Final report

Pasture Trials Network – Phase Three Development

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1. Abstract

This project represents the third stage of a collaborative partnership between MLA and the Pasture Trial Network (PTN) that has been ongoing since 2011. The partnership funds the conduct of joint trials between seed companies to help producers and their advisors assess which are the best-performing varieties for a range of pasture species. Since its inception, PTN has enabled livestock producers, advisors, and supply chain stakeholders to make more informed decisions about forage variety selection.

This third phase of the partnership enabled the review, consolidation, and improvement of PTN core activities by providing timely varietal information from within specified agroecological zones and extending this information using a new communication and extension plan. The programme has strengthened its governance frameworks and invested in understanding industry perceptions and communication policies and strategies, including a working group comprised of key stakeholders. These documents supplement the vision of Phase 3 funding to the PTN, its value to the red meat sector, and the possible adoption pathways for the improved industry value of the PTN.

The PTN relationship with MLA has generated volumes of data, the full potential of which has yet to be realised. Future iterations of the partnership should consider expanding the number of tested species and an increased range of locations to increase the applicability of the datasets to a wider producer audience. Increased promotion and education of PTN activities (particularly to advisors) would also increase the reach of the PTN and improve the uptake of improved genetics, resulting in greater productivity improvements in the red meat sector.

2. Executive summary

Background

The funding of the third phase of the Pasture Trial Network (PTN) development represents the continual collaborative partnership between Meat and Livestock (MLA) and PTN. Since its inception in 2011, PTN has enabled livestock producers, advisors, and supply chain stakeholders to make more informed decisions about forage variety selection.

This project enables the review, consolidation, and improvement of core activities by providing timely varietal information from within specified agroecological zones, extending this information to target producers, consultants, and industry stakeholders, and promoting its activities for proprietary cultivar adoption.

Objectives

The PTN objectively evaluates forage varieties commonly used by beef, sheep, and dairy producers, where the results are to be freely publicly available to support the industry in making informed buying decisions. The benefitted industry outcome is increased forage productivity by selecting better-performing cultivars (based on robust comparative performance information) and improved confidence in choosing the right pasture genetics for specific needs and locations.

The objectives of the third phase of funding focused around:

- Building more robust governance processes.
- Building communication frameworks.
- Continuing the current and future deployment of trials within temperate Australia.
- A concept of building a forage value index for the red meat industry.
- Build a value proposition for the next funding phase of the PTN.

Methodology

The current funded project enabled the continuance of the PTN's previously established active trials, their data analysis, and implementation of new trials, in conjunction with the review, consolidation and improvement of core activities to better service the red meat and dairy industries with the delivery of:

I. Generation of varietal information from core regionally relevant trial locations based on agroecological zone.
II. Trials that include a range of pasture species relevant to producers and,
III. Timely information to producers through the implementation of a newly developed communications and extension plan, initially with the publishing of updated trial site information and data.
IV. Appoint a full-time executive officer and develop the value proposition needed to demonstrate enduring impact for red meat producers.

Results/key findings

The third funding phase has multiple activities and key findings. Each objective achieved during the project is discussed further in this section.

Developments in the programme's governance to better support the continued operations include terms of reference for the management working groups, a review of the organisational constitution and an introduction of policies and protocols. These frameworks better supported the review and guides for trial review and discussion points.

Active trials were continued for temperate forage species within defined agroecological zones, with 69 trials commenced between 2018 and 2021. Trials were conducted and annually audited against the PTN protocol, with 13 trials still active at the end of the project and 35 completed and uploaded to the MLA PTN eTool. Site descriptions have been updated for many historical trials that were missing this valuable information.

Improvements have been made to the organisational data management, with the implementation of new tools, including a dedicated project management tool, Smartsheet, data storage facilities SharePoint and OneDrive. Collectively, this improves the management of the programme, stakeholder communication and decreases data redundancy. As of May 2023, the communications network of PTN receives regular communications through: (a) regular social media updates, primarily through LinkedIn, with 71 followers comprised mostly of agronomists across Australia; (b) the monthly ASF newsletter, within which the PTN provides an update for each newsletter; (c) fortnightly email updates to PTN partners and stakeholders.

Communication regarding the programme's value to end-users has been historically lagging; to combat this, the group established a Communication Working Group (CWG) in the Autumn of 2022. The group comprises representatives from rural advisors, Rural Development Corporations, seed companies and research organisations. The CWG had significant input into the formation of the PTN Monitoring and Evaluation Plan and instigated an industry survey to understand the industry perceptions of the PTN. The survey had a response of 73 respondents, 46 of whom are retailers, 19 beef producers, 17 sheep producers and three dairy producers, with a substantial number of responses from New South Wales. The survey deduced that the PTN had an impact in directly and indirectly supporting producers through their advisors but needs to work on greater relevance to more regions and cultivars and more excellent value in interpreting and promoting the data and program generally. The CWG endorsed the PTN Communication Strategy, which focused on defining the PTN core audience, delivering key messages on the value of the PTN, communication styles and communication platforms.

The organisation also appointed a full-time Executive Officer, the first for the programme to support and drive its development into the future to improve quality and outputs.

The PTN currently delivers individual trial results based on yield. An alternative method is using a Forage Value Index (FVI) that helps summarise variety performance in terms of the time of year that forage is produced and potentially also by including measures of forage eating quality. A concept paper was developed in this project to discuss the potential benefits of utilising the FVI concept within the red meat sector, an innovation that would be challenging due to the larger GxE encountered in medium and low rainfall environments applicable to the red meat sector.

A value proposition conducted within the project indicates that the red meat sector derives value from the PTN through the increased industry uptake of improved 'proprietary' varieties that can

increase producer returns by $200/ha or more, compared to outdated 'generic' varieties. Uptake of the proprietary varieties is improving, with estimates suggesting that an additional $10M was gained by the red meat sector between 2015 and 2021 through their increased usage. Further investigation suggests that there is substantial unfulfilled potential, with the industry potentially able to achieve an additional $200M of red meat production annually if producers ceased using underperforming varieties.

Benefits to industry

As a cross-industry funded programme, its stakeholders continue to invest in the belief that the programme has value in supporting the industry through supporting end-users in making informed sowing decisions for temperate forage selection in their region. The value proposition demonstrates that while a return of 10:1 has potentially been achieved through investment in the PTN, there is the potential to increase the value of red meat production by $200M annually through the improved uptake of high yielding 'proprietary' varieties.

With the investments made by the third phase of funding, the programme has enhanced its operations and additional resources for the industry with the continual trials and established improved governance of the programme to secure a strong future as the national industry-funded temperate forage variety testing program.

Future research and recommendations

The PTN relationship with MLA has generated volumes of data, of which the full potential has yet to be realised. Future iterations of the partnership should consider the expansion of the number of tested species and an increased range of locations to increase the applicability of the datasets to a wider producer audience. Increased promotion and education of PTN activities (particularly to advisors) would also increase the reach of the PTN and improve the uptake of improved genetics, resulting in greater productivity improvements in the red meat sector.

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3. Background

P.PSH 2138 – PTN Phase 3 Development

The Pasture Trials Network (PTN) P.PSH.0687 project continued the Pasture Variety Trial Network (PVTN) implemented by Meat Livestock Australia (MLA). The current project represented an interim 12 month-period (ultimately extended by a further 9 months) through 2021-2023 to enable continuity of sown trials, further analysis and publication of results and develop a next phase project between MLA, PTN Ltd and new partner Dairy Australia (DA).

The PTN supports livestock producers, advisors, and supply chain stakeholders to make more informed decisions about forage variety selection, a key driver of improved livestock productivity, sustainability, and profit. The PTN enables seed purchasers by providing an objective and industry-reviewed evaluation of forage varieties commonly used by beef, sheep, and dairy producers.

In supporting producers, advisors and seed companies, the benefit of PTN to the Australian red meat and dairy industry is increased forage productivity through the selection of better-performing cultivars (based on robust comparative performance information) and improved confidence in choosing the right pasture genetics for specific needs. PTN outputs have focused primarily on generating a trialling structure, analysing, and delivering objective information to producers via the MLA PTN eTool.

Since the commencement of the current phase in 2021, the PTN has continued to deliver various trials across temperate pasture species across Australia within differing agroecological zones. Perennial trial protocols require at least 3 years of data, annuals one year, with some trials funded under this project still underway and others completed that were commenced before this agreement.

The project enabled the continuance of PTN trials while allowing the review, consolidation, and improvement of core activities to better service the red meat and dairy industries with the delivery of:

I. Varietal information from core regionally relevant trial locations based on agroecological zones.
II. Trials that include a range of pasture species relevant to producers and,
III. Timely information to producers through implementing a communications and extension plan initially and publishing updated trial site information and data.

The project extension also allowed for the appointment of a full-time executive officer to review future growth opportunities for the data generated and develop the value proposition needed to demonstrate enduring impact for red meat producers.

4. Objectives

4.1 Objective 1 – Establish the governance structures (project, technical, communication) to manage the PTN program effectively.

ACHIEVED: Over the course of the funding cycle, the PTN has undertaken several developments in the governance structure of the business.

4.1.1 Methodology

During the life of the project, the PTN has invested in improving the governance structures, with developments including:

- Terms of reference (TOR) for the Technical Working Group (TWG)
- TOR for the Communication Working Group (CWG)
- A revision and update of the organisation's constitution, noting the term length of directors.

The development of policies and protocols for:

- Field days
- Data transfer to the PTN eTool
- Data transparency

The Terms of Reference (ToR) for the governance of PTN working groups were developed and signed off by the PTN Board in 2021 and supplied to members of the TWG and CWG. This has clarified those areas within the scope of each group to deliver more efficient meetings.

In late 2022, the organisational constitution was revised, with the major emphasis being an update on the length of terms of Directors. This was changed from an unlimited term to three years for each director, with some seats holding a shorter term to ensure a staggered rotation of the directorships annually.

During 2023, after lengthy discussions, the PTN, its stakeholders and investors decided to withhold from directly hosting field days as the organisation developed a communication strategy. This strategy will include identifying the target audiences, the messages to be communicated and how to engage with the audience. Field days will strongly benefit from these discussions in future seasons.

A policy was developed to improve the timely response and efficiencies in data transfer from the PTN to MLA IT staff for uploading to the PTN eTool in early 2023. This explains the data requirements from the PTN for MLA to undertake the upload to the PTN eTool efficiently with all their information needs.

Lastly, a data transparency policy was drafted in early 2023, which will revolutionise data handling and access for participants in the program, focusing on unblinding commercial species. This improves data access to seed companies for performance data and enables near real-time data use for internal development.

4.1.2 Results

The outcome of these was the development of various documents, which can be found in the appendices of this document. Specific sections are outlined below:

- TWG membership terms of reference, Appendix 6.1.
- CWG membership terms of reference, Appendix 6.2.
- PTN constitution is available upon viewing request.
- PTN Field day policy can be found in Appendix 6.3.
- The PTN eTool data transfer policy can be found in Appendix 6.4.
- The data transparency policy is currently sitting with the board and awaiting approval, but a draft can be found in Appendix 6.5.

4.1.3 Conclusions

Continual investment and development of the organisation's governance structure will continue to improve clarity, boundaries and expectations of activities and operations. The investment to date has been rewarding and set a new direction for the programme.

4.2 Objective 2 – Following standardised trial and publication protocols, conduct and publish variety trials from 2018 – 2021 (annual and perennial trials).

ACHIEVED: Using an established network of contractors from both public and private institutions, the PTN formalised with its investors a portfolio of work from across the temperate zone of Australia, across a range of temperate pasture species.

4.2.1 Methodology

Between the start of 2018 and the end of 2021, the PTN commenced 69 trials, with 35 trials completed (Table 1) and 13 perennial trials still ongoing. Each trial must abide by and be audited annually against the PTN trials protocol, with completed data reviewed by the TWG pre- and post-statistical analysis for approval for release to the industry via the PTN eTool platform. All trials were conducted by following the PTN protocol.

4.2.2 Results

An overview of the completed 35 trials can be viewed in Table 1. 21 trials were not ultimately completed or approved for date release due to adverse weather or environmental conditions or failure to meet the protocol expectations or environmental impact.

Table 1.: Trials completed between 2018 and 2021, outlining the species, location, site report availability and trial duration.

Trial ID	Species	Trial Location	Sown Year	Site Report Submitted?	Trial Duration (yrs.)
Lm1853691	Italian Ryegrass	Dederang	2018	Yes	2
Lma1853691	Annual Ryegrass	Dederang	2018	Yes	1
Lp1853821	Perennial Ryegrass	Lardner	2018	Yes	3
Ms18192336	Lucerne	Aberdeen	2018	Yes	3
Dg1843311	Cocksfoot	Hamilton	2018	Yes	3
Lp1843311	Perennial Ryegrass	Hamilton	2018	Yes	3
Ms1843311	Lucerne	Hamilton	2018	Yes	3
Pa1843311	Phalaris	Hamilton	2018	Yes	3
Lm18116230	Italian Ryegrass	Dardanup	2018	Yes	1
Lma18116230	Annual Ryegrass	Dardanup	2018	Yes	1
Ms19153311	Lucerne	Aberdeen	2019	No	3
Lm19172430	Italian Ryegrass	Taree	2019	No	1
Lma19172430	Annual Ryegrass	Taree	2019	No	1
Fa1962643	Continental Tall Fescue	Howlong	2019	Yes	3
Lm2053821	Italian Ryegrass	Lardner	2020	No	1
Lm19153311	Italian Ryegrass	MacArthur	2019	Yes	2
Lma19153311	Annual Ryegrass	MacArthur	2019	No	1
Lp19193311	Perennial Ryegrass	MacArthur	2019	Yes	3
Lp19123352	Perennial Ryegrass	Aberdeen	2019	No	3
Lm1997304	Italian Ryegrass	Meander Valley	2019	Yes	3
Lp19207304	Perennial ryegrass	Meander Valley	2019	Yes	3
Lm2052643	Italian Ryegrass	Howlong	2020	Yes	1
Lm2053821	Italian Ryegrass	Lardner	2020	Yes	2
Lma2052643	Annual Ryegrass	Howlong	2020	Yes	1
Lma2053821	Annual Ryegrass	Lardner	2020	Yes	1
Lm20182550	Italian Ryegrass	Bega	2020	Yes	1
Lma20182550	Annual Ryegrass	Bega	2020	Yes	1
Lm2043277	Italian Ryegrass	Warrnambool	2020	Yes	2
Lma2043277	Annual Ryegrass	Warrnambool	2020	Yes	1
Lm21103250	Italian Ryegrass	Colac	2021	Yes	1
Lma21103250	Annual Ryegrass	Colac	2021	Yes	1
Lm21222430	Italian Ryegrass	Aberdeen	2021	Yes	1
Lma21222430	Annual Ryegrass	Aberdeen	2021	Yes	1
Lm21116258	Italian Ryegrass	Manjimup	2021	Yes	1
Lma21116258	Annual Ryegrass	Manjimup	2021	Yes	1

4.2.3 Conclusions

The completed trials provided valuable data to the sampled environments' dairy and red meat industries. Opportunities for improvements were identified in the potential to increase trial success rates through improved selection of trial co-operators, improved clarity of trial protocols and trial co-operator training.

4.3 Objective 3 – Provide to MLA-associated (updated) site descriptions and management of all trial and site locations to accompany the publication of pasture performance data.

ACHIEVED: Site details, management and other relevant trial information have been submitted to MLA in a site report document at the time of the data upload request.

4.3.1 Methodology

At trial completion, trial co-operators must make available various data to produce a detailed summary of all aspects of the trial. These details are used to compile a report template supplied by MLA and eventually uploaded to the PTN eTool at the time of data submission. The report covers the following:

- Site location.
- Sowing details.
- Harvest dates.
- Local rainfall during the trial period.
- Trial inputs, including fertiliser and pesticides.
- Trial photos.

4.3.2 Results

Table 1 outlines the compliance of site reports being uploaded to the PTN eTool, where most projects active on the PTN eTool have submitted reports, especially trials completed in the last three years of recent years. Six historical sites (predating the current PTN EO) with no site reports have been identified. Data for these sites are still being located so that site reports can be prepared and uploaded in subsequent eTool updates.

A significant update to the PTN eTool was done in March 2023, including releasing data for previous development lines now commercially visible in the PTN eTool.

4.3.3 Conclusion

Although all trials completed during the third funding phase have been successfully uploaded to the PTN eTool with a corresponding report, there are legacy trials that require remediation in compiling the missing trial report. Varieties previously listed in the PTN under experimental code names have been updated in the PTN eTool to match the commercial variety name relevant to producers and advisors.

4.4 Objective 4 – Develop improved data processing procedures to ensure timely data delivery, publication, long-term storage, and analysis capabilities.

ACHIEVED: The PTN has extensively invested in improved data management and project management information systems to improve efficiency, transparency, and redundancy regarding data management.

4.4.1 Methodology

An Initial assessment of the current data storage and processing capabilities within PTN was required to understand areas of potential improvement in efficiency and functionality. This was done by a needs-based assessment, with a key focus on:

- Trial data management
- Stakeholder communication and data sharing
- Data storage

4.4.1.1 Determination of appropriate tool

The first meetings to aid in developing terms of reference for data processing and storage were achieved through several discussions with key specialists/users to identify potential areas for improvement. After assessing the system in place at the time, key features were identified as necessary for an efficient PTN data storage and processing system. Feedback points from these discussions included:

- File sharing capabilities with varied permissions to enable confidential files to be accessed by individuals (biometrician, administration, executive files), separate companies, different working groups within PTN (TWG, CWG, PTN board) and trial operators.
- Easy to manage feedback system for TWG to trial operators and vice versa to enable active management of trials limiting out-of-protocol issues.
- Incorporating documents associated with individual trials – audits, photographs, reports etc.
- Easy tracking of trial information from the beginning through to completion.
- Capacity to change pre-breeding lines that are later commercialised to commercial names and update published data accordingly.
- Data storage – the capacity to store multiple files in one database instead of using separate spreadsheets for individual trials.
- Improved data analysis capabilities and efficiencies (potential to move to GXE analysis).
- Efficiency when transferring raw data to biometrician and raw data to DA's biometrician for analysis.
- Improved measures to avoid mistakes with multiple spreadsheets to maintain all trial data (coded and uncoded).
- Capacity to standardise data across multiple spreadsheets (or remove the requirement for numerous spreadsheets).
- Reduce the time to transfer information from one file to the next and collate data for review.

Given the limited functionality of the legacy platform, the PTN Executive Officer (EO) investigated varying database systems to assess their functionality and potential alignment with PTN's requirements and budget.

The review identified three cost-effective tools that met the requirements to improve the robustness and provide data redundancy and accessibility to external parties. These were:

- The PTN portal
- Smartsheet
- Microsoft SharePoint and OneDrive

The advantages of each data storage tool are as follows:

PTN Portal:

- Cost-effective to run (low annual upkeep costs).
- User access to files can be tailored with different permissions.
- Access can be granted to the biometrician when data needs to be analysed.
- Provides an external interface for the public to learn more about the PTN.

Smartsheet:

- Cost-effective to run (low monthly upkeep costs).
- Accessible off multiple devices, anywhere.
- Flexible to varying data types and provides hierarchy in data access and editing rights, including documents and photos.
- Ease of use and trial searching enables the TWG to review trial information when uploaded.
- Smartsheet provides access to near-real-time data, trial progress in a Gantt view and period data uploads, and ease of data engagement.
- User access to files can be tailored with different permissions.
- Access can be granted to the biometrician when data needs to be analysed.
- Adaptable to future needs, including vertical and semi-automated data and project management capabilities.

SharePoint:

- Cost-effective to run (low annual upkeep costs).
- Accessible off multiple devices, anywhere.
- Secure data access through authentication.
- Ease of use and trial searching enables the TWG to review trial information when uploaded.
- User access to files can be tailored with different permissions.
- Flexible to varying data types and provides hierarchy in data access and editing rights, including documents and photos.
- Access can be granted to the biometrician when data needs to be analysed.

However, there are limitations to the current systems that will continue to be monitored with a view to addressing them in the future:

PTN Portal:

- The EO can't quickly identify when trials have not been uploaded regularly without the time-consuming process of downloading multiple files (no notifications).
- File size limitations mean photographs can't be stored on the system.
- Individual trials are stored in separate spreadsheets, which limits the capacity to store data long-term in one easy-to-access location.
- Limitations to analysis (GxE) when data is stored on separate spreadsheets with no easy way to integrate.
- The feedback loop must be managed through an additional document.
- When TWG reviews trial harvest data, the project manager still must download all individual harvest data files, run conditional formatting, and present it in a secondary combined Excel spreadsheet. This process is highly time-consuming.
- The system could be more intuitive, and trial operators have made mistakes in uploading data.
- All trial data is held on a different platform and needs to be downloaded before using it, which takes time.
- File-sharing capabilities are limited as the layout is simple and needs file/folder structure. This was the critical reason why SharePoint is now being used for archiving instead.

Smartsheet:

- Individual trials are stored in separate spreadsheets.
- Limitations to analysis (GxE) when data is stored on separate spreadsheets with no easy way to integrate.
- When TWG reviews trial harvest data, the project manager still must download all individual harvest data files, run conditional formatting, and present it in a secondary combined Excel spreadsheet. This process is highly time-consuming.
- All trial data is held on a different platform and needs to be downloaded before using it, which takes time.

SharePoint:

- Individual trials are stored in separate spreadsheets.
- Limitations to analysis (GxE) when data is stored on separate spreadsheets with no easy way to integrate.
- When TWG reviews trial harvest data, the project manager still must download all individual harvest data files, run conditional formatting, and present it in a secondary combined Excel spreadsheet. This process is highly time-consuming.
- Provides limited external interface.
- It is not flexible to differing data presentation styles nor provides data manipulation capability.

4.4.1.2 Data sharing and communication

During 2021, an initial assessment of the file-sharing capabilities across all collaborating parties within PTN highlighted that the most considerable constraint in data management was the lack of file-sharing capabilities. The PTN is unique in the number of collaborating parties (each with separate access permissions) contributing to its successful operation (coordinated by the EO). Such partners include seed companies, DA, MLA, biometricians, administration parties (bookkeeper/insurance/auditors etc.), trial operators and extension groups. The legacy system relied on files held by one person (EO), with the remaining parties having limited file access and editing capabilities.

4.4.2 Results

The tools identified in the review and how the PTN adopted them to improve the data handling and communication of the PTN outputs are outlined below.

4.4.2.1 Trial data process

The critical elements of the trial data process are defined in four stages, initiation, Execution, Review and Upload. These are described further below:

Initiation:

- EO sends trial entry information to program participants (spreadsheets are coded).
- Program participants send coded information to the seed coordinator before planting.
- Trial co-operators establish trial design (in conjunction with PTN's biometrician).
- EO issues contract to trial co-operators.

Execution:

- Trial co-operators conduct trials per PTN protocol.
- Trial co-operators upload individual harvest yield data to the PTN portal within ten days of harvest.
- Each trial has its data collection spreadsheet and is saved as a different Excel file.
- Data is downloaded and reviewed by the EO approximately every 2-3 weeks, provides feedback to trial co-operators and uploaded data to the Smartsheet project management package for seed participants to review near-real-time data.

Review:

- TWG reviews trial data to ensure it is within the protocol and of quality conduct at project completion.
- Information feedback loop through various channels (trial co-operator Meetings, notes within shared trial management document).
- The biometrician analyses data (initially coded) for individual harvests/trials.
- TWG review coded analysis to ensure the trial is statistically sound.
- Biometrician releases uncoded trial analysis for TWG to review. Once TWG review and determine if the analysed uncoded data is agronomically sound (checked against the

performance of standards to make sure data makes sense), then trials are approved for publication.

Upload:

- Individual trials approved for publication are made “web tool ready” for MLA PTN eTool site as per Policy in Appendix 6.4.
- Individual company pre-breeding results are returned confidentially to the company per the data transparency policy in Appendix 6.5.

4.4.2.2 Data storage

PTN uses a portal (http://www.pasturetrials.com.au/) as a file-sharing tool enabling trial co-operators to upload harvest data as the trials are in progress. Data uploaded to this tool is periodically reviewed by the EO and uploaded to other platforms, including Smartsheet and OneDrive, to ensure data redundancy.

4.4.2.3 Data communication

SharePoint was introduced as the PTN core tool to improve communication between stakeholder groups within PTN, particularly given that PTN has collaborators in all southern states of Australia and New Zealand. The SharePoint system also contains links to relevant PTN extension websites, including MLA PTN eTool (https://etools.mla.com.au/ptn/#/regions), DA’s FVI (Forage Value Index) and the PTN data portal, the platform PTN currently uses for trial collaborators to upload trial data. These processes are central to building a functional multi-collaborative team, which ensures better delivery of all other objectives.

The EO and the support officer have set up a SharePoint system for PTN (Figure 1) and provided individual access to collaborating groups and individuals. Individuals/groups have access to different files depending on their group responsibilities. Groups include PTN Board (executive files), TWG (all trial data – coded, trial plans, entries, protocols etc.), CWG (communications plan, templates for extension material), biometrician (trial data, statistical analysis files), Admin (EO, support officer) etc. PTN has completed an instruction document to support the implementation of the PTN SharePoint system.

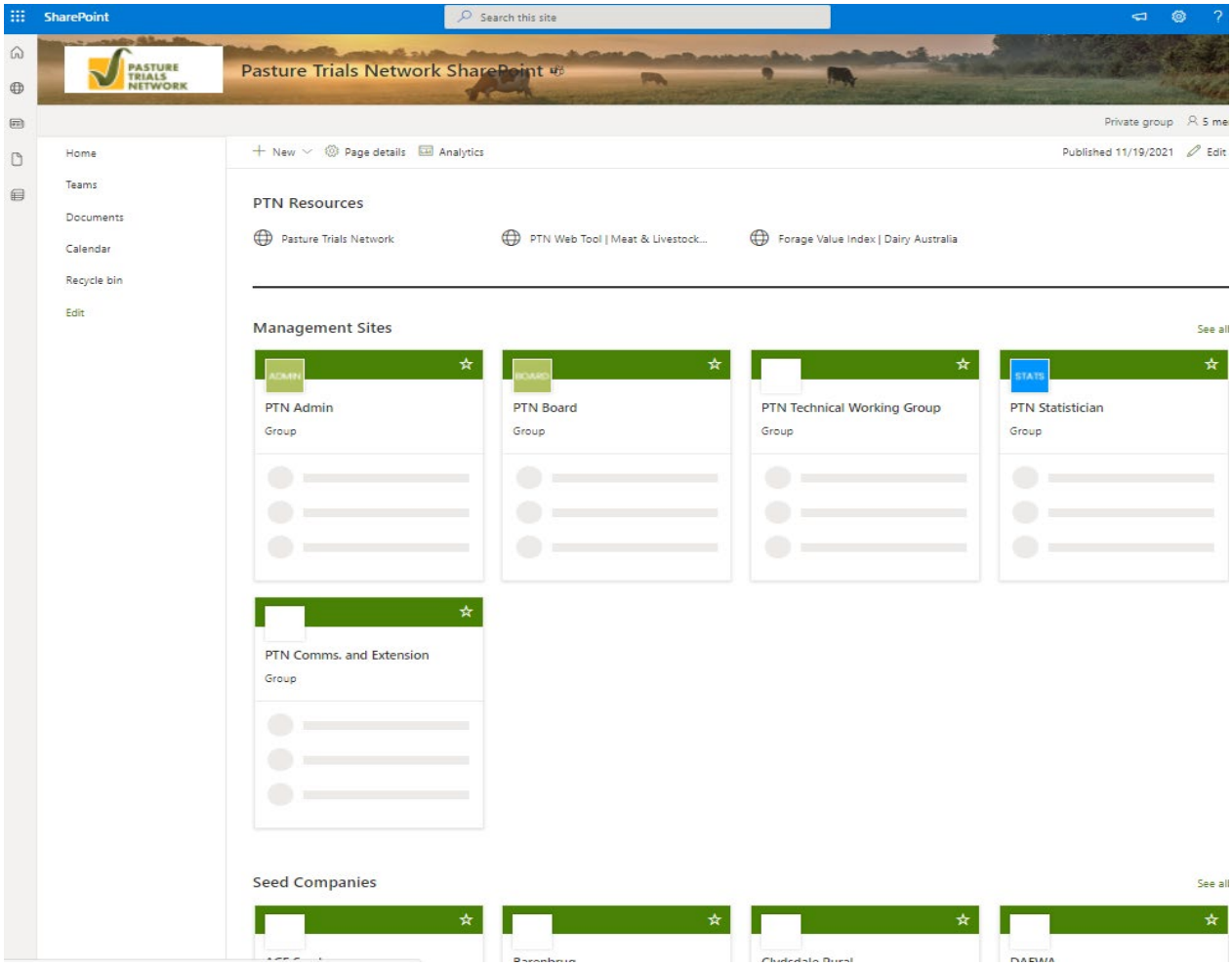


Figure 1. A screenshot representing the Pasture Trials Network SharePoint home page.

4.4.3 Conclusion

The PTN has extensively invested in improved data management tools to improve efficiency, transparency, and redundancy regarding data management. This included looking at various on-the-market tools and fit for purpose. The current tools provide greater flexibility to support further use within the programme without more significant investment in the future.

4.5 Objective 5 – Establish a communications and extension network across southern Australia that delivers timely information to producers comprising at least 20 private sector advisors, eight seed companies, MLA and Dairy Australia communications and adoption teams.

ACHIEVED: To proactively promote the program to its target stakeholders, the PTN underwent a process of engagement to decipher how and what the program requires to engage with its intended audience.

4.5.1 Methodology

The program undertook two key activities to understand what needs and resulting outputs in aid to promote itself to target stakeholders. This was through forming the CWG. The CWG was established in the autumn of 2022. The group contains representatives from varying industry stakeholders, with representatives from:

- Seed companies
- Private rural consultants
- Contract Research Organisations
- Industry bodies
- Rural Development Corporations
- Independent pasture consultants
- Australian Seed Federation

The CWG has many farmer-facing advisors, retailers and farmer extension group staff who are invested in seeing PTN as how they and their clients seek unbiased independent data to make seed selection decisions.

It was envisaged that this group would meet every six months. Still, as time has passed, the group has transitioned to quarterly meetings, advising the EO on program communication activities.

4.5.2 Results

The CWG has met several times, with discussions around and documents regarding various activities of significance to the TWG and CWG, intending to drive awareness and impact of PTN to industry. Topics to date have included:

- Draft Communications and Extension Plan.
- Monitoring and Evaluation Plan.
    - The group assisted in guiding the development and eventual implementation of the plan.
- Baseline Awareness and Impact Survey.
    - Authorised the conduct of the trial.
- PTN Media Release.
    - Supported the development of a document to release to the media to promote the PTN.
- Discussion and recommendations for stand-alone PTN website.
    - The Pasture Improvement Initiative (PII) previously gifted a site, extension, and good practice techniques for PTN to develop and maintain.

- Trial unblinding.
  - Review and support a policy on trial unblinding and data transparency.
- PTN eTool website needs.
  - Investigate the short-term needs of the site to host PTN data and the format in which data could be viewed, site attributes, functionality, specific information, and future capacity and accessibility by all communication devices, including smartphones, iPad, and computers.

The CWG also has discussed some long-term objectives to improve the use and management of the improved species supported by the PTN:

a) **What species are suitable for my situation?** A draft document has been developed to share with other partners to update Pasture Picker.

b) **PTN Selection Tool** – what are the better performing varieties for the species and location of interest? – Major focus initially.

c) **Species Management Guides** – how to get the best out of each of the major species (grazing management, soil nutrition, fodder conservation)?
  - This should be available from generic material, including PII or seed company sites.
  - Suitable companion species.
  - Best grazing method to deliver persistence and production.

d) **Links** – what links can add value to those accessing the site?
  - MLA website and MLA feed base hubs, soils, weeds, persistent pastures, and legumes., eLearning.
  - DA Forage Value Index.
  - The Australian Seed Federation (ASF) Pasture Database may have the PTN site host the information.
  - GRDC NVT.
  - Potentially seed companies that support the PTN and possibly fertiliser companies.

Current regular communication activities are focussed around (a) regular social media updates, primarily though LinkedIn, with 71 followers comprised mostly of agronomists across Australia; (b) the monthly ASF newsletter, within which the PTN provides an update for each newsletter; (c) fortnightly email updates to PTN partners and stakeholders; (d) monthly TWG meetings, and quarterly CWG meetings.

A communication plan is being enacted to expand social media use, improve the PTN website and construct the email address database.

4.5.3 Conclusion

Leveraging both the networks and capabilities of the CWG, the programme is constructing a base of targeted and useful communication outputs targeted at the key audience and lifting the programme's value in achieving the programme's goal to increase the adoption of proprietary forage cultivars.

4.6 Objective 6 – Develop communications materials to promote the PTN to be used by all parties.

PARTIALLY ACHIEVED. The PTN's primary communication material is the PTN eTool and PTN websites and regular social media updates. The PTN has also developed, or at a minimum, initiated placeholders, various communication pathways to promote the programme to the industry.

4.6.1 Methodology

4.6.1.1 Communication strategy

Using the combination of the feedback as outlined in Objective 5 (Section 3.5), the group has developed a communication strategy to define how the programme can reach its target audience and leverage the tools of the PTN stakeholders.

The final product was reviewed and approved by the CWG in early 2022.

4.6.2 Results

4.6.2.1 Communication strategy

The current developed communication strategy can be found in Appendix 6.6. The strategy has focused on defining the PTN core audience, delivering key messages on the value of the PTN, communication styles and platforms.

4.6.2.2 LinkedIn

As part of the communication strategy, PTN launched the LinkedIn page in early 2023, promoting the program and its value to the target audience and the PTN eTool. This has sustained in two months a steady growth of followers.

4.6.2.3 Field day policy

A field day policy was developed in early 2023 and is discussed further in Objective 10 (Section 3.10). This forms part of the PTN's long-term engagement and communication strategy.

4.6.2.4 PTN eTool

The PTN eTool remains the primary communication vehicle for the PTN results, and it is promoted by all seed company PTN partners who wish to show the results to producers and advisors. A large update occurred in March 2023 that uploaded numerous historical datasets and unblinded experimental lines that are now commercially available varieties.

4.6.1 Conclusion

Promoting the PTN and its value to the industry has been evolving, guided by the now-implemented communication strategy, with outputs appearing on LinkedIn and creating a field day policy. The future intent is to leverage stakeholder marketing capability and attend as a speaker at appropriate pasture industry events such as MLA producer forums or producer-group field days. The PTN is

currently assessing how improved PTN attribution can be achieved through promoting the PTN within partner resources.

4.7 Objective 7 – Implemented a monitoring and evaluation plan that demonstrates change in awareness, attitude, opportunity, and value of PTN by next and end users from across southern Australia. Report results by end of the project demonstrating baselines for next and end users from across southern Australia.

ACHIEVED: A monitoring and evaluation plan has been developed, focusing on the PTN's engagement with stakeholders. Further work will be needed to customise the M&E plan to any future MLA funded project.

4.7.1 Methodology

4.7.1.1 Monitoring and evaluation plan

In late 2021, a PTN Monitoring and Evaluation Framework was developed (Appendix 6.7).

The focus of the plan was to determine the following:

a) Impact of the program in terms of value and benefit to the industry.
b) Effectiveness of the programs' communication and extension tools in reaching target audiences.
c) Reach the program information through improved communication and extension methods.
d) Degree of brand recognition for those that saw or heard the program communications.

An evaluation was conducted using various evaluation methods, including survey, interview, and website metrics.

4.7.1.2 Industry survey

An industry survey was actioned by the PTN in mid-2022 to better comprehend the industry impact to date of the PTN. The survey focused on creating a baseline awareness, attitudes, and value of PTN to end users, including livestock producers and their advisors.

The survey was distributed to networks and their respective clients via members of the CWG and TWG to create a broad reach and high engagement, including the DA and MLA newsletters.

4.7.2 Results

4.7.2.1 Monitoring and evaluation plan

A Monitoring and Evaluation Plan was completed to measure current baseline awareness, attitudes, and value of PTN to end users, including livestock producers and their advisors. The plan on the key messages from the PTN, the target audience and data-collection tools (Appendix 6.7).

Implementation of the plan has been constrained by staff changes at PTN, and the need to prioritise other project and PTN operational matters.

4.7.2.2 Industry survey

The industry survey had a response of 73 respondents, 46 of whom are retailers, 19 beef producers, 17 sheep producers and three dairy producers, with a strong majority of responses from New South Wales.

There was a strong awareness of the PTN through the three main industry categories, with MLA and seed companies as the major conjugate of awareness (Table 2). Other communication channels included other farmers, DA, and retail advisors. Most surveyed individuals aware of the PTN Tool had previously engaged with the website, especially in the retail and beef-producing sectors. However, sheep producers were less inclined to have used it, with 60% likely to have visited the website. Most surveyed industry sectors agree that the PTN tool can help improve decisions in selecting your pasture varieties. The retail and consultants believe it had mixed value in their roles. The belief that the PTN tool could be of great value to users is high, with producers (>43%), retail and consultants believing the value to be good, with fewer seeing It as great value to the industry (Table 2).

4.7.2.1 PTN eTool Webpage traffic

Through access to the MLA web traffic tracker by the MLA Feedbase manager, it was possible to track web traffic to the PTN eTool in the key decision-making months for producers and advisors of February, March, and April 2023. In these two months, there were 2994 visits to the webpage, indicating that the red meat sector is using the data.

Table 2. The breakdown of survey responses by the target audience.

Industry Category	*Heard of the PTN? (% engaged)*		*Source of PTN awareness? (% of engaged)*		*Visited PTN Tool? (% of engaged)*		*Tool influenced your sowing decisions? (% of users)*		*How the Tool rates choosing your pasture variety? (% of users)*		*Believe the Tool could be of great value? (% of users)*	
Retail / Ind. Advisor ***(46 respondents)***	No	33	Dairy Australia	13	No	29	No	50	Good Value	43	Good Value	50
	Yes	67	Farmer Group	8	Yes	71	Yes	50	Great Value	14	Great Value	30
			Ind. Advisor	4					Some Value	43	Some Value	20
			MLA	29								
			Other farmers	4								
			Retail Advisor	13								
			Seed Company	29								
Producer – Beef ***(19 respondents)***	No	44	Dairy Australia	11	No	17	Yes	100	Good Value	100	Good Value	19
	Yes	56	Ind. Advisor	11	Yes	83					Great Value	43
			MLA	44							No Value	29
			Seed Company	33							Some Value	14
Producer – Sheep ***(17 respondents)***	No	50	Farmer Group	20	No	60	Yes	100	Good Value	100	Great Value	60
	Yes	50	MLA	60	Yes	40					No	20
			Unknown	20							Yes	20

Key: Ind., independent.

The feedback on improving PTN was reviewed and grouped by industry category (Table 3), with more trial regions and greater varieties added to the program being dominant feedback.

Table 3. Feedback groupings by industry category.

	Retail / Ind. Advisor (no. responses)	*Producer – Beef (no. responses)*	*Producer – Sheep (no. responses)*
More trial regions	9	1	-
More and recent varieties	3	1	-
PTN Website update	1	1	-
Promote the PTN	1	-	-
Other		-	1

Other single comments included earlier sowing times, comparing productivity versus persistence, including quality data, more user-friendly formatting, and the need for multi-site analysis. When asked for other feedback, the primary response was that PTN and FVI are valuable tools, but more data and sites are needed.

It was deduced that the PTN had an impact in directly and indirectly supporting producers through their advisors but needs to work on greater relevance to more regions and cultivars and greater value in interpreting and promoting the data and program generally.

4.7.3 Conclusion

The industry survey has established an engagement baseline to quantify the program's impact with future assessments. Again, leveraging the CWG and an Evaluation and Adoption plan, the group intends to generate greater awareness and impact of the programme to its target audience. Further work will be needed to customise the M&E plan to any future MLA funded project requirements.

4.8 Objective 8 – Develop a 2–3-page concept paper describing lessons from Forage Value Index (FVI) research in the Dairy Industry and how FVI could be used/interpreted to support decisions made by beef and sheep producers, including recommended wording for incorporating on the Dairy Australia FVI website.

ACHIEVED: A concept paper has been prepared (below) discussing how an FVI for the red meat industry is a potential tool that might improve the value of the existing and future data generated by the PTN.

4.8.1 Methodology

Engaging with various stakeholders and developers of the DA FVI program, the PTN EO developed a concept of what an FVI looks like and implemented it for the red meat industry.

The current PTN data set is focused on forage yield, which is one key driver of red-meat production from improved pastures. However, additional factors, such as forage quality and yield, drive the animal responses to consumed forage. The variability of forage quality differs not only between species but also within species as well as environmental and genetic cues such as seasons, ploidy and heading dates. Collectively, these factors can impact grazing animal performance. Understanding individual cultivars' potential value on animal performance is tedious and expensive. A multi-variate analysis can be undertaken to overcome this, where various components that drive animal performance within forage can be given an individual value. Each cultivar is ranked on its potential to increase value over a baseline (traditionally called a standard). A FVI can include multiple components beyond yield, giving growers an understanding of livestock performance by purchasing one cultivar over another within their region. The FVI can be communicated by season, better fitting various livestock production systems.

While the New Zealand FVI was originally produced for three production regions, subsequent analysis of GxE from forage trials has shown that for their industry, FVI only needs to be created for two regions. The development of this FVI has allowed producers and their advisors to select the forage varieties that will increase livestock production.

DA has subsequently and independently developed an FVI for the Australian Dairy industry. DA commenced its FVI with perennial ryegrass and expanded it to include annual and Italian ryegrass. The data generated has been sourced from both seed company trials and those of the PTN in key

locations. Whilst other species are evaluated, it is unlikely that FVIs will be created for them due to the lack of trial data and low potential for commercial uptake for those species in dairy regions.

The DA FVI covers five different seasons, autumn (March, April, May), winter (June, July), early spring (August, September), late spring (October, November) and summer (December, January, February). Still, some species will not have values for all seasons if they do not produce feed then.

Economic values differ between regions based on the trial data from that region and the value of feed in different seasons in the different regions. Further GxE analysis enables decisions to be made on how valuable data from other regions is to each region. The intent is to develop a separate FVI for southwest Western Australia once more trial data become available.

The next phase of DA FVI is to include forage quality (Metabolizable Energy only) in the calculations. This additional value is likely to change the rankings of varieties with later maturity or selected for improved ME. Progress with this next stage has been stalled due to the need for more availability of quality data from the PTN trial program, with some of the planned sites for sampling failing establishment or audit.

The purpose of the concept was to see what lessons can be taken from the experiences of Dairy Australia, the needs of red meat producers and their advisors and possible pathways of setting up an FVI for red meat producers.

4.8.2 Results

The concept outline was delivered in February 2023, which focused on the possibilities of implementation of an FVI for the red meat industry.

Whilst seasonal forage yield is a helpful tool for the industry, a ranking of economic value to producers would be more beneficial to aid decision-making in varietal choice and better support producers in making informed decisions on which variety best suits their production system. There is additional value to better supporting the industry's social reputation in reducing environmentally damaging gas production through improved productivity.

Currently, the PTN only addresses the yield potential of cultivars of select species in select locations. Each trial provides a localised output of the potential cultivar by seasonality (autumn, winter, early spring, late spring, and summer). Cut-off points in time define these seasons. However, advanced statistical analysis could be used to determine better the timing of biomass production and/or quality within the season.

A red-meat FVI could provide two significant shifts in how the data can be interpreted and ranked:

1. A regional approach. The current 'silo' approach of the PTN requires trials to be scattered across critical regions for producers and their advisors to be able to relate the data to their specific localisation (i.e., in their 'backyard'). However, the DA FVI analysis has demonstrated that clusters of trials perform reliably very similarly, and a similar experience has been observed with Dairy NZ. Reducing the number of trials and placing them in targeted locations, according to GxE analyses, could have several benefits for the PTN. A regional, targeted trials approach would encourage the conduct of more extensive, cross-species trials at fewer "core" sites, managed by experienced and well-equipped trial co-operators. This method could potentially address another deficiency of the PTN: the ability to promote and actively engage direct stakeholders through field days and demonstration of the yield

potential of species in that region, as it is likely to include more species at one site with fewer sites commissioned per year. This differs from the current model where each species site is individually selected, with few species grouped, making it challenging to deliver cost-effectively. The suggested core sites can be rotated in a planned approach over five (5) years.

2. Greater separation of the ranking in value of cultivars within a species through nutritional quality analysis – for example, digestibility. This benefit of multi-variate analysis is not providing producers with yield performance but also an animal conversion perspective in one ranking. Thus, the producer could interpret each cultivar's true potential and commercial value, even between species. This process would also give a greater variability in rankings. The tool could present the variability between cultivars in a season-by-season approach for various factors within one hierarchal scale. The multi-variant analysis incorporates parameters such as forage quality and heading date rather than individual tables. This approach provides greater commercial and production potential context than yield independently.

Building a red meat FVI could lead to a greater understanding of the value of what producers are buying, leading to a shift in greater adoption of propriety cultivars, thus, greater on-farm productivity.

Typically, an FVI is developed using aggregated datasets and ranked against economic gain, as with DA's FVI. However, atypically, an FVI can be produced in a silo, i.e., within an individual trial against a non-economic-based weighted value such as forage quality or feed replacement. A red meat FVI focused on individual trials could be deployed, ranking cultivars on forage quality at that site location. This approach may be more appropriate for the red meat sector as GxE is likely to be much larger across the medium rainfall zone (MRZ) environments that are highly applicable to red meat producers in the mixed farming zone. In contrast, the Dairy FVI has been deployed in the more homogenous high rainfall, permanent pasture zone.

The larger GxE likely to be encountered in the MRZ would also require a much larger number of trials to be conducted to generate appropriate confidence in the data, which could be difficult to achieve given the increased investments needed to run these trials. An additional complication to using an FVI in the red meat sector is the different production systems and regions with feed requirements at different times of the year – thus, a single FVI would not always apply to all enterprises within a region.

The PTN currently has more than 650 cultivars approved, which include a mix of commercial and breeder lines across the main species. A more significant investment in nutrition analysis could be a cross-industry approach through the PTN, benefitting both DA and MLA. Targeted trials and timings, nutritional data could be collected.

4.8.3 Conclusion

An FVI can simplify producer decision-making by summarising and simplifying key varietal performance data, such as forage produced at critical times during the season. However, implementing an FVI is likely to be quite different (and more complex) in the red meat sector, where production system requirements and varietal performance vary considerably, unlike the Dairy Industry, where both the production system and environments are more homogenous.

4.9 Objective 9 – Based on a scientific rationale (soil X rainfall x temperature), describe future core (most representative) trial locations, seeking efficiency in the number of trials to generate seasonal pasture performance data.

ACHIEVED: The PTN uses a scientific rationale that outlines past, current, and future trial locations as described below.

4.9.1 Methodology

4.9.1.1 Agroecological zones

PTN trial locations are determined by industry representation (dairy, beef, and sheep) within the agroecological zones defined by Gourley et al. 2007 in Making Better Fertiliser Decisions for Grazed Pastures in Australia. Multiple trial sites were proposed to ensure all industries were serviced where dairy and beef/sheep industries are simultaneously located within a single agroecological zone or different rainfall (high rainfall/dryland zones). The zones are outlined in Figure 2.

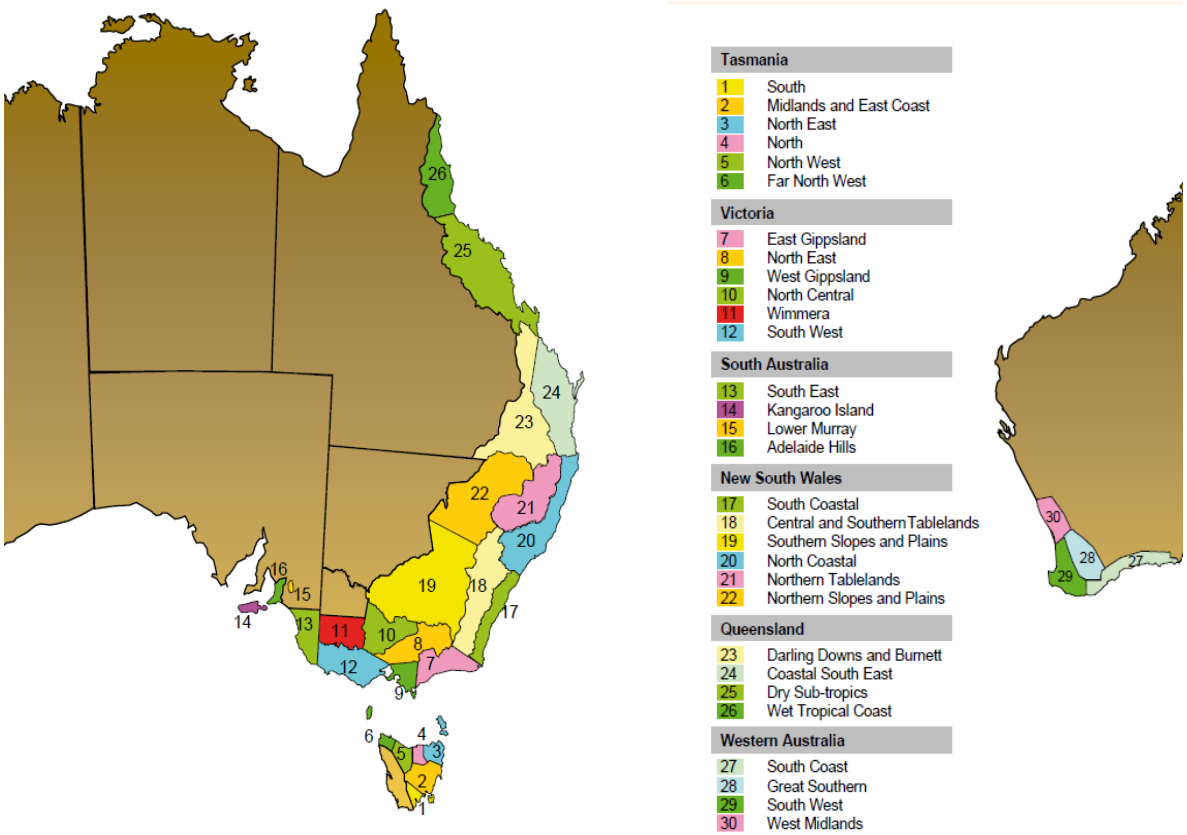


Figure 2. Pasture-based agroecological zones identified around Australia as defined by climate, pasture types and irrigation. Adapted from *Gourley et al. 2007*.

4.9.1.2 Five-year plan

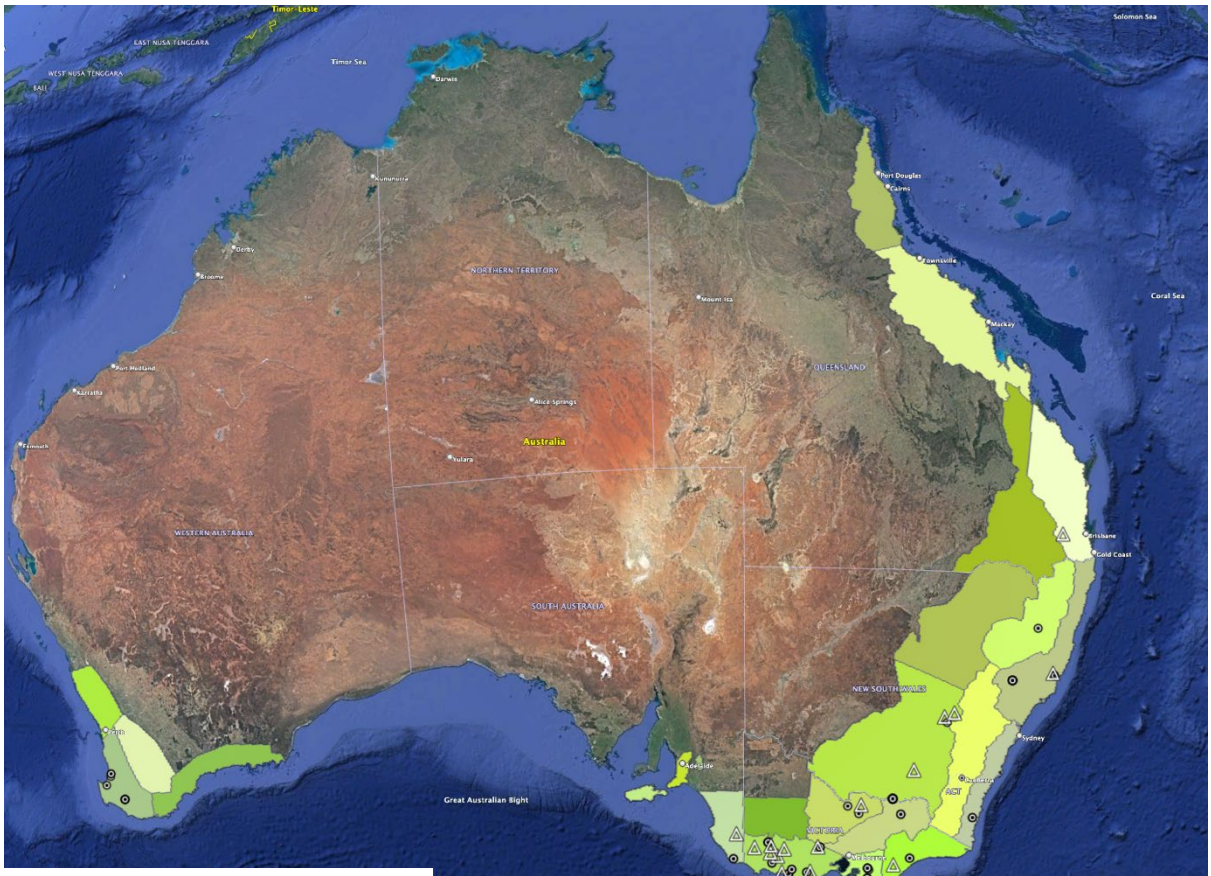
Using the defined agroecological zones (Figure 2), a five-year draft PTN trial program was developed by the TWG. The five-year plan intends to ensure that regions with different pasture-based

industries and agroecological zones have a continuous output of data from the PTN across varying species typically sold in the region as defined by commercial sales.

4.9.2 Results

4.9.2.1 Agroecological zones

Noting the agroecological zones outlined in Making Better Fertiliser Decisions for Grazed Pastures in Australia, Figure 3 maps completed and approved PTN trial sites between 2014 and 2022 across various pasture species within these zones, with some locations testing multiple species simultaneously. Active trials will eventually extend the PTN data set into three new zones once the TWG approves the current trials at their completion.



Legend

O, completed trials.

△, active trials in new locations.

Figure 3. Completed and approved PTN trials of all tested species between 2014 and 2022 located within the pasture-based agroecological zones identified around Australia as defined by climate, pasture types and irrigation. Each trial location may contain multiple trials, with 64 trials in total represented at the specified locations above. The map includes active trials in new regions. Map Adapted from *Gourley et al. 2007*.

4.9.2.2 Five-year plan

A five-year plan was developed (Appendix 6.8), encompassing the location of trials and species between 2023 and 2026. The current plan does not consider any expansion of regions/species that are currently not serviced due to the limited capacity for seed companies to fund these without additional external support. It also does not consider the increased range of pasture species that could be tested, and the possibility of new regions constrained by quality trial co-operators. The current plan has been built into the next five-year Phase 3 Business Plan for PTN.

A new plan will review and revamp the current 5-year plan during the second half of 2023.

4.9.3 Conclusion

PTN uses defined agroecological zones to establish the location of trials, with the current 2022 and 2023 programmes expanding into new regions beyond those mapped. Some of the most considerable constraints in growing into new regions are quality trial co-operators with pasture expertise and the resources available within PTN to train new trial co-operators.

4.10 Objective 10 – Develop a longer-term (5-year) business plan for PTN with in principle agreement of partners based on the objectives established in the short-term agreement.

ACHIEVED: A five-year plan has been submitted to MLA to aid in securing a long-term investment into the PTN to continue the program.

4.10.1 Methodology

4.10.1.1 Five-year business plan

The PTN developed a five-year business plan to support the PTN in securing a five-year funding agreement with MLA to sustain the programme. The key targets for the PTN regarding phase four of the PTN funding agreement were:

- Continue current and expand future trial activity across temperate Australia.
- Greater investment in building the profile of the PTN to its target audience.
- Provide security to the industry on the programme's continuance after continuous short-funding cycles.

4.10.1.2 MER and communication plan

Historically, the organisational adoption strategy has been passive, through participating seed companies focused on using this data through their marketing teams. In 2022, the CWG was formed to leverage forage-connected industry stakeholders volunteering to guide the PTN on extracting a greater value of the PTN data for producers for greater adoption and impact.

The CWG has assisted in creating and eventually endorsing the PTN Monitoring and Evaluation Plan (Appendix 6.7) (Section 3.7).

Further, a communication strategy was developed, reviewed, and endorsed by the CWG in early 2022 (Section 3.6), as in Appendix 6.6.

4.10.1.3 PTN value proposition

Former PTN acting EO, Mike Gout, reviewed various data sources to comprehend the impact of the PTN on the Australian red meat sector; an analysis was conducted of the potential value to red meat production from growers shifting from older common (public) varieties or poorer performing proprietary varieties, compared to proprietary varieties that have shown to be better performers from PTN trials.

The assumptions used to develop the value of the PTN and data in Table 5 and Table 6 are sale volumes (kg) of various species from seed companies operating in Australia. The ASF and its members own this commercially sensitive intellectual property for internal uses and not for distribution.

Using total volumes of perennial ryegrass, tall fescue, phalaris, cocksfoot, clover and sub-clover sold between 2020 and 2021, each species' total area sown was calculated using the recommended average sowing rate. Using global seed company RAGT's forage quality calculator, the production area was used to decipher meat production gains between grazing of commons and propriety lines. Average red-meat prices of sheep and beef were used to identify the economic improvement in shifting to more use of elite proprietary varieties in the red-meat sector feedbase.

Other assumptions used in the calculation include the following:

- End-use production systems of sales for each species were accounted for, i.e., the breakdown of the use of each species in the dairy and meat production sectors from average in-house commercial sales data.
- The years (2020-2021) were selected for the stability of purchasing post-drought.
- The value of production gain of one-year pastures (annual species) and perennial species was set at three (3) years of productive life.

This data was then used to analyse the return on investment (ROI) to MLA through their investment in the PTN programme.

4.10.1.4 Field day protocol

During 2023, the PTN, its stakeholders and investors will restrain from directly hosting field days while the organisation develops a communication strategy, as some PTN stakeholders are concerned that field days must be run in a way that equal opportunities exist for all PTN stakeholders. Therefore, the strategy will address these concerns, including identifying the target audiences, the messages to be communicated and how to engage with the audience. Field days will enormously benefit from these discussions in future seasons.

4.10.1.5 Data transfer to MLA protocol

A joint business Standard Operating Procedure between MLA and PTN was developed to encapsulate the data preparation and uploading process for data from trial co-operators to the MLA PTN eTool. The development of this document formalises the process and creates greater efficiency and transparency on the needs of both parties to upload approved datasets to the public.

4.10.2 Results

4.10.2.1 MER and communication plan

The previously developed Monitoring and Evaluation Plan (Appendix 6.7) and the corresponding actioned industry survey (Section 3.7) highlighted that the total value of the PTN has yet to be reached in supporting producers and consultants in making informed grazing forage cultivar selection decisions through independently-reviewed in-field regional production data. The summary from the CWG review on awareness and impact has highlighted the need for greater investment in marketing and extension of PTN and an increase in the number of regional sites and species of interest.

The group also had significant input into the PTN communication strategy Appendix 6.6. The strategy has focused on defining the PTN core audience, delivering key messages on the value of the PTN, communication styles and platforms.

4.10.2.2 PTN value proposition

The PTN has a potential positive impact of around $208M annually (Table 4) on the broader red-meat industry through the shift in the annual sales of 'common' varieties if replaced with high-performing proprietary varieties. Much of these assumptions are based on commercially sensitive intellectual property held by the ASF.

Table 4. The potential annual value generated is a full industry uptake of improved 'proprietary' varieties and zero use of 'common' varieties.

Pasture type	*Best over poorer performing propriety lines*	*Best over commons*	*Total*
Annual pastures (one year)	$16,470,303	$60,977, 430	**$77,447,733**
Perennial pastures per year (three-year life expectancy)	$39,017,299	$91,456,006	**$130,473,305**
Total potential extra value / year	**$55,487,602**	**$152,433,437**	**$207,921,038**

Based on pasture seed sales data, the additional analysis demonstrates the value of improved proprietary seed sales in the five years from 2015/16 to 2020/21 (Table 5).

Table 5. Calculated returns from improved sales of proprietary varieties over the period from 2015/16 to 2020/21.

Varietal shift	*Potential*	*% shift*	*Extra value*
Value over commons	$152,433,437	6% (measured)	**$9,146,006**
Value over poorer proprietaries	$55,487,602	2% (minimum estimate)	**$1,109,752**
Total		**8% shift in volume**	**$10,255,758**

MLA's investment over PTN Phases 1 and 2 and where red meat producers have shifted their pasture varietal choice, the return on investment is $10.50 for every dollar MLA has invested in PTN (Table 6). Unfortunately, it cannot be obtained how much of this shift has been due to PTN instead of company marketing. But, whilst companies will also be marketing the poorer performing and

common varieties, more effort is put into those performing strongly in PTN trials. In addition, PTN results are being used by seed companies as detailed in their survey response, with 39 seed company staff using PTN data regularly to promote their varieties and a further 27 staff using it sparingly.

Table 6. MLA Return on Investment.

Project	*Investment over project*	*Present ROI*
PTN Phase 1	$815,389	
PTN Phase 2	$161,266	
Total	$976,655	**$10,255,758**
ROI		**10.5: 1**

4.10.2.3 Future direction

There is a need to better comprehend the impact of the PTN with improved metrics of engagement and value, which future PTN projects can establish a baseline to quantify the program's impact on the industry.

A strategy that uses various marketing pathways and direct engagement with end-users and/or their advisors will strengthen the PTN's ability to promote the PTN brand and value. Introducing this focus to the program and the engagement monitoring tools would also be beneficial to quantitively understand the PTN's role and its significance to the red meat industry in the goal of informed forage cultivar selection for greater on-farm productivity.

4.10.2.4 Field day protocol

The current PTN field day policy (Appendix 6.3) reflects the current stance of the PTN concerning field days.

For the remainder of 2023, the PTN will continue to engage with industry stakeholders and investors to promote the work and value of the PTN. A vital discussion point of this activity will be whether field days are the best way to engage with advisors and, if so, what key messages will be delivered. In essence, the draft field day policy focuses on the following:

- Unblinding of commercial lines only.
- Signage of investing stakeholders to be present at the event.
- Sites that contain multiple species are desired to discuss the value of different species within a production system.

4.10.2.5 Data transfer to MLA protocol

The protocol (Appendix 6.5) was completed in February 2023 to support seamless data transfer from the PTN to MLA IT staff for uploading to the PTN eTool. The document explains the data requirements from the PTN for MLA to undertake the upload to the PTN eTool efficiently with all their information needs.

4.10.3 Conclusion

A five-year plan has been submitted to PTN, which has formed the basis for discussion for a multi-year funding agreement with MLA, outlining the value of the PTN.

Additionally, to support and enhance the efficiencies in communicating the value and output of the PTN, protocols have been developed to support the transfer of information to the MLA PTN eTool as well as a collective stakeholder position on field days and other communication avenues through a Monitoring and Evaluation Plan.

4.11 Key findings

The main outcomes from the third phase of investment by MLA into PTN have resulted in:

- A comprehensive revision of the PTN governance frameworks.
- Completion of previously active trials, the continuation of ongoing trials and the commencement of new trials across varying agroecological zones and species in temperate Australia.
- The PTN eTool has been updated to include recently completed trials with trial reports and make previous development lines that are now commercially visible in legacy trials according to their new commercial name.
- PTN has invested significantly in updated Project Management Information Systems, including adopting Smartsheet, SharePoint and a web portal to improve project and data management.
- Communication and industry engagement with the target audience is partly driven by an industry panel called the Communication Working Group. The CWG has instigated an industry survey, Monitoring and Evaluation Plan, and approved a Communication Strategy. Regular social media updates have recently commenced with a rapid increase in the number of followers on LinkedIn (over 70 followers as of May 2023).
- Evaluated the concept of creating a Forage Value Index for the red meat industry, which could bring efficiencies in delivering trials and drive improved buying decisions for target users of the PTN data.
- Using defined industry agroecological zones, the PTN has developed a 5-year plan establishing the species and locations to be tested across temperate Australia.
- A five-year business plan proposal to navigate the possibilities, investment needs and lifting the programme value to its target audience.
- Improved efficiency through developing a data transfer protocol from PTN to MLA for uploading to the PTN eTool.
- Creation of a policy on field days agreed to by PTN stakeholders.

4.12 Benefits to industry

To date, the PTN engagement has identified that the programme has had an impact both directly and indirectly, supporting producers through their advisors. According to the PTN internal value proposition assessment, MLA's investment over PTN Phases 1 and 2 has assisted red meat producers to shift their pasture varietal choice to improved 'proprietary' varieties with a return on investment is $10.50 for every dollar MLA has invested in PTN. Additional uptake of advanced pasture genetics is estimated to have an additional annual value of $190 million. In future seasons the PTN needs to work on greater relevance to more regions and cultivars and greater value in interpreting and promoting the data and program generally for greater adoption of improved cultivars for end-users.

5. Future research and recommendations

Future funding agreements between the PTN and MLA need to support and enable:

- Continuation of current and expand future trial activity across temperate Australia to increase relevance of the PTN to red meat producers.
- Greater investment in building the profile of the PTN to its target audience (both advisors and producers), leveraging the use of stakeholders and the CWG.
- Provide security to the industry on the programme's continuance after continuous short-funding cycles.

These investments will support sustaining the PTN and give confidence to the industry on a collegiate approach to encourage the adoption of improved cultivars through supporting end-users with informed buying decisions at time of sowing.

6. References

Gourley, C.J.P, Melland, A.R, Waller, R.A, Awty. I.M, Smith, A.P, Peverill, K.I, Hannah, M.C (2007) Making Better Fertiliser Decisions for Grazed Pastures in Australia. *Victorian Government Department of Primary Industries.*

7. Appendix

7.1 Technical Working Group (TWG) terms of reference

PTN Technical Working Group (TWG) TERMS OF REFERENCE

Contents

1 ESTABLISHMENT

The PTN Technical Working Group (TWG) has been established to provide strategic technical advice and recommendations to the PTN Executive Officer and to the PTN Board of Directors on specialist technical matters in relation to evaluation of pasture varieties and related activities. Such recommendations will assist the Board and EO in making optimal decisions on strategic and technical requirements of the PTN program relating to evaluation of pasture varieties and service provision.

2 FUNCTIONS AND RESPONSIBILITIES

2.1 GROUPS FUNCTIONS AND RESPONSIBILITIES:

- Provide objective strategic direction for continued improvement in the process of pasture variety evaluation through the Pasture Trials Network as well as contributing to setting priorities and work programs
- Specific taskforces may be convened by the PTN Board on the recommendation of the TWG to deal with specific technical issues.
- Provide specialist technical advice in relation to evaluation of pasture varieties through the Pasture Trials Network, including methodology, data standards, analysis, audits, sign-off, reporting and quality assurance.

2.2 ROLE OF INDIVIDUAL GROUP MEMBERS:

- To operate in a respectful, transparent, and objective manner
- To work toward outcomes that are in the interest of the pasture and livestock industries
- To act objectively in the interests of the PTN in their capacity as a TWG member, removing

potential commercial conflicts of interest.

- Attend monthly meetings as required and actively participating in the Group's work
- Provide relevant technical advice that takes advantage of the latest updates in pasture evaluation for the benefit of the Australian beef, sheep meat and dairy industries
- Ensure that membership of TWG has a focus on benefits to the Australian beef, sheep meat and dairy industries
- Oversee implementation of protocols for trial management and auditing to meet best practice pasture evaluation
- Assist in selection and development of core sites for trialling relevant species in new trials each year
- Develop other trial location and species requirements each year of the program to direct what trials should be implemented
- Review trial and audit protocols annually and adapt these when and where required
- Identify and review potential trial operators to ensure capability and likely protocol compliance
- Review seasonal pasture production data at end of each season to ensure adherence to protocols and propose any corrective actions
- Oversee the audit process to ensure that there is consistent application of trial protocols by trial operators
- Ensure that the trial design maximises statistical advancements and reporting
- Provide recommendations to project partners regarding the required research opportunities to be investigated, based on the core business of conducting pasture evaluation trials and addressing constraints to effective conduct and validity of the reporting of results
- To continually seek to improve the processes, trial management, assessment and robustness of data being signed off for publication.

2.3 OUTSIDE OF TWG ROLE AND RESPONSIBILITIES

To ensure that the TWG is clear on its roles and responsibilities and to ensure time is not wasted in TWG meetings, the following areas are outside of the role and responsibilities of the TWG:

- PTN Governance
- Negotiations with RDCs, including their use of PTN data
- PTN Finance and Budgets

3 SUB-GROUP

The TWG may establish standing or ad hoc sub-groups and the EO must approve their Terms of Reference, which must be constructed to ensure consistency and coordination of overarching TWG functions. The role of the sub-group must be consistent with the role of individual TWG members. The sub-groups will be convened when there is a requirement for intensive working groups to complete activities such as development of new protocols, review of old protocols, meetings with trial operators etc. Specialist external advice may be sought by sub-groups when required. The sub-group must report findings to the EO for review by TWG.

The TWG must consider and review reports presented by its sub-groups and be responsible for monitoring and evaluating each sub-group's activities based on their responsibilities and functions. The TWG must view and approve all technical and advisory material compiled by the sub-group.

4 REFERRAL OF MATTERS

The Group may refer any unresolved items to the PTN Board for discussion, consideration and/or action. In this instance it is the role of the EO to raise issues for discussion in a PTN Board meeting.

5 MEMBERSHIP AND TERMS OF OFFICE

The PTN Technical Working Group shall be comprised of:

- Nominated PTN member representatives – each participant company may nominate one representative, but they must have the technical capacity to provide input to the meeting. One representative per company membership will be permitted or if shared responsibility within a company, only one vote will be allowed per company representative in the event that more than one is present.
- A maximum of three specialised technical advisory pasture research representatives, that may come from public or private sector (but non-seed company)
- MLA and DA shall each have a seat on the TWG,
- Sub-Group members will consist of a smaller number of TWG members as nominated by the EO.

6 CHAIR

The Group will be chaired and convened by the PTN Executive Officer. If the EO is unavailable to chair /convene a meeting, a nominated member of the PTN TWG is eligible to stand as chair for the duration required.

The Chair shall serve for the length of contracted duration determined by the PTN Board of directors.

7 VOTING AND DEBATE RIGHTS

Consensus should be aimed for after debate around issues on the agenda. Where consensus cannot be reached, a vote demanded on a matter must be taken when and in the manner the chairperson directs. The matter must have been submitted in the agenda for decision and must be decided by vote. Each member present has one vote, and therefore any members not present will accept the decisions made by those TWG members present. The chair (EO) is not entitled to cast a vote. The result of the vote is finalised during the resolution of the meeting at which the vote is demanded.
Where consensus can't be reached, a matter will be carried when 70% majority vote has been achieved. An objection may be raised to the qualification of a voter only at the meeting at which the vote objected to is given or tendered. The objection must be referred to the chairperson of the meeting, whose decision is final.

8 PROXIES TO MEETINGS

Members of the TWG can nominate a proxy to attend a meeting if the member is unable to attend. Where possible, the Chair will be informed of the substitution at least 24 hours prior to the scheduled meeting.

The nominated proxy will provide relevant comments/feedback about the attended meeting to the TWG member they are representing.

9 REMOVAL OF A MEMBER FROM OFFICE

The Group may terminate a person's membership for misconduct by a vote of two-thirds of those present at a Group meeting called in accordance with these terms of reference, and for which due notice of the motion to terminate the person's membership has been given.

A person whose membership has been terminated may apply to the PTN Board to have their membership reinstated.

10 QUORUM

The quorum for a Group meeting shall be 50% of the membership (including the EO). Where a loss of quorum is identified, the meeting may be adjourned until a time the Chair determines. Any matters for decision considered when the meeting is inquorate must be subsequently ratified at the next Group meeting before those decisions can be actioned.

11 CONFLICT OF INTEREST

Group members are required to declare to the Chair any real, perceived, or potential conflict of interest they may have with any item on the Group's agenda.

If the Chair or Group deems a member to have a conflict of interest in a matter before the Group, the member will be excused from TWG deliberations and will not take place in any voting where decisions are required.

12 MEETINGS

Group meetings may be held face-to face, by telephone, videoconference, or other electronic means. Group meetings shall be held monthly, however additional meetings may be scheduled if required.

Group members are required to fully prepare for each meeting, read the documentation in advance, and make every reasonable effort to attend each meeting.

13 MEETING TECHNICAL GUESTS

Technical advisory guests are invited with the Chair's prior permission and when items on the meeting agenda require further technical advice from outside the Group.

Guests are entitled to see and hear the proceedings of the meeting but have no voting rights and no right to speak at meetings, unless invited to do so by the Chair. Guests must leave the meeting when requested by the Chair, or if any matters are to be considered in closed session.

14 AGENDAS AND MINUTES

Agendas and associated documentation will be distributed five working days before the meeting. Members will be notified by email of the location and availability of material. Members are encouraged to bring laptops, iPads or similar to the meetings and view the agenda online during the meeting.

Only with the Chair's permission will late papers or the tabling of papers be accepted.

Minutes are to be prepared from each meeting. The Chair will review the draft minutes and action sheet of each meeting, after which, will circulate the documents to all Group members and include them in the agenda papers for the next meeting.

15 EVALUATION AND REVIEW

To ensure the Group is fulfilling its duties, the EO and the TWG will undertake an annual self-assessment of its performance against these terms of reference. The EO will compile the findings of the annual self-assessment and review the Terms of Reference every two years and provide any recommendations to the PTN Board.

7.2 Communication Working Group (TWG) terms of reference

PTN Communications Working Group (CWG) TERMS OF REFERENCE

Contents

1 ESTABLISHMENT

The PTN Communications Working Group (CWG) has been established to develop and implement a communication and extension plan. They will also provide advice and recommendations to assist the PTN Executive Officer and the PTN Board in making decisions to effectively extend pasture evaluation information to industry and end user livestock producers.

2 FUNCTIONS AND RESPONSIBILITIES

2.1 GROUPS FUNCTIONS AND RESPONSIBILITIES:

- Contribute to the development and implementation of a communications plan that will increase the Awareness, Knowledge, Skills and Confidence of advisors in application of objective measures of seasonal pasture productivity to assist pasture purchase decisions.
- Provide advice on the establishment of communications processes that can be used by all participants in the project including newsletters emails, workshops and social media.
- Delivery of key contacts to be used in the project including Agri business, private sector consultants and staff associated with provision of improved pasture management information, to enable the delivery of the PTN extension plan.

2.2 ROLE OF INDIVIDUAL GROUP MEMBERS:

- To operate in a respectful, transparent and objective manner
- To work toward outcomes that are in the interest of the pasture and livestock industries
- Attend meetings as required and actively participating in the Group's work
- To liaise with industry and partner organisations to organise opportunities to extend or help facilitate the extension of pasture evaluation information from the PTN program.
- Promote awareness and benefits PTN can provide to the pasture industry including seed

companies to encourage membership.
- Support the implementation of the communications plan to promote the PTN to meet its performance targets.
- Support the development of communications and extension material to that promotes PTN trial outcomes with clear messaging and branding.

2.3 OUTSIDE OF CWG ROLE AND RESPONSIBILITIES

To ensure that the CWG is clear on its roles and responsibilities and to ensure time is not wasted in CWG meetings, the following areas are outside of the role and responsibilities of the CWG:

- PTN Governance
- Negotiations with RDCs, including their use of data
- PTN Finance and Budgets
- Technical advice and recommendations pertaining to the operation of the PTN program (TWG)

3 REFERRAL OF MATTERS

The Group may refer any unresolved items to the PTN Board for discussion, consideration and/or action. In this instance it is the role of the EO to present the paper for discussion in a PTN Board meeting.

4 MEMBERSHIP AND TERMS OF OFFICE

The PTN Communications Working Group shall be comprised of:

- RDC representatives – one person per RDC.
- Specialised communication and extension pasture research representatives including pasture extension organisations
- Any person/s that have a focus on the delivery of pasture varietal information to the end user (producers), including but not limited to, rural retail groups and agronomists
- Members of seed industry with marketing and communications expertise

5 CHAIR

The Group will be chaired and convened by the PTN Executive Officer and/or the PTN communications support officer. If the EO is unavailable to chair /convene a meeting, a nominated member of the PTN CWG is eligible to stand as chair for the duration required.

The Chair shall serve for the length of contracted duration determined by the PTN Board of directors.

6 DECISION MAKING

The CWG's key responsibility is to work in advisory capacity. As such voting on relevant matters will potentially be irrelevant. However, where decision on a matter is required, consensus should be aimed for after debate around an issue. Where consensus can't be reached, a decision will be agreed when a majority vote has been achieved.

7 QUORUM

The quorum for a Group meeting shall be five members (not including the EO). Where a loss of quorum is identified, the meeting may be adjourned until a time the Chair determines. Any matters for decision considered when the meeting is inquorate must be subsequently ratified at the next Group meeting before those decisions can be actioned.

8 CONFLICT OF INTEREST

Group members are required to declare to the Chair any real, perceived or potential conflict of interest they may have with any item on the Group's agenda.

If the Chair or Group deems a member to have a conflict of interest in a matter before the Group, the member will be excused from CWG deliberations and will not take place in any voting where decisions are required.

9 MEETINGS

Group meetings may be held face-to face, by telephone, videoconference, or other electronic means. Group meetings shall be held monthly, however additional meetings may be scheduled if required.

Group members are required to fully prepare for each meeting, read the documentation in advance, and make every reasonable effort to attend each meeting.

10 MEETING TECHNICAL GUESTS

Advisory guests are invited with the Chair's prior permission and when items on the meeting agenda require further specific advice from outside the Group.

Guests are entitled to see and hear the proceedings of the meeting but have no voting rights and no right to speak at meetings, unless invited to do so by the Chair. Guests must leave the meeting when requested by the Chair, or if any matters are to be considered in closed session.

11 AGENDAS AND MINUTES

Agendas and associated documentation will be distributed five working days before the meeting. Members will be notified by email of the location and availability of material. Members are encouraged to bring laptops, iPads or similar to the meetings and view the agenda online during the meeting.

Only with the Chair's permission will late papers or the tabling of papers be accepted.

Minutes are to be prepared from each meeting. The Chair will review the draft minutes and action sheet of each meeting, after which, will circulate the documents to all Group members and include them in the agenda papers for the next meeting.

12 EVALUATION AND REVIEW

To ensure the Group is fulfilling its duties, the EO and the CWG will undertake an annual self-assessment of its performance against these terms of reference. The EO will compile the findings of the annual self-assessment and review the Terms of Reference every two years and provide any recommendations to the PTN Board.

7.3 PTN Field day policy

PTN FIELD DAY POLICY

Version: Feb23.v1

PURPOSE

The Pasture Trial Network (PTN) coordinates a network of variety evaluation trials across temperate Australia to support productivity gains through improved cultivars across key grazing production zones.

Communication of the purpose, function, and value of the PTN trials to the broader industry to support program awareness, industry stakeholders, and improved pasture agronomy is central to adopting the PTN trial outcomes. The industry should use the trials as objective seasonal pasture production data to inform purchase decisions.

STRATEGY

- **The PTN will withhold from hosting field day events during 2023 as the program evolves its systems and develops a communication strategy plan.**
- Future field days are to be aligned to core regional sites selected for field days to align to the conditions below as accepted by the PTN Technical Working Group (TWG), Communication Working Group (CWG) and PTN Board.
- Target audiences include, but are not limited to:
  - An advisor who wholesales information to clients
  - Agribusiness – awareness of PTN and benefits
  - Producers in temperate Australia
  - Seed resellers – that commercially sell seed to producers independent of seed companies.
- At a minimum, the number of attendees to be recorded and which aspect of the above industries they best align to.

SITE SELECTION

Criteria for trials that can be selected for active field day input are to align to:

- Trials operated by independent trial co-operators to demonstrate no perceived bias from the industry.
- Sites are to have low to no pest issues that impact the quality of the trial.
- Well presented
- Ease of access and safety for attendees to park and transverse the site

FIELD DAY TIMING

The event's timing is strongly recommended to be held in Spring, ideally between September and November in most cases for all species. However, the event's timing can be varied to coincide with local key grazing constraints, for example, addressing the autumn feed gap.

It is recognised that some species may be at differing levels of 'maturity'' in plant development. The site is to be harvested between two (2) to three (3) weeks before the field day to ensure cut data is available for that period and a nutrient application is to occur between the harvest and field day.

The site is to be of tidy presentation, with low to no background weeds within the plot and surrounding buffers.

PTN FIELD DAY POLICY

Version: Feb23.v1

UNBLINDING OF PLOTS

Criteria of lines to be unblinded include:

- Only commercial lines are to be unblinded.
  All reps of a line are to be unblinded.
  - Breeder's lines are to be communicated as "breeder lines" with no inference supplied on the breeding organisation.

Unblinded plot signage for COMMERICAL LINES is to comprise of:

- Company name
- Cultivar name
- Ploidy (diploid or tetraploid) where relevant

Unblinded plot signage for BREEDER LINES is to comprise of:

- A label stating Breeder Line
- Ploidy (diploid or tetraploid) where relevant

FIELD DAY COMMUNICATION PLAN

During 2023, the PTN will work with industry stakeholders and investors to develop a communication plan that will include the focus and key points at PTN linked-field day events.

General field day discussion points to consider in future field days potentially include the following discussion points:

- Background to the PTN and its formation, including the transition from PVTN to PTN and objectives.
- Recognition of funding stakeholders
- The PTN tool, seasonal data and can be used to support purchasing decisions
- The general operation of the trials and quality expectations
- Agronomy of pasture systems:
  - Value of improved cultivars with no focus on cultivar specifics.
  - Value of alternative species if trials are present, for example, the role of cocksfoot, fescues etc., within the local grazing systems.
  - Local pests or issues have arisen during the trial.

In addition to the PTN program, make potential awareness of:

- Variation in flowering timing and the impact of grazing quality in all species.
- What is the value of endophytes in assisting pasture persistence and variation in animal impact?
- Consultants can discuss and interpret the data and trial value in a local productivity performance context.

All delivery materials must:

- Reference the MLA eTools platform and Dairy Australia FVI programs, and **must** be included on handouts or, at minimum, made available to producers.
- Unblinded cultivars are to be identified by markers within the ground.

7.4 PTN eTool data transfer protocol

Version: Apr23.v1

Pasture Trial Network (PTN) eTool Submission Protocol

This procedure outlines managing the data exchange between PTN and MLA and its subsequent upload to the MLA PTN eTool.

1. *PTN Data Exchange to MLA*

1.1 Raw data management

The PTN has a transparent data management system, with data accessible to program investors.

Trial co-operators upload data to the PTN portal post-harvest, which is immediately accessible to participating seed companies. Approximately fortnightly, uploaded data is reviewed by the PTN Executive Officer for quality and review of trial progress. Reviewed data is uploaded to the PTN Smartsheet project management system, which outlines trial progress and maintains a chronological data activity schedule. All investors have access to Smartsheet and can quickly track project progress.

These data management systems collectively allow data redundancy and access for investors to support their research needs.

1.2 Raw data review

Data received from trial co-operators is to be reviewed by the PTN Executive Officer (EO) to ensure completeness, accuracy, and compliance with the PTN protocol. Additional points the data must comply with include:

- *Data to be in an approved PTN template.*
- *Conditional formatting is activated to yield results.*
- *The following is available:*
  - *Soil tests.*
  - *Persistence data.*
  - *Yield data.*
  - *Fertiliser inputs.*
  - *Pesticide inputs.*
  - *Pest damage.*

Data with questionable compliance is to be reviewed by the PTN Technical Working Group (TWG) as an initial screen as a stop-go for further analysis. Any data shared with the TWG; development/breeder lines will remain coded.

1.3 Statistician submission

Reviewed data is to be submitted to the PTN-approved statistician. The statistician will review and extract the data into the statistical analysis package.

The reviewed data file will be directly sent to the statistician in a Microsoft Excel format within the formalised template with appropriate headers. Data can be checked to ensure compliance at: https://apexbiometry.com/apps/pasture-trial-data-checker/

The statistician will return an unblinded CSV file summarising harvest outputs and other statistical outputs. Data is to be reviewed by the PTN Executive Officer to ensure the following:

- *The number of analysed harvests aligns with the actual number of harvests.*

1.4 Peer-review

Analysed data will be prepared for group distribution before peer review by the PTN technical working group (TWG).

Tasks include:

- *Copy uncoded results and affix "sharing" at the end of the file title.*
- *Review the data and use the PTN blinding code instead of the participant breeder line for breeder lines.*
- *Duplicate the original file and send each participating company representative a list of their lines and standards, including breeder lines.*

Share the sharing file with the TWG for peer review and discussion at the next TWG meeting to confirm approval.

Feedback from the review is conveyed to the statistician.

1.5 MLA Submission Preparation

If data is approved, in preparation for submission to the MLA eTools, ensure below is available in the web file or as an appendix.

- *Trial name.*
- *Site name.*
- *pastureID.*
- *Date sown.*

The web file is to include the following headings:

- *IDCode.*
- *Company.*
- *Species.*
- *IDName.*
- *Testline.*
- *YearSown.*

The field report will be completed in the MLA report template, which contains additional data to support the MLA technical staff, including GPS coordinates.

The final submission to MLA, the statistician, is to generate a WebTool Master file.

1.6 Approximate timelines.

The table below outlines the approximate target dates for data upload to the MLA eTool. These guides note seasonal variability that can be experienced year to year.

- *Per the table below, the current procedure aims to achieve bi-annual data uploads.*
- *The statistical analysis aims to be completed approximately one (1) month before data uploads to the MLA eTool.*

The target dates for data uploads are as below:

Species	Trial Life (years)	Target Tool update Date
Annual ryegrass	<1 years	March 1st
Italian ryegrass	<2 years	March 1st
Perennial ryegrass (Autumn sowing)	3 years	September 1st
Perennial ryegrass (Spring sowing)	3 years	March 1st
Tall fescue	3 years	September 1st
Cocksfoot	3 years	September 1st
Phalaris	3 years	September 1st
Lucerne (Autumn sowing)	3 years	September 1st
Lucerne (Spring sowing)	3 years	March 1st
Sub clover	3 years	September 1st
White clover	3 years	March 1st

1.7 PTN Member Data Accessibility

Approved data must be unblinded, including internal development/breeder lines and the original data set.

Data will be uploaded to the PTN portal and in the appropriate sown year folder within the completed trials tab.

7.5 PTN data transparency policy

Data Transparency

PTN trials are to be delivered with integrity and professionalism, with all lines submitted to be managed scientifically and without prejudice or bias across the trial(s).

A. *Commercial Lines*

All commercial lines submitted to the PTN are to be made transparent to all engaged persons involved with the delivery of PTN trials, including, but not limited to:

- *PTN Executive Officer*
- *Trial co-operators*
- *PTN Contract Statistician*
- *MLA PTN Portal Manager*
- *PTN TWG*
- *PTN CWG*

Parties outside the PTN, i.e., those outside the delivery of the trial, are not to be privy to the commercial lines within the program beyond the respective species Standards (direct PTN-funded lines) once the trial is complete or the PTN Executive Officer approves a formal request.

Once a line has been made commercial by a participating Seed Company, the line cannot be removed from the PTN system or returned to being coded.

B. *Breeder Lines*

Breeder or development lines, i.e., not commercially released lines, are to remain blinded. Ploidy, endophyte, dormancy, and company name are to remain visible for all parties in the information shared.

The participating seed company will receive a matrix for submitted breeder lines and the corresponding PTN code to ease the interpretation of blinded breeder lines. If, in the instance, the trial co-operator is also a program participant with breeder lines at sites being delivered by the participant. In that case, these lines submitted by the participant are to remain blinded till the end of the trial to manage perceived conflict.

C. *Trial Completion*

Upon trial completion and approval by the TWG for release, all raw data will be unblinded, including breeder lines, and made available to all invested parties, including the participant's name and all data mentioned above.

D. *Update of Breeder to Commercial Lines*

An annual call to PTN participants is to be made to capture the commercial name of formal breeder lines to support the update of the PTN eTool.

7.6 PTN communication strategy

PASTURE TRIALS NETWORK

Pasture Trials Network - Communication Strategy
October 2022

Where does the PTN currently stand?

There needs to be more awareness in the Australian pasture and broader agriculture industry of the Pasture Trials Network (PTN).

The Meat and Livestock Australia (MLA) milestone survey, recently distributed in 2022, provided insight into the current market awareness of the PTN.

Key points highlighted from this survey were:

- General lack of awareness for the PTN outside of those involved directly or indirectly
- The total value of the PTN program is not fully recognised and understood by the industry.
- Data communication is delayed for end users to implement and make timely, informed pasture purchase decisions.

Given that the PTN and the previous Pasture Variety Trial Network (PVTN), Pasture Improvement Initiative (PII), and Pastures Australia have been running for almost two decades, a clear need exists for more awareness around the program and its value proposition.

Considering the length of time the program has been operating with minimal marketing and communication of its benefits, the main communication activity for PTN will be 'launching' it to the current market/industry stakeholders.

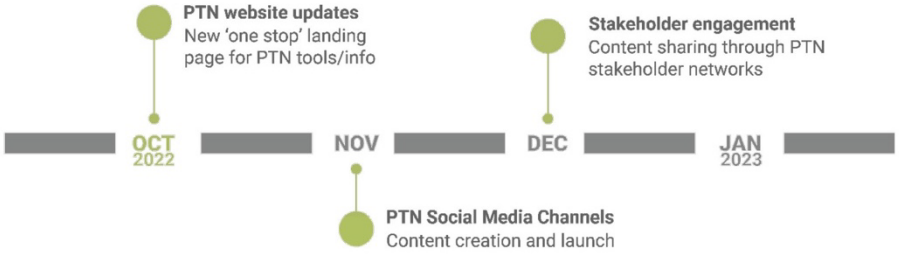
How will PTN 'launch' to the current market?

Through an integrated communication strategy and the development of a communication network, the PTN is to increase industry and end-user awareness of the PTN program and its fundamental value proposition of "making informed sowing decisions to improve producer productivity."

This goal will be achieved through the following:

- Improvement of the PTN website before the end of 2022 (developed in October, launch by December)– standalone landing page including MLA and Dairy Australia (DA) links on the front page, social media links, relevant industry news feed (i.e., DA or MLA news).
- Creation of PTN social media accounts, LinkedIn, Facebook, and Twitter; and establish a more substantial online presence by the 4th quarter of 2022 (Creation October, promotion November).
- Development and implementation of a regular communication schedule for distribution through industry channels and digital channels by the 4th quarter of 2022 (November/December).

Timeline for deliverables



Pasture Trials Network – Communications Strategy – Developed: October 2022

Who is the target audience/s for the communication strategy?

The initial focus of PTN communications is to target advisors and industry organisations rather than end users. By targeting this group directly, they can then indirectly communicate the PTN value to producers/end users. Initial target audiences include, but are not limited to;

- RDCs: DA MLA, AgriFutures, Australian Wool Innovation (AWI).
- Resellers & Sales advisors: consultants within larger companies.
- Independent consultants and extension officers.

What is the communication plan?

The initial communication plan will work to achieve the goal set out in 'launching' the PTN to the current market.

Key messages

- PTN offers independent, rigorous forage/feed base variety performance information.
- PTN data stems from;
  - over a decade of trial data and research.
  - a substantial range of pastural trials across temperate Australia.
  - independent trials without commercial influence.
- PTN data and information is FREE to all, with no cost to access information.

Communication style & delivery

- **Stage 1**
  - Communication will focus on industry awareness improvement, highlighting trial data available and upcoming valuable data – high use of photos/visual content of trials in progress, showing what PTN is and how it is run – put PTN in action!
- **Stage 2**
  - Content focused on end users (producers/farmers) – general pasture information, educational content, a mix of technical and entry-level knowledge target content.
- **Stage 3**
  - Regular content made available for stakeholders to share within their networks – easy-to-digest information, stock news and trial updates.

Communication Channels

Currently Available;

- **PTN Website** - https://pasturetrials.com.au/
  - Currently not set up for public-facing content, it requires updates to be user-friendly.
- **MLA Website/web tool** - https://etools.mla.com.au/ptn/#/
  - Public facing website with all PTN trial data and general information targeted to the red meat industry, managed by MLA web team.

In development;

- **PTN Website** – updated landing page, public-facing content.
  - Creation of a new set of pages aimed at advisors & producers with links to the MLA web tool, FVI, PTN social channels, relevant industry news links.
  - Update images and graphics (currently has an outdated aesthetic).
- **PTN Social Media channels**; LinkedIn, Twitter, Facebook.
  - Social media hashtags, audience targeting and network research, are now in development.

Stakeholders support an action plan

PTN Team – EO and media manager; Trial cooperators, MLA, and DA web teams.

7.7 PTN Monitoring and Evaluation plan

PTN Monitoring and Evaluation Framework

PTN Monitoring & Evaluation Framework

M&E Plan Prepared by:

Jo White
Pasture Trials Network.
jowhite@pasturetrials.com.au

Contents

Introduction

This document presents the monitoring and evaluation plan for phase three of the MLA PTN collaborative project (P.PSH.2138) of the PTN Program. The M&E Plan is designed to summarise and organise the elements of the program evaluation.

This evaluation will focus on the effectiveness and reach of the PTN program tools to communicate the message that is designed to lead to the desired increase in awareness and perceived value of PTN to end users and producers.

The evaluation will be conducted by PTN staff.

This document commences by describing the issue and program and follows this by presenting the monitoring and evaluation (M&E) plan.

Background

A key problem limiting gains from pasture improvement in Australia is that livestock producers do not have access to comprehensive information on the merit of pasture varieties. Differences in the conduct of trials and reporting standards for trial information across seed companies do not readily enable a reliable comparison of trial data. The Pasture Trials Network (PTN) has developed a pasture trialling program to support livestock producers, advisors, and supply chain stakeholders to make more informed decisions about pasture variety selection, a key driver of improved livestock productivity, sustainability, and profit.

The PTN program is co-funded by contributing seed companies, Dairy Australia (DA) and Meat & Livestock Australia (MLA). As a result of this program, objective evaluation of pasture varieties that are commonly used by beef, sheep meat and dairy producers is made publicly available.

Pasture Trials Network Program

The Pasture Trials Network project supports livestock producers, advisors, and supply chain stakeholders to make more informed decisions about forage variety selection, which is a key driver of improved livestock productivity, sustainability, and profit. As a result of this program, objective evaluation of forage varieties that are commonly used by beef, sheep meat and dairy producers are made publicly available.

Initial evaluation from producers, advisors and seed companies indicates the benefit of PTN to the Australian red meat and dairy industry is increased forage productivity through the selection of better-performing cultivars, however, this has not been documented, and the program has not yet established a baseline for industry benefit or awareness. Previous work has focused primarily on generating a trialling structure, analysing, and delivering objective information to producers.

Pilot Project Objectives

This interim project enables the continuance of PTN trials while allowing the review, consolidation, and improvement of core activities to better service the red meat and dairy industries with the delivery of:

1. varietal information from core regionally relevant trial locations based on agroecological zones.

2. trials that include a range of pasture species relevant to producers and,
3. timely information to producers through the implementation of a newly developed communications and extension plan initially with the publishing of updated trial site information and data.

PTN Program under evaluation

The current PTN project (P.PSH.2138) aims to determine the status of the program and develop an improved PTN communications and extension framework and operational processes that allow the timely delivery of pasture evaluation information to the industry. This M&E plan aims to evaluate industry awareness, attitude, opportunity, and value of the PTN program by industry across southern Australia. A baseline of current situational status will be provided, followed by a follow-up assessment to assess improvement /change.

Industry awareness of the PTN program is uncertain, and a baseline needs to be determined. Data dissemination occurs through MLA's eTool website; however, no analytics are available to determine traffic numbers and improvements / use over time. To date, all other extension and communications activities are irregular uncoordinated activities that occur indirectly through collaborating parties such as Dairy Australia, ASF and seed company media releases and trial site operator extension activities. However, the level of impact and exposure is unknown, with no metrics available. Examples of the current tools and communications channels include:

Communication Channel	Description
ASF communications	
Media releases	Via industry magazines such as Australian Dairy farmer, Rural Business
Seed Company media releases	Usually associated with positive trial results – eg "top performer in PTN trials 2011-14".
PTN Website (internal use only)	PTN has its own website (www.pasturetrials.com.au), however this site is for internal use only (data storage). It has since early 2021 acquired the domain: www.pastureimprovementinitiative.com.au. Full benefit and potential to use this domain to extend pasture information from PTN and collaborating parties has not been developed yet.
MLA website	https://etools.mla.com.au/ptn - sole platform for all PTN varietal trial data
DA - FVI	DA promotes PTN trials indirectly data collated for their FVI's is based on PTN trial data.
Field walks / field days	No current format where some trial operators allow small grower groups through the site, however interest is hindered by coding of varietal names in all trials.

Region and Industry Targeted

Current 5-year plans for PTN include the following regions and targeted industries:

Region	Primary segment	Secondary segment
Northern Tasmania (Cressy/Launceston)	Dairy	Meat/Wool
Northwest Tasmania (Smithton)	Dairy	
East Gippsland (HRZ) (Yarram / MID-irrigated)	Dairy	Meat/Wool
East Gippsland - Eastern Dryland) (Bairnsdale)	Meat/Wool	
Northeast Victoria -HRZ (Kiewa Valley)	Dairy	Meat/Wool
Central/NE Victoria (Benalla/Euroa/Seymour	Meat/Wool	
South Gippsland (Leongatha)	Dairy	
West Gippsland (Warragul/Ellinbank)	Dairy	Meat/Wool
Northern Victoria - irrigation (Goulburn Valley)	Dairy	Meat/Wool/Fodder
Western Victoria (Wimmera)	Meat/Wool	
Southwest Victoria (Terang)	Dairy	Meat/Wool
Southwest Victoria (Ararat)	Meat/Wool	
Southwest Victoria (Hamilton)	Meat/Wool	
Southwest Victoria (Warrnambool)	Dairy	
Southeast SA (Mount Gambier)	Dairy	
Southeast SA (Naracoorte / Bool Lagoon)	Meat/Wool	
South Coast NSW (Bega)	Dairy	Meat/Wool
Southern NSW (Holbrook/Howlong)	Meat/Wool	
Central NSW Highlands/Slopes (Goulburn/Orange)	Meat/Wool	
Southern NSW Slopes and Plains (Wagga Wagga/Young)	Meat/Wool	
North Coast NSW - (Scone/Taree/Hunter Valley)	Dairy	Meat/Wool
Northern Tablelands NSW (Armidale)	Meat/Wool	
Southeast QLD (Gatton)	Meat/Wool	
Southwest WA (Boyup Brook)	Meat/Wool	
Southwest WA (Busselton / Manjimup)	Dairy	Meat/Wool

Evaluation Focus and Methodology

Purpose

The project presents a valuable opportunity to determine the benefit of the PTN program to the industry and whether changes implemented within the current project improve the knowledge and value of the PTN program for the industry.

The purpose of the evaluation is to determine the:

- Current awareness and impact of the program in terms of value and benefit to the industry.
- Effectiveness of the program's communication and extension tools in reaching target audiences
- Reach of the program information through improved communication and extension methods.
- Degree of brand recognition for those that saw or heard the program communications.

Evaluation Audience

The following key evaluation stakeholders have been identified and documented in the table below, along with their interest in the evaluation.

Stakeholder	Companies Represented	Interest
MLA	N/A	To ensure the PTN program provides value and benefit to industry and provide metrics
DA	N/A	To ensure the PTN program is reaching industry
Seed Companies	RAGT, S&W SeedCo, Barenbrug, DLF Seeds, Cropmark, Upper Murray Seeds, Tasglobal, AGF Seeds, Vicseeds, Valley Seeds,	To ensure that producers, retailers, and industry are using the varietal information provided on the MLA website to drive consumer decision making for pasture varietal selection
Agribusiness	Nutrien, Elders, AgLink	To provide producers with most accurate information relating to pasture variety performance
Agronomists / pasture extension specialists.		To provide producers with most accurate information relating to pasture variety performance, increase pasture performance and persistence and farming system performance/productivity
Farm R, D & E Groups	Southern Farming Systems Evergreen Riverine Plains McKillop FMG	To provide producers with most accurate information relating to pasture variety performance Potential to be involved in running trials especially as they become unblinded to improve extension capacity

Industry Associations	Grassland Society of NSW Grassland Society of Southern Australia	To provide producers with most accurate information relating to pasture variety performance
Educators (Universities/ Ag Colleges)		Educate young agronomists, researchers etc on how pasture variety trials are conducted and current industry tools available for use

Evaluation Questions

The targeted evaluation audience will include all end users of PTN trial data such as producers, resellers, agronomists, educators and farming systems groups.

The following evaluation questions will guide the development of the Monitoring and Evaluation (M&E) plan that forms part of this document.

Evaluation Question
To what extent had producers in the targeted regions heard of the PTN program?
To what extent do end users value the information provided by the PTN program?
Which communication channels (including direct and indirect) were most successful in raising awareness and promoting the value of PTN to industry?
What is the self-reported change in attitude / awareness and perceived value of the PTN program to industry?

Evaluation Methods

The evaluation will use the following methods to answer the key evaluation questions and assess the program's effectiveness in meeting its objectives:

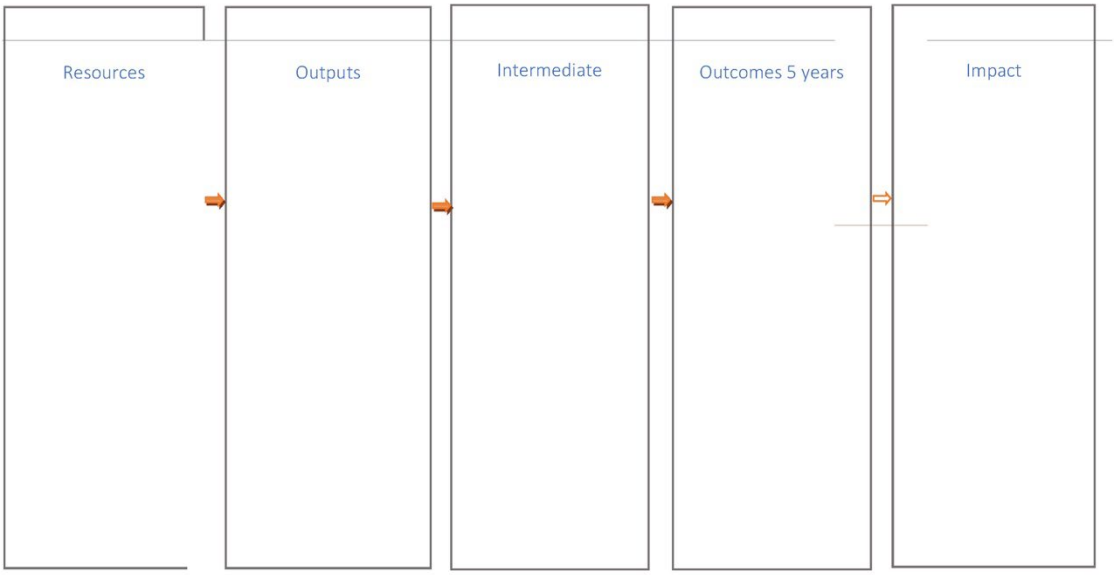
Method	**Description**
Survey	Targeted surveys will be sent out to key stakeholders where appropriate venues and audiences are identified.
Interviews	Interviews will be held with key project stakeholders for example retailers, farming systems groups, agronomists, and seed company representatives.
Website metrics	Website metrics from MLA website to be recorded initially to determine baseline and then at the conclusion of the project to determine effectiveness of the communication and extension plan
Meeting feedback	Field days/ meetings held by collaborators will be used as an opportunity to assess PTN impact through feedback forms.

Limitations

The following limitations are noted to impact this evaluation. These will be noted in the final evaluation report, and limitations assessed as material that will be highlighted regarding their impact on lessons and recommendations for improvement.

Limited timeframe for project change to demonstrate change in industry perception	The current project and the milestones associated with the monitoring and evaluation plan run for less than six months (three – check February milestone), which does not allow a great deal of time to establish a baseline and improve industry knowledge of PTN and demonstrate benefits.

Program Success Performance Criteria



Monitoring and Evaluation Plan

The monitoring and evaluation (M&E) plan is presented in the following table. It indicates the specific monitoring questions that will be used to answer the key evaluation questions, the relevant indicators, data sources or method to obtain the data, and the responsibilities for data collection.

Evaluation	Monitoring				
Broad Evaluation Questions	**Monitoring Question**	**Indicator**	**Data Source/Method**	**Responsibility**	**Timeframe**
To what extent had producers in the targeted regions heard of the PTN program?					
	Have you heard about the Pasture Trial Network (PTN)?	Yes/No Where, what	Survey	Internal / collaborating partners	12 months
	If Yes, where did you first hear about – what sources?	List communication channels	Survey	Internal / collaborating partners	12 months
	Are people aware of local / regional PTN trials currently running within their region?	Y/N	Survey	Internal / collaborating partners	12 months
	Have people visited the local regional PTN trials through field days/ walks?	Y/N	Survey	Internal / collaborating partners	12 months
	Have people visited/viewed the pasture varietal information available on the MLA /FVI website?	Y/N	Survey	Internal / collaborating partners	12 months
	Have you visited the Dairy Australia Forage Value Index Website?	Y/N	Survey	Internal / collaborating partners	12 months

Evaluation	Monitoring				
Broad Evaluation Questions	**Monitoring Question**	**Indicator**	**Data Source/Method**	**Responsibility**	**Timeframe**
To what extent do end users value the information provided by the PTN program?					
	Have you used the information provided by PTN to make pasture variety selections?		Survey	Internal / collaborating partners	12 months
	How do you rate the value of PTN in helping recommend or choose a pasture variety?		Survey	Internal / collaborating partners	12 months
	From the answer above, how could this be improved?		Survey	Internal / collaborating partners	12 months
Which communication channels (including direct and indirect) were most successful in raising awareness and promoting the value of PTN to industry?					
	Which communication and extension channels were used by PTN and collaborating partners to promote awareness?	List all channels		Internal / collaborating partners	12 months
	What was the frequency of use of these channels?	How many newsletters, media releases, quantify number	Metrics	Internal / collaborating partners	12 months

Evaluation	Monitoring				
Broad Evaluation Questions	**Monitoring Question**	**Indicator**	**Data Source/Method**	**Responsibility**	**Timeframe**
		of members reached			
	How many people viewed the MLA / PTN website?		Google metrics	Internal / collaborating partners	12 months
	How many people viewed the DA FVI website?		Metrics	Internal / collaborating partners	12 months
	How do people prefer to obtain information on pasture varietal selection recommendations?	List preferred communication channels (these might be different from how they currently receive information.	Survey	Internal / collaborating partners	12 months
What is the self-reported change in attitude / awareness and perceived value of the PTN program to industry?					
	Has there been a change in sales of leading varieties compared to older or lower performing varieties?	Metrics from seed companies	Interviews / focus group seed companies	PTN / Collaborating seed companies	2-5 years

Evaluation	Monitoring				
Broad Evaluation Questions	Monitoring Question	Indicator	Data Source/Method	Responsibility	Timeframe
	Has there been a change in the sales of leading varieties or a deference to pasture recommendations by PTN?	Metrics from resellers	Interviews / focus group – Resellers	PTN / Resellers	2-5 years

7.8 PTN 5-Year Trial Plan

PASTURE TRIALS NETWORK

PTN Core sites and Trial plan

Core Site Justification

- Core sites were determined based on industry representation (dairy, beef and sheep) within the agro-ecological zones defined by Gourley et al. 2007 in Making Better Fertiliser Decisions for Grazed Pastures in Australia (Figure 1).

- Where both dairy and beef/sheep industries occur within a single agroecological zone or different rainfall (high rainfall/dryland zones), multiple trial sites were proposed to ensure all industries were serviced (Table 3.).

- Improvements in site selection efficiency were made by defining a five-year draft PTN trial program. The aim of this five-year plan is to ensure regions with different industries and agroecological zones have a continuous flow of data (available upon request). This draft plan does not take into consideration any expansion of regions/species which are currently not serviced due to limited capacity for seed companies to fund these without additional external support. It also does not take into consideration increased range of pasture species that could be tested, and increased regions currently not serviced.

This plan is based on PTN's current capacity only and does not reflect its full capacity once Phase 3 has been completed and operational matters within PTN have improved allowing for easy expansion.

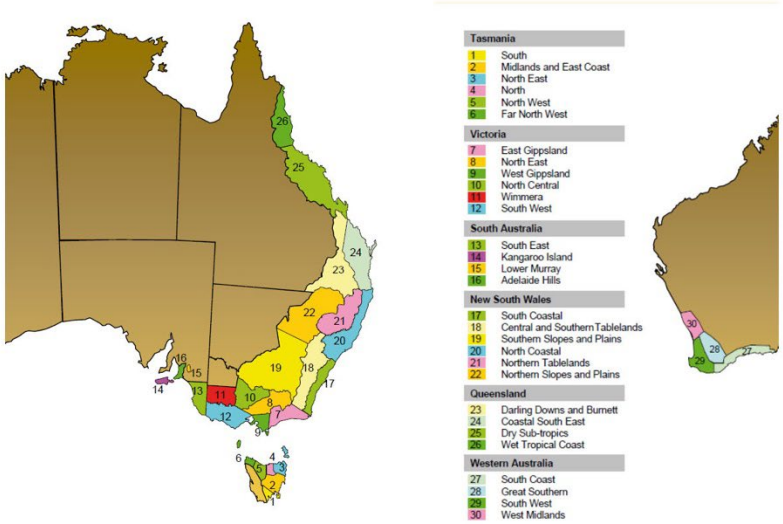


Figure 1. Agroecological Zones as defined by Goulter et al., 2007 in Making Better Fertiliser Decisions for Grazed Pastures in Australia.

Table 3. List of regions (and main industries) proposed to be serviced by PTN pasture varietal trials based on agroecological zones identified. Note - not all regions are proposed for sites

Map zone	Region	Primary industry	Secondary industry
4	Northern Tasmania (Cressy/Launceston)	Dairy	Meat/Wool
5	Northwest Tasmania (Smithton)	Dairy	
7	East Gippsland (HRZ) (Yarram / MID-irrigated)	Dairy	Meat/Wool
7	East Gippsland - Eastern Dryland) (Bairnsdale)	Meat/Wool	
8	Northeast Victoria -HRZ (Kiewa Valley)	Dairy	Meat/Wool
8	Central/NE Victoria (Benalla/Euroa/Seymour	Meat/Wool	
9	South Gippsland (Leongatha)	Dairy	
9	West Gippsland (Warragul/Ellinbank)	Dairy	Meat/Wool
10	Northern Victoria - irrigation (Goulburn Valley)	Dairy	Meat/Wool/Fodder
11	Western Victoria (Wimmera)	Meat/Wool	
12	Southwest Victoria (Terang)	Dairy	Meat/Wool
12	Southwest Victoria (Ararat)	Meat/Wool	
12	Southwest Victoria (Hamilton)	Meat/Wool	
12	Southwest Victoria (Warnambool)	Dairy	
13	Southeast SA (Mount Gambier)	Dairy	
13	Southeast SA (Naracoorte / Bool Lagoon)	Meat/Wool	
17	South Coast NSW (Bega)	Dairy	Meat/Wool
17	Southern NSW (Holbrook/Howlong)	Meat/Wool	
17	Central NSW Highlands/Slopes	Meat/Wool	

	(Goulburn/Orange)		
19	Southern NSW Slopes and Plains (Wagga Wagga/Young)	Meat/Wool	
20	North Coast NSW - (Scone/Taree/Hunter Valley)	Dairy	Meat/Wool
20	Northern Tablelands NSW (Armidale)	Meat/Wool	
24	Southeast QLD (Gatton)	Meat/Wool	
29	Southwest WA (Boyup Brook)	Meat/Wool	
29	Southwest WA (Busselton / Manjimup)	Dairy	Meat/Wool

PTN priority species

- Perennial ryegrass
- Italian ryegrass
- Annual ryegrass
- fescue (Continental)
- Fescue (Mediterannean)
- Cocksfoot
- Sub clover
- Lucerne (irrigated and dryland)

Note- not all species will be sown at all the core sites - should they?
Trial Plan to 2026 is located in Table 3.

Table 3. List of regions (and main industries) proposed to be serviced by PTN pasture varietal trials based on agroecological zones for 2022-2026.

Location	Region	State	Dairy	Meat	Annual ryegrass	Italian ryegrass	Perennial ryegrass	Tall fescue	Cocksfoot	Phalaris	Lucerne	Sub clover	Other legumes
Gatton	Lockyer Valley	QLD	80	20	2023, 2026								
Armidale	N Tablelands	NSW	0	100	2023, 2025	2023, 2025	2023	2023	2023	2023			2023 (white)
Taree	Mid N Coast	NSW	70	30	2023, 2024, 2026	2024, 2026							
Aberdeen, Scone	Hunter Valley	NSW	50	50	2023, 2025	2023, 2025					2023		
Cowra	Central West	NSW	10	90									
Wagga Wagga, Young	S Riverina,SW Slopes	NSW	0	100							2024		
Bega	S Coast	NSW	50	50									
Howlong, Holbrook	S Riverina,SW Slopes	NSW	20	80	2025			2025	2025	2025	2025	2025	
Dederang, Kiewa	North East	VIC	30	70	2024, 2026	2024, 2026	2024						
Shepparton, Tongala	N Irrigation	VIC	100	0	2023,24,25, 2026	2023,24,25, 2026					2024		
Ballarat	C Highlands	VIC	10	90									
Hamilton, Glenthompson	South West	VIC	20	80	2023	2023	2023, 2026	2026	2026	2026	2026	2026	
Warrnambool, Colac, Terang	South West Coast	VIC	80	20	2024, 2026	2023, 2024, 2026	2023, 2024, 2026	2024	2024	2024	2024	2024	2024 (white)
Ellinbank, Lardner	W Gippsland	VIC	80	20	2023, 2025	2023, 2025	2023, 2025						
Leongatha	S Gippsland	VIC	80	20		2024, 2026	2024, 2026						
Bairnsdale	E Gippsland	VIC	80	20	2023	2023	2023	2023	2023	2023			
Cressy	Midlands	TAS	10	90	2026	2026	2026	2026	2026	2026			
Meander, Elliott, Wynyard	North Coast	TAS	50	50	2023, 2025	2023, 2025	2023, 2025						

Naracoorte, Bool Lagoon	South East	SA	0	100				2024	2024	2024		2024	
Mount Gambier	Lower South East	SA	50	50									
Busselton,Boyanup,Dardanup	West Coast	WA	80	20	2025	2025							
Manjimup, Boyup Brook	South West	WA	10	90				2024	2024	2024		2024	

New Locations

Location	Region	State			Annual ryegrass	Italian ryegrass	Perennial ryegrass	Tall fescue	Cocksfoot	Phalaris	Lucerne	Sub clover	Other legumes
Orange, Goulburn	C & S Tablelands	NSW	0	100	2025	2025	2023	2023	2023	2023	2023	2023	
Benalla, Euroa, Seymour	North East	VIC	0	100	2025		2025	2025	2025	2025			
Horsham	Wimmera	VIC	0	100				2023	2023	2023	2023	2023	
Ararat	C Highlands	VIC	0	100	2024	2024	2023	2023	2023	2023	2023	2023	
Yarram	S Gippsland	VIC	50	50	2025	2025	2026	2025	2025				

Potentially Future Missing Locations

Location	Region	State			Annual ryegrass	Italian ryegrass	Perennial ryegrass	Tall fescue	Cocksfoot	Phalaris	Lucerne	Sub clover	Other legumes
Warwick	S Darling Downs	QLD	20	80									
Tamworth	North West NSW	NSW	10	90									
Canberra, Cooma	Monaro	NSW	0	100									
Woodside,Clare,Rosewothy	Hills & Fleurieu	SA	20	80									
Mount Barker	South Coast	WA	0	100									