



Final report

ParaBoss Phase III Producer Communication, Extension, and Adoption Delivery and Website Management

Project code: P.PSH.1320
Prepared by: Kelly Wall
Animal Health Australia
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Abstract

ParaBoss is the national authority for sheep, goat, and cattle parasite control in Australia, providing information on parasites and their control through its suite of products – WormBoss, FlyBoss, LiceBoss, and TickBoss. The resources are a source of detailed information and regional programs developed to improve on-farm management of worms, flies, lice, and ticks. ParaBoss is owned by Australian Wool Innovation (AWI), Meat & Livestock Australia (MLA), the University of New England (UNE), and Animal Health Australia (AHA) has been a partner in this project.

Phase III of the ParaBoss project (2021-2024) AHA delivered on the below two components:

1. Website Management
2. Producer Communication, Extension, and Adoption Delivery.

Key outcomes from this project include:

- Increased awareness and use of ParaBoss as a producer resource through an updated website platform evidenced by consistently outperforming baseline quarterly targets of reaching 15,000 users per quarter and achieving 25,250 page views
- ParaBoss content is technically accurate this is achieved by consulting a technical lead to review project outputs and significantly condensing 1,700 pages of technical information into the current 855 web pages, bringing eight separate sites into one home.
- Increased knowledge and intended practice change through a combination of targeted extension activities and a producer-centric website and communications 5783 registered webinar attendees, with an overall satisfaction rate of 8.66/10. 58% of webinar attendees indicated an intention to do something differently because of attending a webinar.
- 97% of webinar attendees reported learning something new or the webinar reinforcing their existing knowledge.
- Delivery of 9 pilot producer workshops to 62 participants at 5 sheep pilot workshops and 56 participants at 4 cattle pilot workshops.

This final report provides details on how AHA has successfully met the requirements of the project.

Executive summary

Background

ParaBoss is the national resource for sheep, goats and cattle parasite control in Australia, providing information on major parasites through its suite of four products WormBoss, FlyBoss, LiceBoss and TickBoss. The products are a source of detailed information and regional programs developed to improve on-farm management of worms, flies, lice and ticks.

In 2020 a review was undertaken of ParaBoss products and services via a survey of key representatives from several industry sectors. An overall assessment of the findings of the ParaBoss review agreed that ParaBoss is still yet to achieve national recognition and industry impact but has the potential to achieve both. Together during Phase III, MLA, AWI, UNE and AHA addressed all 14 recommendations from the ParaBoss review: Recommendations for products and services (Ball and Curtis, 2020).

Objectives

The goal of ParaBoss Phase III was to enhance and support the profitability and sustainability of Australia's sheep, goat, and cattle producers through the delivery of effective, independent, accurate, and objective advice on best practice management of parasites.

All project objectives have been achieved. The project enabled the ParaBoss assets to work together to continually reinforce the value of each element to the producer, guiding them to 'what's next' as they bring ParaBoss into their production processes. Over time, each interaction with current and potential ParaBoss users has guided them towards beneficial behaviour change and adoption of best-practice management strategies.

Methodology

The ParaBoss team knew that successful producer adoption and practice change required a producer-centric approach.

The project team framed project activities and priorities around what producers needed from ParaBoss to improve their awareness of, engagement with, and ultimately adoption of these resources within their ongoing production processes.

The team developed, delivered, shared, and promoted relatable, relevant, seasonal, and timely communications, resources and events as well as a rollout of national extension activities and workshops that catered to a wide range of producer needs.

Results/key findings

- Producers are the most listed users of the ParaBoss website accounting for 54%.
- The Boss Bulletin and its tailored content remains one of the most successful communication products for the project with an average open rate of 33% and click rate of 6%.
- Webinars have successfully facilitated the growth of the engaged audience in producers and other industry participants. We received 5,783 webinar registrations, 2,303 attended in real-time, of which 981 were producers.

- Nine workshop pilots were well received by attendees and overall feedback was excellent. Overall satisfaction for sheep workshops was 8.52/10, and cattle 8.96/10.
- Leveraging off and utilising existing projects and networks delivered impact and value for money.
- During the period from October 2022 to June 2024, the ParaBoss website received 613,528 pageviews from 275,648 users.

Benefits to industry

Industry has benefited from improved knowledge and understanding of key parasite management practices that pertain to their livestock business. Industry benefits and providing tangible practice change opportunities have been key to all outputs of the ParaBoss project.

Future research and recommendations

Future recommendations include gaining full access, to all the tools, tool prioritisation and upgrades as well as some known website-related updates that will be required shortly, for example, the rescheduling of Diazinon products.

In addition, the development of additional workshop materials and the continuation of monthly ParaBoss webinars is recommended.

Table of contents

Abstract	2
Executive summary	3
1. Background	7
2. Objectives	7
3. Methodology	7
4. Results	8
4.1 Communications	8
4.1.1 Boss Bulletin	8
4.1.2 Facebook	11
4.1.3 YouTube	12
4.1.4 Stakeholder publications and promotion	13
4.1.5 Style guide	15
4.1.6 Advertising, merchandise, and collateral	15
4.2 Website	16
4.2.1 Design and development	17
4.2.2 Host and maintenance	18
4.2.3 Tools	18
4.2.4 Statistics	20
4.3 Extension and Adoption	22
4.3.1 Webinars	23
4.3.2 Events	24
4.3.3 Workshops	26
4.3.4 Other	31
4.4 Technical	32
4.4.1 Support and input	32
4.4.2 Technical Committee	33
4.5 Monitoring, Evaluation and Reporting	34
4.5.1 Data collection and baselines	34
4.5.2 Results	34
4.6 Project management and stakeholder engagement	35

4.6.1	ParaBoss management	35
4.6.2	Project Committee.....	35
4.6.3	UNE	35
4.6.4	Other	36
5.	Conclusion	37
5.1	Key findings	37
5.2	Benefits to industry	37
5.3	Future research and recommendations	38

1. Background

The goal of ParaBoss Phase III was to enhance and support the profitability and sustainability of Australia's sheep, goat, and cattle producers through the delivery of effective, independent, accurate, and objective advice on best practice management of parasites. Parasites affect all livestock, with parasite prevention, control, and lost production costing the industries hundreds of millions of dollars a year. Actions taken to minimise parasite risks and treat affected livestock can vary significantly across Australia, and the timing of these actions is crucial to ensuring that they are effective, there is no 'one-size-fits-all' approach to parasite management.

To combat this, producers must have access to accurate information that guides their approach to parasite management on their property. This project has succeeded in raising awareness, promotion, development, and distribution of tools, recommendations, and resources relevant to parasite management, to all regions across Australia.

2. Objectives

The objectives of the ParaBoss Phase III producer communication, extension, adoption delivery, and website management project are to:

1. Rebuild the ParaBoss assets with a contemporary look, ease of use and consistency across all platforms.
2. Translate the prioritised ParaBoss assets into practical, producer-focused resources, balancing accessible language, reduced repetition, and technical accuracy.
3. Establish a full breadth of content and distribution partnerships to amplify the reach of ParaBoss (including AWI, MLA, bulletins, newsletter content, associated websites, etc).
4. Establish mechanisms for producer and industry feedback.
5. Establish networks of advocates and allies to help distribute ParaBoss information and grow its reach and impact.
6. Develop extension events including face-to-face producer workshops and webinars.
7. Drive ParaBoss presence at network events.
8. Update the Drench Decision Guide.
9. Engage with a minimum of 1,500 producers during the project.

This final report provides details on how the above listed objectives have been achieved.

3. Methodology

Successful producer adoption and practice change require a producer-centric approach; therefore project activities and priorities were framed around what producers need from ParaBoss to improve their awareness of, engagement with, and ultimately adoption of these resources within their ongoing production processes. To achieve this a variety of methods and mediums were utilised to appeal to the breadth of producer types and livestock species in a national setting.

The approach was underpinned by four key principles:

- **Producer led:** Ensure the producer's needs and context are clear and clearly define how each activity will contribute to producer adoption.
- **Performance:** Prioritise activities based on the outcome, impact, and value for money.
- **Scale:** Engage in partnerships to improve outcomes, scale, and breadth.

- **Data driven:** Collect qualitative and quantitative data, consult with industry, and use these to improve decision making.

Throughout the project, the ParaBoss team revised, shared, and distributed practical and cost-effective recommendations to control parasites to producers and other industry professionals. Information was made available in a variety of formats, including webpages, articles, reference documents, multimedia, face-to-face workshops, webinars, and videos, enabling producers to select the format that best suits them.

The ParaBoss team collaborated, engaged, and sought feedback with and from MLA, AWI and UNE and other stakeholders to succeed and deliver a high standard of work.

4. Results

4.1 Communications

The ParaBoss Communication Plan detailing the strategy for the development and implementation of relevant communication tactics and campaigns, endorsed by MLA and AWI 2021 see Appendix 01.

Table 1. ParaBoss communications plan objectives and progress

OBJECTIVES	PROGRESS
Support the ParaBoss Extension program and website promotion and adoption, through a tailored customer journey that generates awareness of the online resources, tools, and extension activities, efficiently guides producers to relevant resources, and establishes return end users.	100% complete

4.1.1 Boss Bulletin

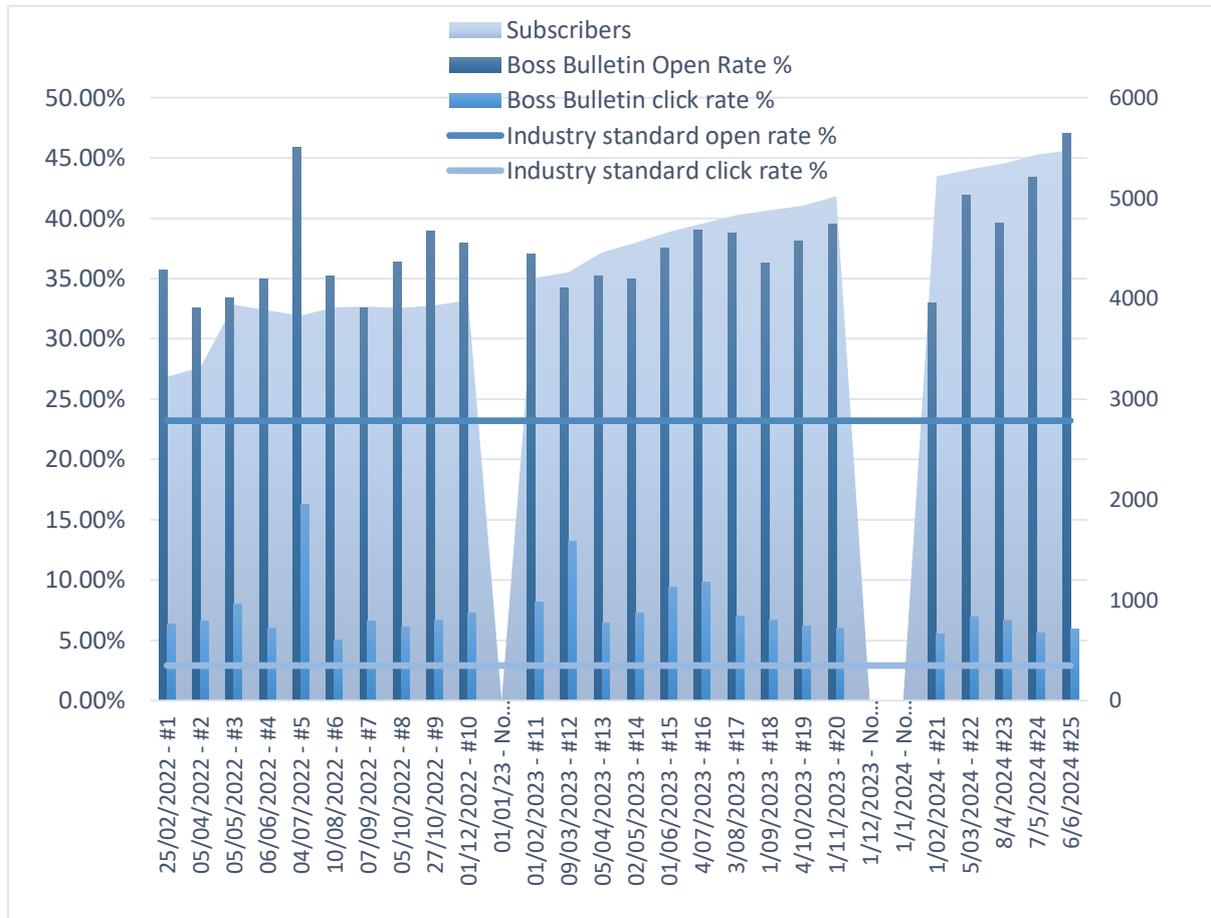
Demonstrated effectiveness and growth

The communications program for ParaBoss Phase III demonstrates effectiveness and growth, with 25 editions of the Boss Bulletin published between July 2021 to June 2024. Starting with 3,220 subscribers in February 2022, our audience has grown to 5,479 by the 25th edition, reflecting a 70.16% increase or 2,259 new subscribers, surpassing the agreed target to increase the e-newsletter subscription base by 50% over the three years. A dedicated pop-up remains live across the five Boss websites encouraging visitors to sign up for the monthly Boss Bulletin e-newsletter.

High engagement rates

The 25 Boss Bulletins delivered have collectively been opened over 41,500 times. By consistently delivering topical content and expert tips relevant to producers across cattle, sheep, and goats, communications achieved and maintained an average open and click-through rate of 37.56% and 7.43%, outperforming the industry averages of 23.21% and 2.91% respectively and underscoring the high engagement and continued relevance of ParaBoss materials.

Figure 1. ParaBoss Boss Bulletin statistics, February 2022 to June 2024



Content planning and strategy

Once a month the ParaBoss communications team brought together our team of extension and technical experts from the ParaBoss project and AHA biosecurity team to discuss relevant content for the month ahead. These discussions then developed into a content plan for the Boss Bulletin and the ParaBoss Facebook page.

Evolving content strategy

The content strategy of the Boss Bulletin has evolved to meet the needs of our audience, influenced by variations in funding availability across the project's duration as well as the website review. After the website review was complete and all information was consolidated, the emphasis for Boss Bulletin was directed to channelling producers to the ParaBoss website and existing resources. In the initial editions (1 to 14), the extension team with support from the communications team authored an average of three new content pieces per Bulletin. In editions 15-20, this approach shifted to producing one new article per Bulletin. In editions 21-25, we focused on promoting existing content from across all ParaBoss websites with seasonally relevant reminders.

Diverse and relevant content driving the right audience

The newly developed content ranged from species-specific articles to articles relevant to all species and showcased timely topics and seasonal advice. These articles, including monthly seasonal updates, have been read over 13,651 times. Topical articles have resulted in producers becoming the most listed user utilising the ParaBoss website for the first time since its launch. The ParaBoss Intellectual Property (IP) Owners are provided the opportunity to include content.

Seasonal focus

Each new Boss Bulletin edition featured a tailored seasonal focus update from ParaBoss extension leads, Megan Rogers and Fiona Macarthur, and ParaBoss technical lead, Matt Playford, to provide content that was as regionally and seasonally relevant for our readers.

Fast facts

Each edition highlighted a new fast fact to educate, engage, provide actionable insights, promote ParaBoss resources and tools available via the four Boss websites (WormBoss, FlyBoss, TickBoss, and LiceBoss), emphasise preventive measures, and highlight cost-effective practices, all of which contribute to better parasite management.

Webinar and workshop EDMs

Our webinar EDMs have been highly successful, generating over 4,399 registrations. This success is complemented by our promotional efforts on Facebook and the circulation of media kits to relevant partners and influencers in the cattle, sheep, and goat areas, boosting registration and attendance at our webinars and workshops.

For each webinar and workshop, the communications team developed an event promotion kit based on the communications plan provided by the extension team. To ensure seamless distribution, the kit contained:

- An e-newsletter or website blurb
- Social media posts and tiles
- Event flyer

Collaborative efforts

The team collaborated and finalised discussions with MLA and AWI on the possibility of an additional regional updates e-newsletter, this was agreed unnecessary as the monthly Boss Bulletin's seasonal update addresses this requirement.

The AHA communications and customer service team liaised with AHA's related industry members from Sheep Producers Australia, WoolProducers Australia, Goat Industry Council of Australia, and Cattle Australia ensuring we developed and promoted content tailored and relevant to producers.

Other collaborative opportunities have been leveraged throughout the term of the project, from all members of the team via committees and cross project communications, such as AWI Extension NSW sharing relevant content, and advertising webinars, allowing distribution of collateral at trade displays. Leverage at face-to-face events, particularly events that reference ParaBoss have been common throughout the project, such as AWI Winning with Weaners, and LLS presentations delivered by the technical lead. This cross-promotion is largely difficult to quantify, however not insignificant to the project.

4.1.2 Facebook

The communications team developed Facebook Guidelines see Appendix 02.

Social Media growth and engagement

At the start of the project the ParaBoss Facebook page had 2,023 followers and now has 4,225 followers, marking a 108% increase in our social media audience over three years, more than doubling our reach.

Impressions and engagement

Within this period, the ParaBoss Facebook page achieved a total of 872,850 impressions, with 56% being organic and 44% being generated through paid tactics such as ads and boosted posts.

A total of 30,716 engagements were recorded, including shares, comments, and reactions to ParaBoss content. Of these engagements, 67% were organic and 33% were paid, these metrics include some engagements uncategorised due to platform limitations. The project lifetime engagement rate was 3.5%.

Although only six out of the 12 reporting quarters met the communications plan target of a 4% engagement rate, this should not be viewed negatively. Impressions and engagement often have an inverse relationship. For instance, during months with Facebook paid promotions aimed at increasing reach and impressions, we observed a slight decrease in engagement. This is a common trade-off when prioritising reach over engagement.

Link clicks and published posts

Our posts received 7,038 link clicks, and we published 656 posts. We highlighted the unique features of ParaBoss, such as tools and treatment guides, to new and existing users, promoted upcoming extension events, webinars, and workshops, and shared testimonials from event attendees.

Ongoing campaigns and ads

- Seasonal focus – new monthly seasonal updates and feature articles (as developed) were promoted via Facebook ads to increase traffic to the website and article readership. Collectively these have resulted in over 152,131 and 2,000 impressions and link clicks respectively leading to the website articles.
- Webinar and workshop – ads via Facebook were delivered to create and promote awareness of upcoming events as well as to boost registration and attendance numbers. Collectively these have resulted in over 179,675 and 850 impressions and link clicks (including event responses) respectively leading to increased event registration.
- E-news subscription– new Boss Bulletin issues were shared with a sign-up call-to-action to boost the ParaBoss e-news subscription base.
- Facebook page followers – 2 ads were launched to test paid promotions resulting in 127 new page likes and over 12,700 impressions.
- ParaBoss tools – quick video tutorials were developed and shared to showcase various ParaBoss tools as well as demonstrating their usage instructions.

Figure 2. ParaBoss Facebook statistics – July 2021 to June 2024



4.1.3 YouTube

Find the YouTube analytics report in Appendix 03.

The ParaBoss YouTube channel was created in November 2018 and serves as a repository for webinars, and promotional content.

Subscriber and view growth

The YouTube channel has grown from 0 to 104 subscribers and accumulated 9,950 video views, translating to more than 895 hours of watch time from July 2021 to June 2024.

Video content and engagement

During this period, 62 videos have been made available, including 24 webinars featuring topical and timely content with subject matter experts showcasing the value of ParaBoss and its suite of resources.

Impact of Facebook promotions

Facebook promotions significantly boosted traffic to the YouTube channel, accounting for more than 50% of primary traffic drivers, followed by direct page traffic and YouTube searches using terms like ParaBoss, flystrike, and flystrike sheep. The channel recorded 72,666 impressions and 48 total likes on the YouTube videos.

Most popular webinars

The videos are optimised for various devices, with the top three being computers, mobile phones, and TVs. The top five most popular webinars by views are:

1. Controlling bush ticks and theileriosis in Australian cattle
2. Worm control in goats
3. Management of cattle tick and tick fever
4. Why dung beetles should be on your radar?
5. Next Level Healthy Goats!

4.1.4 Stakeholder publications and promotion

The ParaBoss communications team shared promotional assets with partners including LLS, SPA, Nutrien, Livestock SA, and FutureBeef to help promote ParaBoss events. Sharing digipacks with proposed social media posts allowed these to be cross-promoted and increase readership.

MLA Feedback magazine and AWI Beyond the Bale (BTB)

During the 18 months from July 2021 to December 2023, 16 articles were published:

- 6 articles in AWI's Beyond the Bale publication
- 7 articles in MLA's Goats on The Move e-newsletter
- 3 articles in MLA's Feedback Magazine

Media coverage during phase III

During Phase III, ParaBoss received a total of 224 media mentions. Of these, 166 were on social platforms such as Facebook and X (previously Twitter), while 58 were through media or blog items. These mentions reached an audience of over 2,304,925 readers.

Key publications featuring ParaBoss or its sub-brands (FlyBoss, LiceBoss, TickBoss, WormBoss) include:

- The Weekly Times
- Northern Valleys News
- The Land
- Stock and Land
- The Wimmera Farmer
- The South Eastern Times
- Western Magazine
- Beef Central

Social media amplifiers include:

- Northern Cattlemen's Association
- WoolProducers Australia
- Sheep Producers Australia
- Livestock SA
- MLA
- AWI.

The media coverage and social amplification achieved, though limited, has contributed towards boosting the visibility and reach of ParaBoss and its sub-brands.

Promotional campaigns

The ParaBoss communications team engaged with the Australian Community Media Network (ACMN) and Kisimul Holdings (KG2) to execute two separate brand awareness campaigns during Phase III. The ACMN campaign was not considered successful when measured by click-throughs to impressions ratio.

Kisimul Holdings Pty Ltd (KG2)

Australia's largest independent farmer database, KG2 is a comprehensive platform offering diverse services catered to the Australian agriculture industry, ranging from market research to visualised historical and forecasted farm-specific weather data. In a strategic collaboration with Engage TV, K2G introduced the 'On the Farm' network (onthefarm.tv) in 2022, aimed at delivering pertinent information to farmers through various devices, including mobiles, desktops, and household TV screens on farms. KG2 provides access to over 200,000 verified farming locations. This allows for targeted on-farm video messaging, filtered by farm type and size. This digital offering is set to reach over 95% of Australian farms across sectors like grain, dairy, livestock, cotton, sugar cane, and mixed production, with segmentation based on farm size.

Recognising the potential of K2G's services, AHA engaged in a partnership to leverage these resources for the ParaBoss brand. The primary objective was to boost brand awareness and enhance overall recognition, aligning with ParaBoss communication plan objectives.

KG2 was engaged to run the first-ever ParaBoss on-farm TV advertising campaign. On-farm TV refers to digitally connected devices in the targeted farming region such as smart TVs, tablets, laptops, and mobile devices.

The ParaBoss promo video was used for the ad, it is 14 seconds in length. Find the ad [here](#)

Objective

- Increase the ParaBoss brand awareness
- Enhance overall brand recognition.

Outcomes

- Campaign delivered 88,520 unique impressions across mobile phones, smart TVs, laptops, and tablets at an average daily frequency of 1.4 times per device
- The campaign delivered \$355.46 over its budget (introductory offer* for AHA)
- Over 50,000 impressions were delivered to QLD and NSW, followed by 18,000 in VIC
- Tasmania had the highest completion rate (86.65%), followed by QLD (79.57%)
- More than half of impressions were served to connected TVs
- 76.41% ad completion rate (ad viewed in full).

Was it successful?

From December 2023 to May 2024, ParaBoss page views saw a notable upward trend, experiencing a significant 57.9% increase in total views.

The KG2 ad campaign likely contributed to this traffic boost, complementing our ongoing content improvements, and promotional activities, with seasonal trends, which collectively attracted more website visitors.

However, evaluating the campaign's success is challenging due to its short one-month duration.

When

15 February 2024 – 15 March 2024. The campaign was scheduled to run for one month, targeting sheep, cattle, and goat producers nationwide. The strategically timed advertisements were displayed from mid-February to mid-March, serving as a timely reminder for parasite preparation leading into autumn.

Observations

- The audience engaged well with the ParaBoss ad scoring a higher-than-average completion rate of 76.41% (An average completion rate is around 70%).
- A minimal portion of the YouTube activity ran as skippable ads (10% of the \$5,000 budget), and the rest ran on un-skippable inventory.
- More than 50% of audiences were served the messaging on their connected TVs, engaging viewers with high-quality visuals and sound in a home environment.
- Messaging was run during peak times (5pm – 9pm).
- Media was well balanced across in-stream video (ads that appear within the flow of content, typically on video platforms, social media feeds, or even within articles on a website such as 7news.com.au, Forbes.com, Theguardian.com and more see Appendix 04), streaming video (Foxtel, Kayo, Binge, etc), and YouTube.

4.1.5 Style guide

The ParaBoss project was aligned with a newly created and modern style guide see Appendix 05, the style guide was signed off by MLA & AWI in December 2021 and included a suite of marketing collateral (adhering to the new guide). The guide included refreshed logos, modern fonts, iconography, business cards, and other stationery, an exhaustive editorial guideline, co-branding guidelines, and more.

Further to this, a set of logos was developed for UNE which refer to advisors, advisor training, and worm egg count quality assurance (WEC QA) logos.

All style guide collateral was provided to AWI, MLA, UNE, and relevant stakeholders for usage.

4.1.6 Advertising, merchandise, and collateral

The ParaBoss team developed ParaBoss flyers for promotion at face-to-face events and workshops see Appendix 06. These included individual flyers promoting ParaBoss for northern and southern cattle, goats, and sheep.

Two ParaBoss promotional banners were designed and developed for face-to-face events and workshops see Appendix 07. The banners cover all species and promotes the website and social media presence of ParaBoss.

A 'ParaBoss on a page' flyer was developed, outlining what Phase III of the project entails see Appendix 08.

A ParaBoss multi-species page insert in the Farm Biosecurity project pocket notebooks was distributed to livestock producers across the country via AHA events and extension workshops, particularly sheep, goat, and cattle producers.

The ParaBoss project developed and released a promotional and a northern beef ParaBoss video.

Table 2: List of ParaBoss collateral

LIST OF PARABOSS COLLATERAL ITEM	DIGITAL/PRINT	HOW MANY AVAILABLE
Pull up banners	Print	2
ParaBoss PowerPoint template	Digital	1
ParaBoss virtual backgrounds	Digital	4 (goats, northern, southern cattle, sheep)
ParaBoss on a page project outline	Digital	Available as .jpg file
ParaBoss promotional flyers – goat, sheep, cattle	Print	Distributed via MerinoLink Conference, Bendigo Sheep Show, AWI and MLA, cattle shows
ParaBoss branded pens	Print	
ParaBoss shirts and vest	Print	Purchased as required for ParaBoss team
ParaBoss promotional video	Digital	Available via YouTube
Northern beef ParaBoss video	Digital	ParaBoss: A premier resource for parasite management for Northern Cattle
ParaBoss – Australian Community Media Network campaign	Digital	2

4.2 Website

Find the ParaBoss Website Prioritisation Plan at Appendix 09.

Table 3. ParaBoss prioritisation plan objectives and summary

OBJECTIVES	PROGRESS
Deliver website redevelopment activities to the ParaBoss suite of websites under Phase III.	100% complete
Prioritise front-end changes that improve website usability and intuitive navigation, allowing improved emphasis on impactful messages.	100% complete
Develop the platform to become the resource of choice for producers seeking information that will support decision making around parasite management.	100% complete
*Work package 1 – website revamp - Site navigation, structure, function, and design for ease-of-use	100% complete
*Work package 2 – content revamp - Optimising and strengthening content	100% complete
*Work package 3 – enhancing uptake - Exploring greater linkages with external data	100% complete

4.2.1 Design and development

Major content review and consolidation

During the development of the new ParaBoss website, the team realised just how extensive and complicated the previous websites were, with an overwhelming number of pages, old clunky technology, and various off-site companies being used.

The ParaBoss team engaged with IP owners, communication experts, and producers as well as a wider extended group to seek their detailed feedback on the ParaBoss website features and functionality and required the domain names.

The team worked closely with UNE, AWI and MLA to ensure consistency across the ParaBoss websites in particular the recently developed WEC QA website hosted by UNE.

A major content review was undertaken, significantly condensing 1,700 pages of technical information into the current 855 web pages, bringing eight separate sites into one home.

The new ParaBoss website was launched with an associated media release, and digital content kit on **4 October 2022**, bringing the content in line with current technical advice and website accessibility standards.

Addressing redundancy and enhancing searchability

Previously, multiple web pages existed with the exact same title, making it challenging for users to distinguish which article was relevant for them as goat, or cattle producers, especially for common terms like "Liver fluke" – all web pages had the exact same title without specifying which one was for which livestock species.

To ensure all pages are searchable for smoother navigation and users have easy access to the information they require, the ParaBoss communications team, with support from the AHA biosecurity and project team, reviewed the 855 pages and updated titles to distinguish repetitive content for goats, cattle, and sheep producers.) This extensive review and update dramatically improved the user experience (UX) on the platform, enabling quick navigation between tools and resources that inform parasite management on-farm.

Continued improvements and updates to the ParaBoss website occurred, including a predictive search feature and a chat box option.

AHA also developed a website review report, see Appendix 10 outlining the completion of the website maintenance and content updates, as well as the improvements made to the website search function.

The team rebuilt the ParaBoss website to have a contemporary look, focused on ease of use and consistency across all platforms. The ParaBoss website is practical, producer-focused, has reduced repetition and improved technical accuracy.

The ParaBoss website for the first time since its launch, now has **producers as the most listed user accounting for 54.5%**.

New and interactive find an advisor page

The Find an Advisor or Provider webpage was given a major revamp to now include additional services such as breeding, product resistance testing, product sales, and more offered by the ParaBoss certified advisors and providers.

Streamlined sign-up – subscriber process

A newly streamlined sign-up page was launched for ParaBoss. This upgrade is designed to better capture target audience reach, interests, and increase subscriptions to the Boss Bulletin.

4.2.2 Host and maintenance

Avil Arts was contracted as the ParaBoss website developer. As part of the project requirements, Avil Arts hosted and maintained the five ParaBoss revised websites as required.

The hosting package included:

- Hosting five ParaBoss websites
- SSL certificate
- CloudFlare CDN
- CloudFlare enterprise DDoS protection
- Malware/hack removal in the unlikely event of a compromised website
- Automated daily website backup with 30 days backup retention
- Staging website for testing and deploying changes.

AHA together with funding partners undertook a review, renewal and purchase of a list of registered ParaBoss related Domain names.

4.2.3 Tools

ParaBoss provides users with a suite of interactive tools ranging from a Product Search Tool that allows users to search for registered parasite treatment products, to checking flystrike risk, to optimise treatment times.

The ParaBoss webpage that hosts the tools was updated to reflect feedback from the Project Committee. New features included tool blurbs, offering users a brief overview of the tools. Coloured logos were added to each tool to easily identify the relative 'Boss' and the tools listed to appear in order from most used through to least used to ensure users are finding what they need even faster. A major challenge for the team throughout the life of the project was AHA's lack of hosting, server, and content access to the ParaBoss tools not allowing AHA to keep the tools up to date and working appropriately, particularly as some of these tools are housed with external agencies outside AHA's control. Over this time, AHA continued to work with the relevant technical areas where and how we could, to ensure that the tools remained an asset of the ParaBoss project. AHA regularly requested and suggested IP owners consider tool backend access prioritisation, algorithms, relevance, and upgrades.

A project status report was provided to the ParaBoss Committee in December 2022 which included an attachment to ParaBoss Digital Tools Report on Functionality see Appendix 11. This outlined how testing of each tool was conducted within the ParaBoss suite, including those used in the ParaBoss

Certificate in Sheep Parasite Management. AHA confirmed all tools were functioning correctly from our end.

In June 2024, Avil Arts begin working collaboratively with UNE to prepare and organise the website codebase for an instructional handover to enable the tools to be stored in a repository allowing the code to be updated.

Audit

An audit of the ParaBoss tools was agreed to be undertaken. This required the team to collate what we knew about the various ParaBoss tools including showcasing which tools have been most commonly accessed since October 2022, hosting servers and access barriers, etc. See Appendix 12 ParaBoss Tools Audit July 2023.

In July 2023 Avil Arts was engaged to conduct a comprehensive review of the ParaBoss Tools. This review centred around assessing the existing issues, and the current hosting environments, and formulating recommendations for a modernised rebuild or refactoring of the ParaBoss suite of tools. See Appendix 13 Review of ParaBoss Tools – Issues and recommendations.

Product search tool

After a lengthy process of gaining access to the backend of the product search tool, AHA undertook a review and update of the tool. This involved contacting and updating the manufacturer's information, removing products that had been discontinued, and adding the new product sheep lice product fluralaner. AHA then developed an SOP ParaBoss Product Search Tool see Appendix 14, a how-to guide explaining how to undertake this task in the future. AHA undertook the review in July 2023, it was then recommended by the Technical Committee that a review should be undertaken every six months, if the IP owners would like to follow this recommendation, then a review of the product search tool is now required.

LiceBoss tools

With the release of a new sheep oral lice product, AHA ensured the new product fluralaner was integrated into the LiceBoss website content and tools as relevant and access allowed. See below table 4 for a summary of the LiceBoss tools updated with fluralaner.

Table 4. A summary of the LiceBoss tools updated with fluralaner

LICEBOSS TOOLS	UPDATED TO INCLUDE NEW ORAL LICE TREATMENT FLURALANER	COMMENTS
Lice Treatment for Breeding Ewes and their Lambs	Completed	
Long Wool Lice Tool	Completed	To note: the cost-benefit will need to be reviewed in the future.
LiceBoss Treatment Decision Guide	Completed	Potentially need to review the tool's 'recommended actions' for producers (results/recommendations given to producers using the tool) in the future as these may become outdated.
LiceBoss tools: WoolRes	No action is required (for fluralaner)	Needs revision – e.g. products that aren't on PubCrus anymore (Jetamec), no products listed

LICEBOSS TOOLS	UPDATED TO INCLUDE NEW ORAL LICE TREATMENT FLURALANER	COMMENTS
		for some application methods (dip for flies, jetting race); would be good to verify that each product has the same directions (retreatment intervals, withhold periods); and verify that the targets haven't changed.
Sheep rubbing tool	No action is required (for fluralaner)	No action is required.
LiceBoss Treatment Factors tool	Not Completed	Needs backend access/algorithm to fully review. Currently is hard coded on an old legacy server in an 'outdated' style code. When originally developed, there was no admin access point for other web developers to access to make changes, hence 'hard coded'.
Short Wool Lice Tool	Not Completed	Needs backend access/algorithm to fully review. Currently is hard coded on an old legacy server in an 'outdated' style code. When originally developed, there was no admin access point for other web developers to access to make changes, hence 'hard coded'.

Drench decision guides

In May 2022 the ParaBoss Technical Lead undertook a desktop review of the Drench Decision Guides for sheep and goats and confirmed the current Drench Decision Guides were fit for purpose and reasonably functional. Only two edits were suggested and then actioned to bring them up to current policies.

4.2.4 Statistics

The ParaBoss website for the first time since its launch in October 2022, now has producers as the most listed user accounting for 54.5%.

During the period from October 2022 to June 2024, the ParaBoss website received a total of 613,528 pageviews from 275,648 users.

New user tracking

With the implementation of Google Analytics 4, the project began tracking new users more accurately. Out of the total users, 180,054 were new users between October 2022 and June 2024. This indicates that a significant portion of our audience is discovering ParaBoss for the first time, highlighting effective outreach and growing brand awareness.

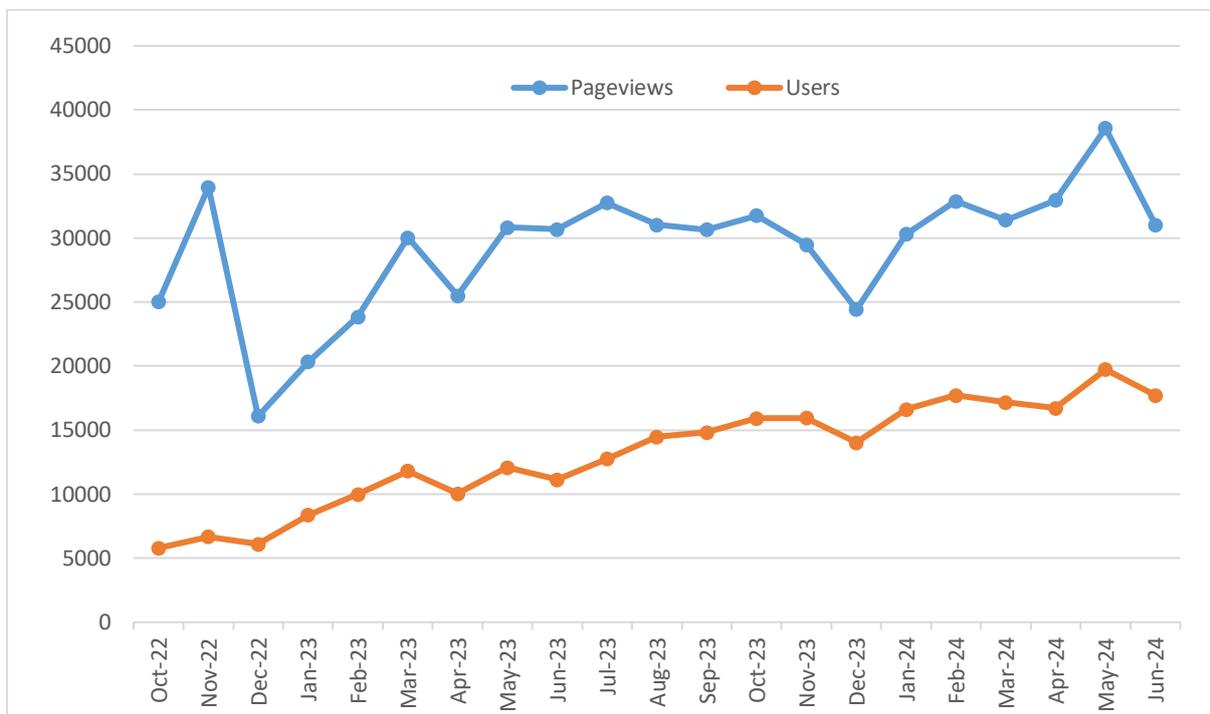
Returning users

The remaining 95,594 users are returning visitors, showcasing strong user loyalty and continued interest in the ParaBoss content. This balance between new and returning users suggests that the ParaBoss content is engaging and valuable enough to keep users coming back.

ParaBoss traffic sources

- Direct Traffic – 20%: indicates strong brand recognition and loyalty, with users directly navigating to the ParaBoss website.
- Search Traffic – 70%: shows that users are actively searching for ParaBoss when seeking parasite management advice.
- Referral Traffic – 7%: signifies valuable backlinks from other trusted websites such as MLA and AWI, contributing to the ParaBoss website's credibility and authority.
- Social Traffic – 3%: while smaller, this still shows engagement from ParaBoss social media efforts, bringing in additional visitors from platforms like Facebook.
- Bounce Rate – 53%: indicates that the site is performing well and that over half of ParaBoss visitors are engaging with more than one page, industry standard typically ranges between 40-50%.

Figure 3. ParaBoss website statistics – October 2022 to June 2024



User feedback and website improvements

Between October 2022 and March 2023, a star-rating feedback form was implemented to collect data on the newly launched ParaBoss website. This allowed us to make necessary changes to enhance user experience and improve information adoption. All users had the option to provide text feedback along with their rating, and we systematically reviewed this data to understand and address any negative experiences.

Over the six-month period, just over 450 ratings were collected, which indicated that the website was generally meeting user expectations. In Q2 2023 collection of ratings was eventually stopped, due to low to no response rate. However, the ParaBoss Inbox was monitored regularly to receive and act on user feedback received via the website contact form.

All feedback received was rated three stars or higher, when ratings of one or two stars were given, where appropriate, we made changes to improve the user experience.

Website testimonials

1. Extremely easy to find the information I was after.
2. Magnificent information - and well presented as well.
3. Love WormBoss but it is 'information dense', so a summary is a great addition.
4. Relevant, concise, the latest info on hand Thanks!!!! Very appealing easy to use!
5. The drop-down menu got me where I needed to go pretty easily. Although while looking for info on the insecticide tags for flies I originally looked in the prevention section, not the treatment section.
6. The new website and interface is great! Much easier to navigate.
7. I am just SO glad there is a one-stop shop of information about ticks. Thanks!

ParaBoss inbox

Throughout Phase III, the communications team regularly monitored and managed the inbox, collecting and addressing user feedback related to broken website links, finding resources, accessing webinar recordings, and more.

4.3 Extension and Adoption

ParaBoss extension plan

The ParaBoss extension activities were integrated throughout the project, and the team worked together for common goals.

The extension plan was developed and formed the underpinning context for all that the team undertook. Find the plan in Appendix 15.

The primary objective of all extension activities was to engage with sheep, cattle and goat producers as the primary audience. The achievement of this objective is demonstrated in the analytics that show most audience members engaged were producers.

Table 5. ParaBoss extension plan objectives and progress

OBJECTIVES	PROGRESS
Increase the number of producers that are participating in and engaged with the ParaBoss community – via ParaBoss membership (newsletter subscriber list, etc.), engaged on social media, and attending ParaBoss events (both online and face-to-face).	100% complete
Provide a mechanism that producers can use to directly improve the management of their livestock business in the area of parasite management via participation in the ParaBoss community.	100% complete
Ensure that all activities and outputs are interconnected, showing strong linkages to key information sources, and consistently using industry best practice terminology, thereby strengthening key messages and calls to action.	100% complete

The ParaBoss team provided timely, relevant information via various delivery methods. This was delivered with practice change and on-farm adoption as the primary intended outcome. Packaging simple messaging to help producers gain confidence in undertaking best-practice parasite management was key. An example of this is the ‘Test - don’t guess!’ tagline which ParaBoss used at every opportunity to serve as a continual reminder that worm testing before treating takes the guesswork out of managing worms in flocks and herds.

4.3.1 Webinars

Webinars have been held monthly throughout the project (except December and January each year). The day of the week and time of day (first Tuesday of the month at 1:00 pm AEST) has remained static, and this has helped ParaBoss develop a significant community of engaged participants, in all segments of the industry.

Throughout the reporting period, the team has delivered a total of 25 webinars to industry, on a range of topics, that have been seasonally relevant and timely across all livestock and parasite species. The table below summarises key performance data for the webinars until July 2024.

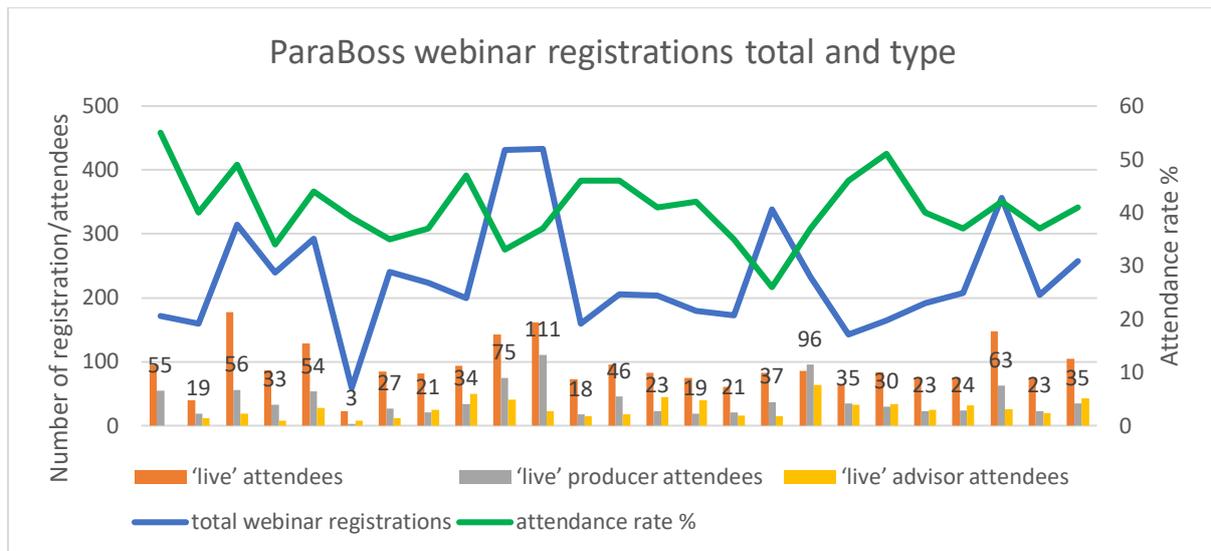
Webinar recordings are all available on the ParaBoss website. Webinar communication packs were designed and developed by the ParaBoss team as part of the revised ParaBoss style guide, including a variety of PowerPoint slide templates and virtual backgrounds, providing a consistent theme and brand awareness.

Media packs were developed by the ParaBoss team for webinars and were distributed to funders and stakeholders for distribution through their channels, and the same pack was sent out to promote the monthly webinars.

Table 6. Webinar key performance data

REPORTING PARAMETER	RESULT
Number of webinars held	25
Total registrations	5,783
Attendance rate %	40.68
Live attendees	2,303
Live producer attendees	981
Live advisor attendees	652
Number of cattle	7,461,481
Number of sheep	2,828,609
Number of goats	375,087
Overall satisfaction /10	8.66
% learned something new or reinforced existing knowledge	97.76
% who will do something different after attending a webinar	58.64

Figure 4. Key webinar attendance statistics over 25 webinars



Webinar testimonials

1. Finally, a goat webinar with some substance! – good to see actual research synthesised and consideration into translational commentary for producers. There’s a need for deep dive seminars for producers.
2. First time attending a ParaBoss webinar – it won’t be the last! Thank you it was great information.
3. Very informative and practical.
4. Excellent info, thanks.
5. Great and interactive, good questions at the end.
6. Excellent webinar, quite detailed but with practical application.
7. Keep up the great work!
8. Very informative and easy to follow presentation, I’m looking forward to the next one.
Thank you for running these.

4.3.2 Events

30 face-to-face events were attended on behalf of ParaBoss throughout the project. These events were an opportunity to promote awareness of ParaBoss to both the primary target audience (producers) as well as other industry participants, such as advisors, veterinarians, researchers, etc.

Throughout the project, 122,280 participants attended extension events that were not workshop pilots or webinars staged by ParaBoss. This figure was largely due to the presence of a huge crowd at Beef Australia 2024.

Attendance at the significant industry events was a highlight. The team attended in person and online at numerous third-party hosted events, including speaking at four MLA MeatUp or BeefUp events, and a goat industry field day. Numerous other opportunities to hold trade displays were utilised to promote ParaBoss.

In July 2023 the ParaBoss extension team shifted focus to pilot workshops, attending face-to-face events was no longer feasible due to costs vs impact. Where the team couldn’t attend face-to-face

events due to budget or otherwise, online attendance occurred were possible. The team also provided the ParaBoss promotional video and ParaBoss branded collateral to many other various events for stakeholders to share and utilise.

Table 7. Face-to-face events attended by the ParaBoss team

EVENT	EVENT HOST	DATE	LOCATION	NUMBER OF ATTENDEES	NUMBER OF PRODUCER ATTENDEES
Beef Up Alice Springs	MLA	12-Nov-21	(ONLINE)		
AWI Its Fly Time!	AWI	18-Nov-21	ONLINE	260	102
TFS Field Day	TFS	2-Dec-21	Bigga	25	25
BPW webinar	SCNSW	9-Nov-21	ONLINE	248	90
Seasonal worm update	SCNSW	10-Feb-22	ONLINE	271	98
MLA MeatUp	MLA	1-Mar-22	Dubbo	105	91
AHA Sheep Health Forum	AHA	22-Apr-22	Canberra	10	0
MerinoLink Conference	MerinoLink	7-Jun-22	Wagga Wagga	300	114
LLS Ellerston FD	LLS	28-Apr-22	Ellerston	50	50
Meat Up Longreach	MLA	25-Mar-22	Longreach	63	49
AWI BPW update	AWI/PARABOSS	18-Aug-22	online	126	276
2022 AWI Flystrike RD&E Technical Forum	AWI	10-Aug-22	Sydney	100	
Meat Up Naracoorte	MLA	28-Jun-22	Naracoorte	103	79
Meat Up Northam	MLA	5-Aug-22	Northam WA	76	53
MeatUp Wagga Wagga	MLA	16-Aug-22	Wagga Wagga	98	72
Agribusiness Today Forum	RDA	4-Aug-22	Forbes	120	n/r
AWI Update - blowfly chemical resistance update	SCNSW	8-Sep-22	online	205	82
MLA Update	MLA	30-Nov-22	Toowoomba	350	350
Meat Up Casino	MLA	6-Dec-22	Casino	TBC	TBC
West Wyalong Merino Ewe Competition	Sheep Breeders Association	10-Feb-23	West Wyalong	50	40
WormBoss Workshop Pilot	ParaBoss	22-Feb-23	Canowindra	8	8

EVENT	EVENT HOST	DATE	LOCATION	NUMBER OF ATTENDEES	NUMBER OF PRODUCER ATTENDEES
Provided ppt to A. Morelli MLA Meat Up	MLA	8-Mar-23	Winduna		
Goat Field Day	C Stewart (goat stud)	24-Mar-23	Collie NSW	100	70
MLA, AWI, AHA staff briefing	All	7-Jun-23	online	84	0
Meat Up Cowra	MLA	10-Aug-23	Cowra NSW	136	98
Sheep, Camelid and Goat Veterinarians conference	AVA	23-25 Aug 2023	Bendigo Vic		
Meat Up Cunnamulla	MLA	5-Sep-23	Cunnamulla Qld	68	55
Beef Australia - Rockhampton	Various	5-10 May 24	Rockhampton	119,324	unknown

4.3.3 Workshops

The project funders agreed in July 2023 that producer workshops were to become the main focus for the final year of the project. The workshops were scheduled and planned to be in the major livestock regions across Australia.

62 participants attended five sheep WormBoss pilot workshops in NSW – Canowindra, Glen Innes, SA - Naracoorte, and Clare and WA – Mount Barker. 56 participants attended the four ParaBoss cattle workshops held in NSW - Casino, Queensland - Claremont, WA - Albany and NT - Katherine. The no-show rate was significant at all events, which was attributed to the fact that the event was free of charge. This did however contribute to over-catering at some events.

Table 8. WormBoss sheep workshop pilot summary

LOCATION	DATE	NUMBER OF ATTENDEES	SATISFACTION /10
Canowindra	22/02/2023	8	8.5
Glen Innes	23/11/2023	20	8.95
Mount Barker	28/02/2024	6	8.83
Naracoorte	19/03/2024	16	8.13
Clare	26/06/2024	11	8.18

Table 9. ParaBoss cattle workshop pilot summary

LOCATION	DATE	NUMBER OF ATTENDEES	SATISFACTION/10
Casino	22/11/2023	21	7.62
Albany	29/02/2024	5	9.20
Clermont	10/04/2024	20	9.45
Katherine	22/5/2024	7	9.58

The sheep WormBoss pilot workshop focused on assisting producers to become more confident and aware of which worms to be on the lookout for when to test their sheep, how to choose the right drench, how to improve pasture management to minimise reinfection and what longer-term steps they can do on-farm to improve the overall resilience and resistance of sheep. The workshops also focused on best practice management when drenching livestock following worm egg count results and minimising the onset and development of drench resistance.

The cattle ParaBoss pilot workshop focused on best practice parasite management and integration across all major parasites in the cattle industry (worms, ticks, flies and lice), as emerging and existing chemical resistance is becoming an issue for the industry.

The ParaBoss team spent considerable time and effort attending to feedback received from MLA and AWI and attendees ensuring they are the fit for purpose workshop package they have become. The pilot stage involved using a number of presenters to deliver the workshops. The purpose of this was to test the materials with a range of deliverers, as opposed to leading parasitologists. This ensured that the content is fit for delivery by agricultural consultants with some parasite knowledge rather than parasitologists, which are in limited supply for this style of workshop. This further enhances the scope of potential deliverers, and hence the potential delivery audience of the workshop materials.

Following each workshop's delivery, a debrief was provided, with internal evaluation undertaken, allowing for a discussion on what worked well, what needed improvement and any future actions.

Although the workshops were initially planned and costed as one each for sheep and cattle, it became quickly apparent that three workshops were required. The ParaBoss team, with the ParaBoss extension lead's expertise at the helm, developed and delivered three workshop pilot programs concurrently:

- WormBoss sheep
- ParaBoss northern cattle
- ParaBoss southern cattle.

A considerable body of work is contained in the workshop handover package, for finalisation into a one-day workshop for producers.

Workshop feedback from attendees

Overall, the workshops were very well received by attendees all over Australia, in different production zones. The full evaluation dataset can be found in the ParaBoss MER table at Appendix 16.

Workshop attendees reported improved confidence in parasite management as a result of attending the workshops.

Figure 5. WormBoss sheep workshop attendee confidence improved from before workshop score of 5.59/10 to following workshop of 7.41/10.



Figure 6. ParaBoss cattle workshop attendee confidence improved from before workshop score of 6.34/10 to following workshop of 8.50/10.



Awareness of ParaBoss tools was also improved in workshops because of attending the workshops.

Figure 7. WormBoss sheep workshop attendee awareness of tools improved from before workshop score of 6.08/10 to after workshop score of 8.17/10.



Figure 8. ParaBoss Cattle Workshop Attendee Awareness of Tools Before and After Workshop improved from 6.11/10 to 8.29/10.



The two Figures below show the individual event satisfaction rating and the overall average across all pilot workshops.

Figure 9. WormBoss Sheep Workshop Satisfaction Average = 8.52/10

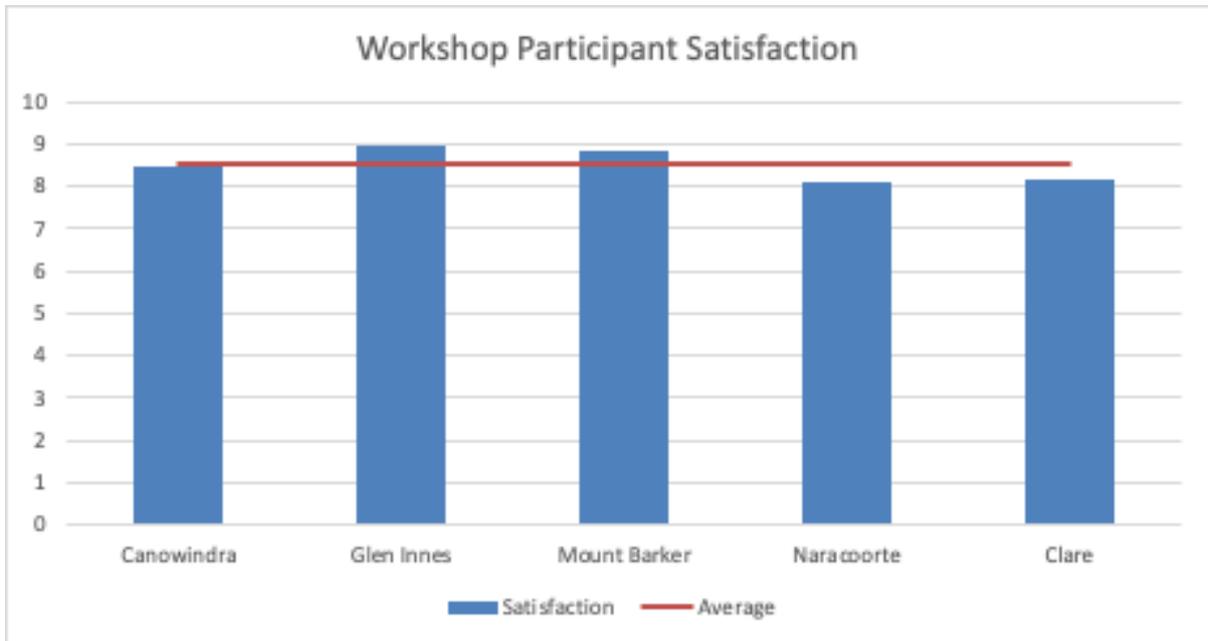


Figure 10. ParaBoss cattle workshop satisfaction Average = 8.96/10



Workshop testimonials

1. From someone who had very little knowledge re worms, the workshop was extremely valuable & was easy to understand. We have come away with confidence to implement practices and where to find information and tools. Thank you for providing this workshop, it was so very worth our time!
2. Day was well structured with quality presenters.
3. Content was relevant and flowed in a logical manner.
4. The inclusiveness and availability of info for first timers to seasoned producers.
5. The knowledge around the room, the presentation method, and the handbooks that are provided.

Workshop materials

Workshop materials and documents are provided in a separate hand over file. See Appendix 17a, 17b and 17c Contained in these folders are the following:

- 3 Workshop slide decks with speaker notes and guidance
- 3 Participant booklets in Word format
- 3 Booklet covers in PDF, InDesign and Word format
- 3 Workshop chemical labels and guidance sheet for the presenter
- ParaBoss Fly management table (northern cattle)
- WormBoss self-assessment activity
- MLA Cattle management calendar
- Event Flyers
- Workshop checklist for presenter
- Workshop run sheets for all workshops including timings, slide numbers, key messages
- Workshop evaluation forms for all workshops
- High-level presenter briefing outlining the key workshop outcomes
- Any final recommendations regarding graphic design requirements for images, etc.

4.3.4 Other

In June 2023, a staff briefing/awareness meeting was held to broaden the awareness of staff across MLA, AWI and AHA about ParaBoss. Topics included an overview of the program, key information and how this is helpful to producers, and live examples of the online tools that producers and advisors can use to help with parasite management.

This event aimed to broaden the scope of staff who can discuss the program at industry events with a higher degree of confidence, and also leverage the project across other industry-funded programs.

84 participants were online – with additional staff attending in group office scenarios.

4.4 Technical

4.4.1 Support and input

Technical input and support was an essential part of all aspects of the project.

Over the course of the project, ParaBoss Technical Lead, Dr. Matt Playford, promoted ParaBoss to a range of clients in a non-formalised context. He has presented to various groups of producers and advisors and referred participants to ParaBoss, and/or demonstrated the suite of products and tools.

Table 10. Technical Lead Highlights

DATE	HIGHLIGHTS
Sept 2021	Reviewed contents of website for technical accuracy and clarity. Provided detailed reports to website team at AHA for revising content of pages. Planned for strategy workshop.
Oct 2021	Liaised with AWI and MLA to select Technical Committee members.
Nov 2021	Attended team meeting in Canberra, delivered webinar to Alice Springs BeefUp meeting, barber's pole worm webinar.
Dec 2021	Delivered sheep farmer's worm control workshop in Crookwell, NSW. Visited Canberra to work with Jane on newsletter content and process.
Jan 2022	Redrafted life cycle diagrams, wrote newsletter articles.
Feb 2022	Promoted ParaBoss programs in ABC radio interview on resistance in sheep worms, liaised with MLA on articles for cattle tick.
Mar 2022	Attended team meeting, reviewed content of newsletters, wrote articles.
Apr 2022	Arranged and delivered two webinars, field day for beef producers at Ellerston, NSW.
May 2022	Reviewed website (ongoing), wrote newsletter articles, reviewed drench decision guides for sheep and goats.
June 2022	LiceBoss webpages revision, wrote articles for newsletter.
July 2022	Wrote newsletter articles, reviewed webpages.
Aug 2022	Goat worm control, program review.
Sep 2022	Reviewed AWI Fly Extension messaging, aligned key content of FlyBoss.
Oct 2022	Wrote articles for newsletter, webpages reviewed, annual calendar plan for social articles.
Nov 2022	Reviewed FlyBoss and LiceBoss tools and submitted recommendations.
Dec 2022	Reviewed videos, wrote articles for newsletter.
Jan 2023	Wrote and reviewed articles for Beyond the Bale, MLA Feedback.
Feb 2023	Delivered sheep worm control workshop in Canowindra, NSW.
Mar 2023	Attended team workshop in Canberra.
Apr 2023	Wrote newsletter articles.
May 2023	Delivered webinar on theileriosis.
Jun 2023	LiceBoss webpages reviewed to include Flexolt.
Jul 2023	Delivered webinar, prepared cattle workshop content.
Aug 2023	Wrote and reviewed newsletter articles, reviewed website content.
Sep 2023	Presented at MeatUp, Cunnamulla, QLD, delivered a webinar on cattle worm control for Australian Cattle Vets.
Oct 2023	Revised TickBoss pages.
Nov 2023	Wrote newsletter articles, presented at cattle workshop (Casino, NSW) and sheep workshop (Glen Innes, NSW).
Dec 2023	Reviewed newsletter articles.

DATE	HIGHLIGHTS
Jan 2024	Interviewed by ABC Country Hour on theileriosis, wrote seasonal report.
Feb 2024	Reviewed newsletter articles, seasonal outlook.
Mar 2024	Reviewed newsletter articles, seasonal outlook.
Apr 2024	Delivered cattle parasite control workshop in Clermont, QLD.
May 2024	Reviewed Boss Bulletin articles.
Jun 2024	Undertook website review and corrections.

4.4.2 Technical Committee

AHA contracted Dr. Matt Playford as a member of the ParaBoss Technical Committee for the term of ParaBoss Phase III (2021 - 2024).

AHA provided input into the development of the ParaBoss Technical Committee Terms of Reference.

As and when required an AHA ParaBoss Project Committee or ParaBoss team representative/s attended the Technical Committee meetings to service project updates, talk to papers and or to receive feedback.

Table 11. Technical Committee highlights

DATE	HIGHLIGHTS
Aug 2021	Technical Committee members recruited.
Sep 2021	Discussion with AWI, MLA, AHA on Technical Committee.
Oct 2021	Reviewed draft Technical Committee terms of reference (TOR).
Oct 2021	Submitted and reviewed TOR for a ParaBoss Technical Advisory Group (TAG) also referred to as Reference Group, to allow for support and multiplication of outputs from ParaBoss (including through ParaBoss Technical Forum).
May 2022	Attended the first ParaBoss Technical Committee meeting.
Sep 2022	Technical Committee meeting - discussed: proposed zone, aps for seasonal newsletter, cattle treatment thresholds, product search tool, extension plan, doubling up of chemical classes in primer drenches, national residues survey reports highlighting high levels of anthelmintics in goat meat samples, modification of FlyBoss tools, AWI flystrike extension and messaging consistency.
Dec 2022	Technical Committee meeting -key items discussed.
Mar 2023	Technical Committee meeting - key items discussed.
June 2023	Technical Committee meeting - David Emery talked on theileriosis and guidance for webinar, FlyBoss tools update, availability of Zolvix, Nilzan and Triguard, recommendation for ParaBoss to adopt new WAAVP guidelines, request for Technical Committee representation from northern Australia, including Flexolt in LiceBoss, Technical Committee engagement with broader Australian livestock parasite community, International Sheep Vets Conference, Wollongong 2025.
Nov 2023	Technical Committee meeting - Biology of lice factsheet reviewed, overview of Flexolt from Jane Morrison (MSD), update on blowfly chemical resistance from Narelle Sales (NSWDPI), BPW biology discussion, standardisation of terms for common names for parasites, worm egg count methods and QA testing, 9 International Conference on novel approaches for the control of helminth parasites in livestock, automated worm egg count systems.

DATE	HIGHLIGHTS
Apr 2024	Technical Committee meeting - Diazinon loss of products, sheep blowfly prevention chemicals, liver fluke resistance, FECRT guidelines, stewardship of mectin products for cattle, SCGV conference report.
Jun 2024	Technical Committee meeting - Worm egg counting and drench resistance testing recommendations, the future direction of ParaBoss, liver fluke resistance, MLA MyFeedback reporting inconsistencies, goat parasite control resources.

4.5 Monitoring, Evaluation and Reporting

Table 12. ParaBoss monitoring and evaluation plan objectives and progress

OBJECTIVES	PROGRESS
Providing MLA and AWI with information on the inputs and outputs from the ParaBoss Phase III Producer Communication, Extension, Adoption Delivery, and Website Management project.	100% complete

4.5.1 Data collection and baselines

As per the agreed Appendix 18 Monitoring, Evaluation, and Reporting (MER) Plan, the ParaBoss team collected and collated the agreed performance matrix data throughout the life of the project into an extensive Excel spreadsheet. The collated areas of MER have been split under the following four main indicative areas:

- Awareness
- Trust
- Adoption
- Industry benefits

Undertaking MER allowed the ParaBoss team to collect and measure the relevant data requirements to enable the provision of feedback on project activities, as well as assess their relevance and effectiveness at the end of the project.

A Monitoring and Evaluation detailed Excel spreadsheet of raw and collated data formed part of the milestone reporting and has been shared with MLA and AWI over the life of the project.

The agreed data collected and reviewed to date can be found in the MER Excel SS Appendix 16 and is mentioned throughout this report.

4.5.2 Results

A key element of the MER report was to use the findings to inform continuous improvement. The yearly results provided a valuable chance for the team to reflect on ParaBoss activities progressed and provided opportunities to recommend improvements. Identifying high-performing and low-performing activities allowed for reflection and adjustments to be made to boost the effectiveness of subsequent activities.

The MER report will be a valuable tool for funders and others to reflect on what worked well and what didn't, thus allowing the next phase of ParaBoss to have clear beneficial activities towards an agreed way forward.

4.6 Project management and stakeholder engagement

4.6.1 ParaBoss management

AHA has ensured the project has run effectively with a collaborative approach across locations, species and delivery partners. AHA engaged program partners regularly on relevant deliverables and outcomes and maintained an open dialogue between MLA, AWI, and UNE.

AHA has been agile and accommodating throughout the project, an example of this is when MLA advised reduced funding which led to the reprioritisation of activities within year three.

Some key achievements throughout the project are:

- Provided ParaBoss input into the Sheep Sustainability Framework and Beef Sustainability Framework surveys
- Developed new or strengthened old relationships with various stakeholders e.g., Animal Medicines Australia, Elders, various subject matter experts, etc
- Delivered ParaBoss presentations to sheep stakeholder groups
- Actively involved in detailed discussions on project priorities, impact, and delivery of tasks, products and producer workshops
- Continued discussions with MLA and AWI on options for what's next for ParaBoss (Phase III and beyond).
- Scheduled regular check-in meetings with direct stakeholders of the project, allowing for cross-collaboration, sharing of information, and progression of actions across various areas of the project.
- Contributed to a ParaBoss speaking spot and paper at the 2023 Sheep, Camelid, and Goat Veterinarians (SCGV) Conference on 23-25 August 2023, in Bendigo, VIC. Emily King from AWI presented on behalf of the team.
- Two team members have completed the ParaBoss Certificate in Sheep Parasite Management, with two more enrolled for completion by the end of 2024.

4.6.2 Project Committee

The functions of the ParaBoss Phase III Project Committee were to provide strategic and operational guidance for the ParaBoss Phase III project and to provide updates, advice, and recommendations to an IP Owners Committee of MLA, AWI and UNE.

The AHA project manager and at times general manager were representatives on the ParaBoss project committee. AHA provided reports, updates on project activities, good news stories, monitoring and evaluation stats, and insights, and contributed core program decisions. These updates informed the progress of project activities towards ensuring ParaBoss' remit as Australia's national authority for the control of internal and external parasites for grazing ruminant livestock.

4.6.3 UNE

The ParaBoss team assisted and worked together with UNE to increase enrolments in the Certificate in Sheep Parasite Management, the WEC QA program, and various other website and tool related challenges and improvements.

We worked with UNE to update and revise the Find an Advisor webpage to include more categories and upload of functions, etc.

AHA provided UNE with a ParaBoss website style sheet/skin for use on the UNE-owned and managed WEC QA website (the website works independently with the ParaBoss website) to ensure the WEC QA site looks similar to the ParaBoss website.

A set of logos see Appendix 19 was developed for UNE which refer to advisors, advisor training, and worm egg count quality assurance (WEC QA) logos.

Win 3 free enrolments campaign

In 2023, a campaign promoting the ParaBoss Certificate in Sheep Parasite Management was launched, with an aim to drive interest, engagement, and uptake of the course. Article consisting the competition details was published on the ParaBoss website and promoted via the Boss Bulletin #11 and Facebook. The campaign collectively generated 61 link clicks (competition link) via Boss Bulletin, 5 entries into the competition, and 17 shares on Facebook, demonstrating that the ParaBoss community is engaged and receptive to competitions and diverse content.

Advisor and provider web listing updates

As project manager AHA updated all new WEC QA providers and ParaBoss Certificate in Sheep Parasite Management listings on the ParaBoss website as required and provided by UNE.

Each month, or sometimes once every two months, UNE shares an updated list of sheep advisors. Additionally, once a year, they provide a new WEC QA graduate list. These updates have been promptly published on the website, ensuring that users always have access to the most current list of advisors and WEC QA providers. Currently the website lists a total of 159 advisors and providers. Boss Bulletin edition #10 showcased the 2022 WEC QA graduates, and this article became the most clicked article of the issue. This demonstrates that ParaBoss subscribers trust and are interested in obtaining services from ParaBoss Certified WEC providers and are keen to know who these providers are in their region.

4.6.4 Other

AHA attended and contributed to discussions and agreements at the ParaBoss Phase III Prioritisation & Phase IV Planning Meeting in Sydney in July 2023. MLA, AWI, and AHA reprioritised the project deliverables and timeframes with a direct focus on producer pilot workshops. Contract variations were required and completed.

The outcomes of significance from the meeting were:

- Project finish date extended by 12 months from 30 June 2024 until 30 June 2025. Noting the final report and related invoice occurs in Aug - Sept 2024. The remaining contract time (Oct 2024 until June 2025) allows for transitions, website hosting, and maintenance, project management closure activities, and or contract exchanges.
- \$90k of MLA funding decrease.
- Various edits to the outcomes of on-field activities, an update to the previous years 1 and 2 regarding actual deliverables and agreed requirements.
- Milestone requirements reduced and related dates changed.
- Reduction in event attendance, reporting requirements, and communications outputs.
- New addition of eight producer pilot sheep and cattle (southern and northern) workshops.
- Agreed out of scope – tool upgrades and train the trainer.
- Year 3 and 4 activities agreed out or reduced were:

- Three fewer social posts a week.
- No sheep workshops in NT & QLD.
- No exploring greater linkages with external data e.g. no producer alerts.
- No end-of-year survey.
- 6 monthly not quarterly external publications.
- No sheep health monitoring project investigation.
- Event numbers reduced significantly.
- Concept of cost-recovered workshops removed.
- Fewer reporting requirements.
- Adoption and on-farm practice change requirements were reduced.
- No field & and online activities, annual review meeting.

5. Conclusion

5.1 Key findings

- Producers are the most listed users of the ParaBoss website accounting for 54%.
- The Boss Bulletin and its tailored content remains one of the most successful communication products for the project with an average open rate of 33% and click rate of 6%.
- Webinars have successfully facilitated the growth of the engaged audience in producers and other industry participants. We received 5,783 webinar registrations, 2,303 attended in real-time, of which 981 were producers.
- Nine workshop pilots were well received by attendees and overall feedback was excellent. Overall satisfaction for sheep workshops was 8.52/10, and cattle 8.96/10.
- Leveraging off and utilising existing projects and networks delivered impact and value for money.
- During the period from October 2022 to June 2024, the ParaBoss website received 613,528 pageviews from 275,648 users.

5.2 Benefits to industry

The benefits to industry are multi-faceted. As practice change is a key consideration in the project, all extension activities were staged with on farm practice change in mind. A strong intent to make some change on farm was reported by producers in exit surveys from ParaBoss webinars and face-to-face events.

Growth of the producer interaction with all facets of the project is a benefit to industry as more producers are now aware of ParaBoss and what it can do to help them manage parasites more effectively.

- Improved awareness of the ParaBoss website has resulted in more interaction with the ParaBoss tools achieving over 81,000 click throughs on these tools consistently surpassing the 5000 click through baseline target each quarter throughout phase III.
- An improved awareness of ParaBoss tools by 2.09/10 for sheep workshop attendees, 2.18/10 for cattle workshop attendees and offerings.

5.3 Future research and recommendations

Tools

It's essential that within the future of ParaBoss (Phase IV), IP owners gain backend access and consider tool prioritisation, relevance and upgrades. IP owners need backend algorithm access, as well as the need to identify which tools are still valuable and prioritise which needs to be updated.

It is suggested that a review of the Product Search Tool should be undertaken every six months. If the IP owners would like to follow this suggestion, a review of the Product Search Tool is due now.

The team believes the Drench Decision Guides would benefit from a full review to ensure they align with the key messages throughout the regions, to ensure consistency in messaging and alignment of key ParaBoss extension messaging, all to commence with the same question regarding WEC test results. A key message for the project was to encourage more worm egg counting in all species.

With the registration of fluralaner in sheep for lice, all lice tools require a detailed review (in addition to the limited review AHA was able to undertake) to ensure models are adequately updated.

Products

The ParaBoss Technical Lead has advised that fluralaner will also be available for cattle sometime soon. See Safety Data Sheet Appendix 20. At the time of writing this report the application is currently with the APVMA with the anticipated registration in Q4 2023 or Q1 2024. AHA advises this will require an update of the cattle sites, probably for LiceBoss, TickBoss, and FlyBoss but no details of claims are available yet.

The APVMA has announced cancelling registration or amending labels for a suite of 15 veterinary products containing diazinon. This will impact LiceBoss sheep, LiceBoss cattle, FlyBoss sheep and FlyBoss cattle. It will not affect TickBoss as the only OPs registered for ticks on cattle are chlorphenvinphos and ethion.

This will also require deleting a number of products from the Product Search Tool and the decision support tools and mean that website and workshop content will need to be modified to remove references to these products.

University of Sydney researcher Dr. Nichola Calvani reviewed the ParaBoss pages recently prior to delivering the liver fluke webinar. She comments that the resistance rating for flukicides is incorrect and needs revision. This was taken to the Technical Committee in June 2024, who requested a review of all of the resistance indicators (initially for fluke but then across pages and parasites) and to use the Kotze Hunt paper as the basis for review.

Workshops

The team suggests the development of a table the same as the fly management table for the other key parasites, such as ticks, and worms. The fly management table outlines all fly products as the primary parasite – therefore a worm and tick would be warranted.

Train the trainer for the ParaBoss related workshops recommended prior to roll out.

Other suggestions for the workshops are:

- Include a follow up/reminder text message to all registered participants, to help reduce no shows.

- Charge attendees to attend, to help with cost recovery but also help mitigate against no shows.
- When organising catering, don't cater for additional attendees, as no shows are common. Noting this may change once workshops are staged with producer contribution.
- Include another grazing management example in the WormBoss workshop as the current one is barber's pole worm focused with high summer rainfall and summer growth.

The workshop materials are now finalised and available for funders to determine what the delivery model will consist of.

Webinars

The webinar community shows strong attendance levels, and the continuation of webinars is recommended as webinars are an excellent vehicle for the delivery of timely, relevant content by nationally recognised speakers.

Podcasts

The ParaBoss website hosts a suite of podcasts (Wormcasts) which were developed by UNE in the previous phases of the project. A small monthly fee is required to host these therefore it's recommended the podcasts are reviewed and prioritised and if agreed beneficial then promoted.

ParaBoss certificate in sheep parasite management UNE

It's highly suggested that the UNE ParaBoss Certificate in Sheep Parasite Management is reviewed and upgraded to align with the agreed ParaBoss style guide and imagery. The certificate content is very text heavy and repetitive. If a cattle parasite certificate is going to be considered/developed this should also follow the agreed style guide.