

final report

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Back to Basics – Development of a national guide for smallholder livestock producers

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Executive summary

Commercial livestock producers have access to considerable resources and are regulated to ensure compliance with the appropriate legislation and standards. By comparison there is a relative dearth of information available that is specific to smallholders, whose motivations for keeping livestock are varied and often do not align with those of commercial livestock producers.

The objective of this project was to develop a simple and clear glovebox style guide to animal welfare (on-farm and during transport) standards and guidelines applicable for small producers and hobby farmers.

A review of current relevant information including literature, guidelines and existing glovebox guides was completed to identify the type of information that was currently available to smallholders, particularly in relation to the Australian Animal Welfare Standards and Guidelines. In addition, the outcomes of previous relevant studies undertaken by the research team were considered in the context of communication networks and information sources (Hayes et al., 2017, Hernández-Jover et al., 2014). Based on the information obtained through these activities a draft glovebox guide was developed. This document was sent to ten stakeholders, identified as having an interest in the research area, for review. Further refinement of the document followed, based on feedback received. The final phase in the process was for the guide to be piloted with smallholders. Nine smallholders were sent the draft document and asked to provide feedback on five main areas, considered to be acceptability factors, during a telephone interview. These factors were;

- Relevance of content
- Completeness of content
- Clarity
- Usefulness
- Presentation - language, pictures, format, access

This feedback was evaluated and incorporated into the next version of the document where appropriate. The level of information obtained as a result of the consultation process allowed for the development of a comprehensive end product. The final document consists of seven main sections;

1. About this guide
2. Livestock ownership
3. Livestock identification and traceability
4. Animal Welfare
5. On-farm biosecurity
6. Animal health
7. Contacts and further information

Providing clear information to smallholders keeping livestock on their obligations with regards to standards, guidelines and legislation is a valuable undertaking and one that is hoped, will increase awareness of the responsibilities associated with livestock ownership.

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1 Background

Commercial livestock producers have access to considerable resources, developed to provide current information on areas relevant to biosecurity and the management of health and welfare of stock. This group of producers are regulated to ensure compliance with the appropriate legislation and standards, with penalties associated with non-compliance. By comparison there is a relative dearth of information available that is specific to smallholders, whose motivations for keeping livestock are complex and often do not align with those of commercial livestock producers. In addition, there is suggestion that some smallholders may operate outside regulated systems, particularly with regards to livestock identification and animal movements (Hernández-Jover et al., 2009, Schembri et al., 2010, Hollier et al., 2008). Whilst it would be naïve to assume that in all instances such non-compliance is unintentional, it is likely that a lack of knowledge and understanding of the current requirements and appropriate practices plays an important role.

A degree of caution must be observed when considering the husbandry practices, communication needs and networks of smallholders, given that there is no single definition of what constitutes a small farm in Australia (Aslin, 2006, Buxton et al., 2006, Hollier and Reid, 2007). In general, smallholders are often considered to pose a greater biosecurity risk compared to commercial producers with regards to the introduction and spread of endemic and exotic livestock diseases (Hollier and Reid, 2007, Martin et al., 2012). Research suggests the lack of prior agricultural knowledge and experience of smallholders and a lack of local communication networks supporting them, has contributed to this perception (Hollier and Reid, 2007). The lack of adequate communication networks between smallholders and industry and government stakeholders has also been identified as a major issue (Schembri, 2009, Hernández-Jover et al., 2013, Hollier and Reid, 2007).

The Australian Animal Welfare Standards and Guidelines for The Land Transport of Livestock were released on 21 September 2012 and are being regulated in the various state jurisdictions. The Cattle and Sheep Welfare Standards and Guidelines were endorsed by all State agriculture ministers in February 2016. They have explicit standards which are compulsory and guidelines to indicate best practice. The 'Is it fit to Load Guide, 2012' has been widely used to assist producers, transport operators, saleyard and abattoir operators know what is and is not acceptable in terms of animals fit to transport. However, the fit to load guide is not aimed at small livestock producers who have been missed by this process and need assistance to comply with current standards of practice. MISP2020 estimated that the downside risk for industry related to animal welfare was \$3.4bn by 2030. The reputation and the social license to operate of the red meat industry rely on all livestock producers complying with their legal requirements in terms of animal welfare. In general, small hobby farmers lack farming experience and have poor knowledge about livestock ownership requirements. This can lead to poor animal welfare and consequently, poses a major threat to the entire red meat industry.

The aim of this project is to assist small livestock producers to understand and meet their legal obligations under the Standards stated above and their state legislation.

2 Project objectives

The objective of this project is to develop a simple and clear glovebox style guide to animal welfare (on-farm and during transport) standards and guidelines applicable for small producers and hobby farmers. The guide should be readily understood by those from a non-rural or non-English speaking background and include:

- PIC/NVD registration details
- Animal ID
- Health status of animals – Biosecurity – Health statements
- Handling of animals
- Fit to Load – very general referring them to existing FTL booklet
- Transport –method of transport fit for purpose (what is acceptable and unacceptable), safe for the animals, provides safe segregation of species, etc.
- Humane euthanasia
- Summary of above sections
- Further info – contacts for state Depts of Ag and LivestockASSIST number

3 Methodology

3.1 Review of current relevant information including literature, guidelines and existing glovebox guides

3.1.1 Literature, guidelines and existing glovebox guides

Search strategy: The search terms were combinations of the following words anywhere in the title, abstract or website- smallholder, small landholder, peri-urban, hobby farm, biosecurity, livestock, animal health, animal welfare, livestock transport, guidelines, guide, pocket-guide, glovebox guide, agricultural extension and information. This broad range of terms was expected to cover the varied terminology used to describe smallholders. The Primo Search and Science Direct databases and Google Scholar were searched. Bibliographies of retrieved articles were also searched for relevant literature.

Research/publication portals and resources within Australian state and federal government agricultural and biosecurity websites, international (United Kingdom, USA, European Union) government agricultural and biosecurity websites and relevant industry websites were searched, with particular emphasis on locating existing glovebox guides.

3.1.2 Smallholder feedback on previously developed guide

A research project titled “Investigating attitudes, behaviours and communication networks in relation to biosecurity and emergency animal disease among smallholder producers in New South Wales and Victoria” was undertaken by the research team in 2015 (Hayes et al., 2017). Three regions of identified smallholder population were selected for inclusion; Riverina, South Coast and Euroa/Benalla. Information was obtained through focus group discussions held with purposively recruited smallholders, defined as those keeping less than 50 cattle and/or sheep.

At the completion of the focus group discussions participants were provided with a package of biosecurity and animal health management extension materials, including the Pocket Guide for Smallholder Livestock Owners in NSW/Victoria. Participants were asked to review the documents and consider the perceived usefulness of the resources, providing any suggested changes. Responses were recorded on a scale of 1-5 where 1 was Not at all useful and 5 was Very useful. Suggested changes were recorded as comments. For the purpose of this report only feedback on the Pocket Guide for Smallholder Livestock Owners in NSW/Victoria will be reported upon.

3.1.3 Redesign of the glovebox guide

The Pocket Guide for Smallholder Livestock Owners in NSW/Victoria guide, previously developed by the research team, was used as a baseline document. As this guide was not developed for national use, content was checked against the requirements of individual states and territories and updated to reflect national guidelines as required. Additional sections were added, and existing content expanded upon, to include the areas of transport, welfare and humane euthanasia. The glovebox guide was produced using Microsoft Publisher 2013 and formatted as an A5 booklet for development purposes. Guidelines for writing in plain English were reviewed as part of this process (SA Government Reform Commission, 2007) to ensure that the content was conveyed in a way that is accessible to people from a non-English speaking background.

3.1.4 Consultation with stakeholders

The objective of the consultation with stakeholders was to obtain feedback on the draft glovebox guide. Ten stakeholders, identified as having an interest in the area of research, were contacted by email and asked if they would be interested in reviewing the draft. Representatives of the following organisations were contacted;

- Goat Industry Council of Australia
- Sheepmeat Council of Australia
- WoolProducers Australia
- Cattle Council of Australia
- Local Land Services
- Livestock Biosecurity Network
- Meat and Livestock Australia
- Animal Angels
- Small Farms Network
- RSPCA

All stakeholders indicated that they were able to assist and were sent an electronic copy of the document. Stakeholders were given two weeks in which to review the draft and provide feedback, either by returning comments via email or by telephone.

3.2 Pilot of glovebox guide with a cohort of smallholders

3.2.1 Human ethics application

Human ethics approval was obtained from Charles Sturt University, Faculty of Science Human Low Risk Ethics Committee for piloting the redesigned Glovebox guide with smallholder producers. The

protocol number for this approval is 400/2017/03. An amendment to this approval for the use of telephone interviews should a focussed discussion group not be able to be convened within the required timeframes was submitted to the Charles Sturt University, Faculty of Science Human Low Risk Ethics Committee. Approval of this amendment was received on 13th April 2017.

3.2.2

A request for participation was sent to members of the Small Farms Network – South Coast, NSW through LLS, Land Services Officer South East and the Small Farms Network – Capital, NSW/ACT through the program coordinator on behalf of the research team. Members were contacted via email and/or through the regular Small Farms Network newsletter.

Interested smallholders were asked to contact the researchers directly via telephone or email.

Initial screening included obtaining details on the numbers and types of livestock kept (less than 50 cattle, sheep, and/or goats), number of years/experience in livestock ownership and NESB background (where applicable).

Those who fit the criteria for inclusion were sent an email containing the Participant Information Sheet and Consent Form. Those agreeing to participate were then sent a hard copy of the guide and instructions for reviewing the document via Express Post and asked to contact the research team to arrange a suitable time for a semi structured interview to discuss their feedback. The broad areas that the participants were asked to consider prior to the follow up discussion are considered to be acceptability factors. These areas are:

- Relevance of content
- Completeness of content
- Clarity
- Usefulness
- Presentation - language, pictures, format, access

Participants were then telephoned and an interview conducted. Interviews were recorded on an audio device and transcribed to a word document. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp. was used for the descriptive statistical analysis.

3.3 Finalisation of glovebox guide

Feedback from stakeholders and smallholders was incorporated as considered appropriate by the research team with input from MLA.

4 Results

4.1 Review of current relevant information including literature, guidelines and existing glovebox guides

4.1.1 Literature

Despite assertions that smallholders are an important group within the overall Australian livestock landscape (Department of Primary Industries, 2010), there are limited coordinated resources available specific to them (Hollier and Reid, 2007). Indeed there is evidence of a decline in coordinated and targeted extension activities (Marsh and Pannell, 1998, Vanclay, 2004, Hernández-Jover et al., 2012).

As previously mentioned, smallholders are not a homogenous group. Researchers, industry, government, non-government and community organisations tend to use their own criteria to define smallholders. Land size is often used independently or in combination with factors such as level of income derived from the agricultural operations or the landholder's motivation for land use (Aslin, 2006, Buxton et al., 2006, Hollier and Reid, 2007, Hollier et al., 2008). While the number of livestock is generally not used in defining smallholders, it has been shown that the number of animals kept plays a critical role in biosecurity risk, with biosecurity practices being influenced by the number of livestock held rather than the physical size of the property (Martin et al., 2012).

The self-identity of smallholders keeping livestock is also variable, as illustrated in a recent study investigating smallholder livestock production in Australia. When asked to describe their reasons for keeping livestock, responses ranged from those who saw themselves as small scale commercial operators to those who viewed their livestock as pets (Hernández-Jover et al., 2014). These factors combine to create a picture of a multifarious sector of the Australian livestock landscape.

Irrespective of their motivation, smallholders do not operate in isolation. They are part of a larger network that supports, regulates and informs those keeping livestock and it is understanding how this network operates, that is key to maximizing its effectiveness. Considerable research has been done, particularly in the last five years, investigating the communication networks of smallholders. While the emphasis of a large proportion of this research has been on biosecurity and emergency animal disease communication, the results are transferable to the current research.

Smallholders, in general, are a group that actively seeks information. Indeed, over 82% of 746 respondents in a survey by Hernández-Jover et al. (2014) reported that they sought information on the health of their livestock, with newsletters, email and websites selected as the most useful methods of information delivery.

It is widely acknowledged that an exclusively government directed, top down approach to information dissemination to smallholders is sub optimal (Maller et al., 2007, Aslin, 2006). Recent studies looking at the communication networks of smallholders report that smallholders seek information on animal health and husbandry from a variety of sources. Veterinarians have been repeatedly identified by smallholders as one of the main sources of information on animal health

(Hernández-Jover et al., 2014, Hollier et al., 2008). However; using veterinarians to communicate important information to smallholders has its limitations, given that for many of those keeping low numbers of livestock, involvement with veterinarians is infrequent, limiting any potential influence they may have (Hernández-Jover et al., 2014).

Schembri (2009) and Hernández-Jover et al. (2012) identified other producers, private veterinarians and family and friends as being the first point of contact for smallholders keeping pigs seeking information, ahead of government authorities and pig industry organisations. A series of studies conducted by members of the current research team, investigating smallholder livestock production in Australia, have reported similar findings (Hayes et al., 2017, Hernández-Jover et al., 2014, Hernández-Jover et al., 2013). Whilst industry and government are the main conduit for information delivered to large scale farmers (Gilmour et al., 2010), smallholder's access to this information is unreliable. The level of engagement of smallholders with industry is also limited (Aslin, 2006, Maller et al., 2007, Beale et al., 2008), which is not to say that industry do not make efforts to support smallholders, indeed many industry bodies offer specific membership options for smallholders. It is more likely the perception held by some smallholders that industry stakeholders are not interested in their practices, and as such smallholders may not feel part of or represented by these organisations, that drives this lack of engagement (Hayes et al., 2017).

Dissemination of information from government to smallholders is to a degree dependent on a smallholder being registered with a Property Identification Code, effectively informing government of their livestock ownership status. The extent to which smallholders comply with this requirement is variable (Maller et al., 2007, Hollier et al., 2008), and is contingent upon both, an awareness and understanding of the system and a subsequent choice to actively comply. Even for those who are in receipt of government initiated information, the majority of this is not tailored to meet the specific needs of smallholders (Guise et al., 2010, Hollier et al., 2006). Whilst there is undoubtedly overlap of relevant content, there is suggestion that there is a degree of mistrust of government as an information source, thereby limiting the extent to which communication is effective (Hernández-Jover et al., 2014, Palmer et al., 2009, Taylor-Gooby and Zinn, 2006).

In recent studies investigating the stakeholder networks of smallholders, organisations and individuals with whom smallholders were likely to have a more personal relationship, such as family, friends and other breeders / producers, were considered by smallholders to be more interested and influential (Hernández-Jover et al., 2014, Hayes et al., 2017). The use of both horizontal and vertical communication networks are suggested as an effective method of communication with smallholders (Aslin, 2006, Hayes et al., 2017, Hernández-Jover et al., 2014, Hernández-Jover et al., 2012). This offers support to the concept of the direct engagement of those who could be defined as 'champions' to assist in the delivery of extension programs to other smallholder producers (Hollier and Reid, 2007).

Whilst knowledge and behaviour are inextricably linked (Fishbein and Ajzen, 1975), it is simply not enough to expect that dissemination of information will lead to the desired behavioural change (Hollier and Reid, 2007, Palmer et al., 2009). To maximise effectiveness, communication must not only have content that is relevant, it must also be presented in a clear format that is accessible to its intended target (Temperley et al., 2013, Leeuwis, 2013, Maller et al., 2007). Messages must be

arranged in a way that is logical and reflects the priorities of both the sender and receiver (Leeuwis, 2013). Given the diverse nature of the smallholder population, it is important that any written communication is at a level that considers the varying levels of knowledge and experience of smallholders, to avoid alienating members of the group, particularly through stereotyping. There are also particular communication challenges associated with smallholders from culturally and linguistically diverse backgrounds (Aslin and Mazur, 2005, Maller et al., 2007). While language is an obvious barrier; social and cultural factors, such as entrenched traditional farming practices and intergenerational communication patterns, require particular sensitivity when attempting to influence practices (Aslin et al., 2004, Parker and Suriyabanadara, 2000).

4.1.2 Guidelines

Relevant sections of the Australian Animal Welfare Standards and Guidelines for Sheep (Animal Health Australia, 2014a), the Australian Animal Welfare Standards and Guidelines for Cattle (Animal Health Australia, 2014b), the Australian Industry Welfare Standards and Guidelines – Goats (Animal Health Australia, 2016), A national guide to the selection of animals fit to transport - Is it fit to load? Revised edition 2012 (Meat and Livestock Australia, 2012) and the Australian Animal Welfare Standards and Guidelines - Land Transport of Livestock (Animal Health Australia, 2012) were reviewed. Whilst these guidelines do not make specific provision for smallholders, they apply to those keeping a minimum of one animal of the relevant species. The welfare guidelines for cattle, sheep and goats cover the following areas:

- Responsibilities
- Feed and water
- Risk Management of extreme weather, natural disasters, disease, injury and predation
- Facilities and equipment
- Handling and management
- Breeding management
- Humane killing

These guides indicate that where a higher standard is required through legislation, the higher standard applies. With regards to transport, the welfare guides make specific reference to the Australian Animal Welfare Standards and Guidelines - Land Transport of Livestock. This document contains general transport standards and guidelines for - Responsibility and planning; Stock handling competency; Transport vehicles and facilities for livestock; Pre-transport selection of livestock; Loading, transporting and unloading livestock; Humane destruction; in addition to species specific standards and guidelines. The level of detail contained in this document, while relevant to all those involved in the transport of livestock, may favour those involved in commercial livestock.

4.1.3 Existing glovebox guides

Whilst there were a number of online resources that could be accessed by smallholders, a search for pocket guides did not yield substantial results. Many resources were in the form of fact sheets rather than the true pocket guide style. The use of the word pocket or glovebox in the title did not correspond to the size of the document, with many documents sourced being A4 in size and ranging from 4 to 52 pages in length. The title of the documents provided a good indication of the content with some having a particular focus, for example biosecurity, and others providing information on a

variety of topics. An example of a well presented pocket guide utilising photos and minimal text was the Foot and Mouth Disease (FMD) Pocket Guide Cattle.

4.1.4 Smallholder feedback on previously developed guide

A pocket guide for smallholders was developed in 2014 by a group that included members of the research team, as a follow-up activity of a project funded by the Department of Agriculture and Water Resources (DAWR) which aimed at characterising smallholder livestock production in Australia. With the title, a Pocket Guide for Smallholder Livestock Owners in NSW/Victoria, the guide contained general information on animal health and husbandry and also provided specific information on biosecurity and emergency animal disease. Animal Health Australia and DAWR were consulted as key stakeholders when the pocket guide was designed and both institutions showed their interest in the use of such a product to improve engagement of smallholders with biosecurity and animal health management. However, to date the developed guide has only been used for research purposes.

In 2015, as part of a project investigating the communication networks of smallholders, further feedback on the guide was received by those participating in a series of focus group discussions and follow up activities (Hernandez-Jover et al., 2015 (unpublished data)). Participants were asked to comment on various aspects of the pocket guide and other biosecurity related resources, and provide a “usefulness score” using a scale from 1-5. The average usefulness score for the pocket guide was 3.25 (range 3-4), indicating a moderate level of usefulness. Comments suggested that the pocket guide was basic and general, containing information that any responsible small farmer should already know. It was, however, acknowledged that parts were useful and that the main application of this type of resource would be for those that are new to farming. It was also suggested that a hard copy may be easily misplaced, with preference for an electronic format. These results should be viewed in light of the likelihood that those self-selecting for this type of research may have a greater level of knowledge of the topics covered in the guide than the general smallholder population.

4.1.5 Redesign of the glovebox guide

A draft glovebox guide was developed for distribution to stakeholders. The guide contained the following sections, and included a mix of text, links, diagrams and photographs.

- Introduction
- Livestock ownership
- Livestock identification and traceability requirements
- Animal health, husbandry and welfare
- On-farm biosecurity
- Handling of livestock
- Transport of livestock
- Humane euthanasia
- Conclusion
- Acknowledgements
- Contacts for further information

4.1.6 Consultation with stakeholders

Feedback on the draft glovebox guide was obtained from ten stakeholder organisations. In general, feedback was positive with a view that such a guide will be a useful tool for smallholders keeping livestock. Balancing suggestions of increased content with the need to provide a guide that was easy to use and understand, particularly for those new to livestock or from a NESB, was a challenge.

4.1.7 Consultation with smallholders

Twelve smallholders contacted the research team following the initial request for participation. Of this group, one participant did not follow up with further contact, one kept more than the requisite number of animals and one contacted the research team too late for the interview to be completed within the required timeframe. Therefore, the final number of participants providing feedback was nine. It should be noted that the level of engagement of participants in the process of reviewing the guide was high, with considerable forethought and insight evident.

Two thirds of participants were aged between 35-44 years, with 66.7% of all participants being female. Sheep were most frequently kept, either on their own (55.6%) or in combination with cattle (11.1%), with cattle and goat producers also providing feedback. The mean number of cattle kept was 20 with a range of 6 to 33 head; for sheep, a mean of 3 sheep with a range of 6 to 30 were kept, with the single goat producer keeping 50 goats. Two thirds of respondents reported keeping other species, namely alpaca, poultry, pigs and horses, on their property. The size of properties ranged from 12 to 360 acres with a mean size of 103.22 acres. Years involved with livestock ranged from 1 to 20 years with mean of 5.33 years.

Extra income, home consumption and maintenance of grass/ weeds were reported as being the main reason for participants keeping livestock. Note that for this question more than one answer could be provided.

Despite specific invitation to smallholders from a NESB to participate, only one smallholder from such a background responded to the request. Whilst this makes it difficult to provide definitive comment on the suitability of this document for this population, a number of participants commented that they also considered the document in the context of those for whom English is not their primary language.

Participants were asked to provide comment on five main areas and to provide specific comment on the individual sections of the guide.

Acceptability factors

Overall, participants reported that the guide contained information that was definitely relevant to their daily operations. Feedback in this area included comments that the guide would be useful for those starting out and that it provided clear information on the major general topics associated with managing livestock as a smallholder.

With regards to **completeness** of information, suggestions were made to include information on how to locate a shearer, breeding, further information on animal health and to provide a specific weed section. Overall, however, it was considered that the guide was not missing any major areas of information nor did it contain large amounts of redundant information. There was some disagreement

about the level of information provided, with one participant commenting that more specific detail was required for a number of sections. It was, however, generally acknowledged that the guide must provide sufficient detail to stand alone whilst also providing the tools to undertake further investigation in areas that may require this.

With regards to **clarity**, there was overall agreement that the guide was clear and the language was pitched at an appropriate level. Comment was made that the photos require further consideration as some did not appear to add value to the written text. It was also suggested that photos be captioned.

All participants considered the guide to be a **useful** document that they would refer to as an information source when first starting out and as a reference document as they became more experienced with livestock. One participant would have liked to see a workbook style document with places for notes, records and a calendar of yearly activities.

The **presentation** of the guide attracted considerable comment. Participants were in agreement that the optimal presentation of the guide was A5 (148 x 210 cm) and spiral bound. The general consensus was for the guide to be landscape orientation with a fold over at the top, although two participants did express a preference for portrait side opening. No participants expressed a preference for a smaller version A6 (105x148), particularly as this may reduce legibility and the clarity of images. The type of paper should be able to withstand moisture and the rigours of farm life. The need for a hard cover was dependent on the type of paper used (e.g. waxed paper may negate the need for a plastic or hard cover).

Hard copy was the preferred option, with an alternate online availability considered to be useful, particularly for a younger demographic and as an option for later releases. Participants considered an app would only be of value if considerable functionality was incorporated.

Font size was considered to be acceptable, with comment that a reduction could reduce legibility. The use of the yellow underlined emphasis points was not well received, with suggestions that these be removed. Comments associated with these include that they were unnecessary and could be construed as patronising. It was suggested by one participant that the use of yellow in the titles was not ideal for readability, with red being a proposed option. Similarly, a change to the universally used blue for URL's was suggested.

No clear conclusion on the use of URL's within the text versus them being placed at the back of the document could be drawn. There were perceived benefits and disadvantages to both. A compromise could be to include URL's for websites that are likely to be used on a regular basis in line with text, with all others available at the end of the guide.

With regards to the distribution channels, potential access points included rural suppliers, existing small farm services and networks, local council and veterinarians.

Specific comments on content

The addition of a contents page was considered to be of high importance, as was reconsideration of the title. It was suggested that the distinction between what is a legal requirement and what is best practice be presented clearly throughout the guide. It was also suggested that it would be useful to include a short summary section at the start of the guide on factors that need to be considered before

deciding on the most suitable species. For example, a short description of popular breeds, access to shearers, fencing requirements (particularly for goats).

The section on fencing was unclear in parts and will require modification. The bushfires and flood sections were considered to be important, however, a number of participants thought that it would be useful to include information on preparation given that many smallholders may not be on site when these events occur. It was also suggested that the list of diseases in the flood section be elaborated upon to include a short description of the diseases mentioned.

With regards to the livestock identification section, a clearer indication of exactly what the smallholder must do and how they go about doing it was suggested. For example, specific instructions on how to obtain a PIC.

The water and nutrition sections were considered useful with some comment on the need to provide a clearer explanation of DSE and supplementary feeding. The disease section needed more consistent language with suggestions that photos and information on precautions such as isolation, for example, might be a useful addition. More information on weeds was suggested, particularly those that are likely to result in major animal health issues.

There was some comment on the emphasis on transport and handling as compared to other sections however, given that this was the one of the drivers for the guide, this is not considered to be an issue. This section will be enhanced by the addition of photos that will be provided by Animal Angels. Similar comments were made on the sections on body condition scoring and humane euthanasia, which may warrant review. The body condition scores were generally thought to provide an effective tool, with a strong preference for the format of the cattle section i.e. photos. The technical information in the euthanasia section was questioned by some participants and will be reviewed by the research team to ensure that it is clear and accurate.

Feedback from stakeholders and smallholders was incorporated as considered appropriate by the research team with input from MLA. The final sections to be included in the guide are:

1. About this guide
2. Livestock ownership
 - Legal obligations
 - Boundaries and fencing
3. Livestock identification and traceability
 - Property Identification Code
 - National Livestock Identification System (NLIS)
 - Livestock Assurance Program
4. Animal Welfare
 - Basic welfare needs
 - Nutrition
 - Supplementary feeding
 - Water
 - Shelter
 - Minimising pain
 - Humane euthanasia
 - Natural events
 - Handling of livestock

- Transport of livestock
- Fit to load
- Handling during transport
- Transport vehicles
- 5. On-farm biosecurity
 - Quarantine
 - Farm inputs
 - Farm outputs
 - Feral animal, pests and weeds
- 6. Animal health
 - Vaccination
 - Notifiable diseases
- 7. Contacts and further information

5 Discussion and conclusion

A review of the literature supported the need for the development of this guide, particularly given the lack of previous livestock experience that has been reported in the smallholder population. The perception that smallholder's practices may expose both themselves and the wider livestock industry to a greater level of biosecurity risk, further support this.

Overall, the response from those involved in the review of the draft guides was that such a tool would be of use to smallholders, particularly for those new to livestock ownership. A number of smallholders who participated in the pilot commented that knowing how and where to access information that was relevant to their operations, could be challenging.

It must be noted that despite specific requests in the invitation to participate for input from smallholders from a NESB, there was limited feedback received from this group. Notwithstanding this limitation, engagement with the process of reviewing the guide was high with input received from a variety of producer types. As such, the level of information obtained as a result of the consultation process allowed for the development of a comprehensive end product.

6 Key messages

Providing clear information to smallholders keeping livestock on their obligations with regards to standards, guidelines and legislation is a valuable undertaking. It is anticipated that the distribution of the glovebox guide will lead to an increased awareness of the topics presented.

7 Bibliography

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