answer)*

◯ No ◯ Yes ◯ Unsure/too early to know

If Yes, does your family have a **succession plan** underway? *(Please circle your answer)*

Not started Early stages Halfway Well advanced Completed/Ongoing

OTHER COMMENTS AND THANK YOU FOR YOUR TIME

Do you have any other comments about any of the topics covered in the survey, or other aspects of land and water management in the Wimmera? Please use the space provided to write your comments or attach additional sheets. Your comments will be recorded by the research team.

We appreciate the time you have spent answering the questions. **Please return the completed survey in the postage-paid envelope provided.**

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If you need assistance with the survey, wish to make specific comments about it, or receive a copy of results, please contact Dr Hanabeth Luke via **1800 317 503**.

If you would like to be contacted as a part of further research, please write your email address or other contact here:

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