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Auditing and Accreditation Program Scoping Project

Regional testing of pasture varieties – auditing and accreditation

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Abstract

Virtually all information available to farmers needed for the evaluation and selection of pasture cultivars comes from private seed company trials. Seed companies present conflicting messages and farmers, at best, view the information with scepticism. This project sought to develop an industry wide auditing and accreditation system for pasture seed company trials through an extensive collaborative approach with the seed industry. As a result of this process, a comprehensive set of protocols and processes for the both the conduct and then auditing and accreditation of trials has been developed. The adoption and implementation of the auditing and accreditation program would lead to the delivery of trial data to farmers that has been independently checked, has a high level of integrity and quality and can be trusted. This will underpin the education and development of discerning farmers, confident in the information they have at their disposal and capable of selecting and using advanced plant genetics.

Executive Summary

Background
Unlike in the grains industry, there are no independent pasture variety trial programs in Australia. Most information available to farmers concerning in the selection of pasture cultivars comes from trials run by private seed companies. There is a crisis of confidence in this information and a perception that the pasture seed market lacks integrity. This is reinforced every year when the seed companies issue their promotional material; each with their cultivar(s) represented as the best above all others. In the face of this, farmers have "turned off" and instead get caught up in simply purchasing seed that is readily available or cheap, without necessarily considering its quality, potential production or fit for purpose. Farmers are no longer sufficiently discerning.

Objectives
This project sought to work with the pasture seed industry in order to develop an auditing and accreditation program based on existing private seed company trials. Specifically the project sought to:

- Gain an understanding of the collective size and scope of the existing private seed company trials and identify the likely size of a future auditing and accreditation program
- Review existing trial protocols and where necessary extend or develop new protocols
- Identify additional measures that could be gained from these trials and the potential for "value adding" to existing private company trials
- Develop Trial Manager/Operator protocols and audit process
- Develop an audit and accreditation process for trials
- Investigate processes and challenges in the reporting and branding audited trial data
- Consider candidate methods for delivery of trial data to farmers
- Consider the Governance and Operational requirements of an auditing and accreditation program

Results and Discussion
Extensive discussion and collaboration with a range of private seed companies resulted in the development of a pasture trial Auditing and Accreditation Program (AAP) for private seed industry trials.

It was established that the national private company trial program contains an approximate total of 300 measured trials covering the main species of;

- Annual, Italian and perennial ryegrasses
- Tall Fescue
- Cocksfoot
- Phalaris
- Lucerne
- White cover and sub clover

Reviewing trial protocols revealed that although seed companies had experienced managers and operators, they had no always detailed the protocols and methods they used.

While additional measures that could be taken from private seed company trials were identified, it was made clear that seed companies believed that the market was NOT sufficiently educated to

make use of the additional information and that Dry Matter (DM) and persistence data was more than adequate at the moment.

An audit and accreditation process was developed for trial managers and operators as well as the trials themselves. This represents a significant change in the seed industry and although there is general agreement that something needs to be done, the reality of having someone check on companies and trials for the first time is confronting and will need to be worked through with some sensitivity.

The delivery and branding of information generated through the AAP was discussed extensively and guidelines and recommendations developed. The primary concerns were around IP issues, ability to market without (undue) hindrance, branding and the development of a brand, and the promotion of the program.

Benefits of the Auditing and Accreditation Program

This program can be viewed as but one plank that underpins a wide range of activities that need to occur in order for farmers to become more discerning and make better pasture selections. Ultimately we want farmers to make use of superior plant genetics in order to gain the most out of their management skills and animal genetics.

Discerning farmers (and advisors) actively seeking reliable and quality trial data to make decisions about what they use on their farm will result in a number of positives for both farmers and the seed industry generally, including:

- Better farmer returns from the use of more advanced plant genetics complimenting the advanced animal genetics and production systems
- Greater confidence in new plant genetics leading to increased renewal rates
- A re-focus of the pasture seed supply chain on delivering good quality plant genetics matched to the farmers production system RATHER THAN the frequently price driven focus
- A possible rationalisation of the options with fewer low value cultivars and a focus on cultivars that give greater farmer returns – leading to the circular feedback loop of better seed company returns and a clear signal for seed companies to invest in better plant genetics.
- The protection of both farmers and the seed market from the flooding of cheap, potentially inferior, overseas plant genetics with NO testing

Seed Company Position

All seed companies that contributed to the development of this program have indicated that while they have some concerns, they are interested in the program and would submit some trials for auditing. The key to greater involvement both immediately and in the longer term is the development and funding of a marketing and education plan.

Recommendation

It is recommended that, in collaboration with the Australian Seed Federation, the Auditing and Accreditation Program be implemented in 2010; that a significant investment is made into the development and promotion of a brand and, that all avenues are exercised in the promotion of the program.

Contents

1 Background

Unlike in the grains industry, there is no independent pasture variety trial program in Australia. The vast bulk of the information that is available for use by farmers in the selection of pasture cultivars comes from trials run by seed companies. There is a crisis of confidence in this information and a perception that the pasture seed market lacks integrity. This issue has been recognized at the highest levels within the seed industry (Australian Seed Federation) yet there has been little public movement on the issue.

Earlier work co-funded by Pastures Australia and various seed companies involved the bringing together of seed companies (co-funders) to jointly oversee a small number of trials run by an independent researcher. The program was a vehicle in which various industry issues could be canvassed and, where necessary, resolved in a collegiate manner. This level of communication and co-operation has not existed for quite some time.

One of the central recommendations to come out of these projects (still ongoing) was the development of a system which would:

- help restore farmers confidence in seed company trial data
- have high integrity
- help highlight the value of improved genetics (and the cost of poor genetics)

This project is the result of those recommendations. It builds on the past work of seed companies and Pastures Australia and presents auditing and accreditation processes for trials run by pasture seed companies and other organisations. It encompasses a suite of species including annual and perennial grasses plus legumes and, through better utilisation of the existing resource of seed company trials, seeks to significantly expand the amount of good quality data that famers can access in order to make better species and cultivar selections for their farms. Critically, this project actively engaged with the seed industry throughout the process.

2 Project Objectives

By 15 February, 2011, with agreement and in principle support from seed companies, develop an auditing and accreditation program based on existing seed company trials. The project will deliver to MLA protocols for conducting regional testing of pasture varieties, auditing processes of managers and sites, reporting and communication protocols for all trials that are part of the auditing and accreditation program and a governance structure.

The objectives can be broken down into a number of parts as follows:

- Site Inventory completed and candidate sites for auditing identified.
- Trial Protocols
- Identification of additional measures and the potential for “value adding”
- Develop a value proposition for the improved analysis of trials
- Trial Manager/Operator protocols and audit process
- Develop an audit and accreditation process for trials
- Processes for reporting and branding audited trial data
- Outline of Candidate methods for delivery of data
- Governance and Operational management of the auditing and accreditation program
- Costs of implementation (direct costs)

3 Methodology

A key aspect of this project was its engagement with the seed industry and specifically with seed companies in order to develop protocols, processes and structures that would be readily accepted by the industry. In short the following was undertaken in the conduct of this project:

- Review of APPEC and other similar trial protocols (NFVT – NZ, NAPLIP protocols)
- Extensive consultation with seed companies and representatives of the Australian Seed Federation (ASF) totalling 18 one-one meetings taking up to a full day each.
- Regular communication and discussions with those same people via phone and email
- Meeting with GRDC NVT program manager (Alan Bedggood).
- Provision of two rounds of draft reports on relevant sections to seed companies for feedback
- A group meeting with all interested seed companies invited where key issues were resolved and the future discussed.

This process represents a collegiate approach to the development of revised trial protocols along with the development of an Auditing and Accreditation program. It sought to bring everyone along in the discussion, respecting and answering to their individual company priorities and concerns while at the same time encouraging them to take an industry wide viewpoint and even make decisions as a collective.

4 Results and Discussion

4.1 Site Inventory completed and candidate sites for auditing identified.

Please refer to Appendix 1a and 1b for the full report.

An inventory of private seed companies was undertaken with mixed participation. A reasonable estimation of the Australian private seed company trial program was made and then used to identify the likely size and scope of any auditing program. Further to this seed company input was sought on any perceived holes in the market and then from this a short investment priorities paper was produced (appendix 1b) which could be used to guide future trial locations.

4.2 Trial Protocols

Please refer to Appendix 2.

The APPEC protocols were reviewed and after extensive consultation with the seed industry modified to account for any changes in technology and methodologies that have occurred over the almost 10 years since the APPEC protocols were last reviewed. Previous protocols did not offer any guidelines on methods of Dry Matter (DM) measurement and this has now been added to the new version. In addition to the APPEC protocols the New Zealand NFVT protocols were consulted and some elements incorporated. NAPLIP protocols for sub clover were consulted in the development of protocols for the trialling of sub clover which has not been included in the past.

Of all the seed companies interviewed, only one had documented trial protocols however they refused to share them. All other companies did not have a documented set of protocols that they could take down off the shelf and show to someone in an effort to describe how they run and measure trials. From that point of view, it is hoped that the industry will adopt these revised protocols, keep them accessible and use them in the training of new recruits.

4.3 Additional Measures and Value adding

Please refer to Appendix 3.

As part of the interview process with seed companies each were individually asked to consider additional measures that might add value or not add value to trial data supplied to farmers. Overwhelmingly DM production and persistence were still the key features. Additionally however seed companies suggested that in time a more mature market (which is not the case at the moment) would also value feed value parameters, animal production (predicted via modelling) and economic evaluations.

4.4 Value proposition for improved data analysis

This section is dependent on some work yet to be done by a consultant statistician and therefore cannot be reported on.

4.5 Trial Manager/Operator Protocols and Audit processes

See Appendix 4 – Auditing and Accreditation Manual.

There were mixed responses to this concept. Some companies felt that it was a very good idea while others were initially suspicious of the motives. The approach taken was that this process was one of education. It was in the best interests of the program, seed companies and the trial managers/operators if they understood what was required of them. The approach of the audit organisation in this space needs to be one of education and participation and not dictatorship. Minimum standards must be met however for the greatest level of participation and success it was deemed important that this process foster a level of collaboration at the upper technical levels. So, workshops were proposed as one way to facilitate this. Attendance at workshops is required as a part of the process of maintaining a managers/operators accreditation as well as to stay in touch with changes in the program and its requirements. Plus workshops are a way for the technical experts in seed companies to contribute to the future improvement of the program. The workshops are not to be lectures but more structured reviews and discussions.

In the main this approach has been well received. In essence it actually builds on a similar approach used in the Pastures Australia independent trial program and the development of this program.

4.6 Audit and Accreditation process for trials

See Appendix 4 – Auditing and Accreditation Manual.

There has been a mixed response to this. Some companies were willing to embrace the process while others were more reluctant and saw the incorporation of actual trial inspections as a threat and too onerous. One suggestion put forward by a couple of seed companies was that the program should operate at the company level – with companies being accredited to run trials and there being no checking of trials. This has been avoided in this program because of:

- the fundamental need to restore integrity in trial data produced by all companies
- the smallest auditable element is the trial
- company level accreditation could be more susceptible to abuse, both inadvertent and deliberate
- Multiple types and purposes of trial are run by seed companies and not all are of the same quality. Companywide accreditation has the potential to lend credibility to trials that are not up to scratch
- There is potentially little difference between a company accreditation scheme and the proposed trial focussed scheme however the branding is focussed on the output – trial data and not on companies.

There has been extensive consultation and work undertaken in order to find compromise positions that limit the potential for the process to be too “invasive” while ensuring that sufficient checks are in place to ensure that producers can be confident in the data. This is a big change when it is considered that currently few companies had trial protocols sitting on the shelf, there are quite variable methods used by companies – sometimes for convenience rather than accuracy, and few companies actively consult or adhere to the minimum standards set by the APPEC program.

A possible option has been outlined for trials already in existence (sown in last 2 years – 2009 and 2010) to be included in the Auditing and Accreditation program. It essentially requires an autumn inspection in the 2011 along the provision of all data up to date. The trial would then slot into all the same inspections as per the original program. This would allow a more rapid expansion of the program…

The Auditing of this program needs to be undertaken by a single organisation to limit potential inconsistencies. This has been an effective strategy for the grains NVT program. Suggestions as to who the auditor(s) could be were variable but few individuals were nominated. The organisation and auditors needs to have experience in pasture running trials and be free of any commercial relationship that includes the sale of seed. It is expected that a tender process may be necessary in order to tease out prospective auditors.

4.7 Reporting and Branding of audited trial data

See Appendix 4 – Auditing and Accreditation Manual.

Minimum standards have been set and the bar has been raised significantly in terms of providing context for trial results. There was surprisingly few objections to this – and it must be admitted that part of the reason for this is the fact that a parallel program (independent trial – PA) has been

working on getting agreement across numerous companies on how (and what) data should be presented with trials for a couple of years with significant agreement being reached this year.

Branding has been extensively discussed and needs to occur at the trial level. It is critical to the program's success that a suitable brand be developed and then heavily promoted by all stakeholders. It must be seen as being independent of seed companies however will need to be promoted by them, the industry generally and MLA.

4.8 Candidate methods for delivery of audited trial data

See Appendix 5 – Delivery of trial data from an independent source.

At the beginning of the project there was strong resistance to the delivery of seed company data by anyone other than the seed company. The paper included as appendix 5 reflects this. In essence trial IP is owned by the seed companies and they clearly stated that any program that required the assignment of any rights over their IP to another organisation would not be supported. They want to control their own information and this seemed commercially reasonable.

Recently, at the final group meeting of potential participating seed companies the concept of someone other than seed companies delivering data was floated and while still not receiving much support, it was not rejected as strongly as in the past.

In time the position of seed companies may change further as they get used to having audited and accredited trials and the potential benefits of new models for information analysis and delivery are developed.

4.9 Governance and Operational management of an Auditing and Accreditation program for pasture seed trials

See Appendix 6 – Auditing and Accreditation Program – Governance and Operational Structure.

A model very similar to the GRDC NVT program has been proposed. It has been well accepted in the grains industry and includes the necessary levels of accountability to the stakeholders. In addition, there has also been proposed a regular forum (workshop) which would involve trial managers and operators and be a vehicle by which further program development and change could be discussed and recommended.

4.10 Cost of Implementation

See Appendix 7 – Direct costs of implementation - Estimate

Total cost in year 1 of setting up and running a start-up or pilot scheme with a maximum of 80 trials submitted is estimated to be $210,000.

5 Success in Achieving Objectives

There are a number of very clear deliverables contained in the objectives including:

- Site Inventory completed and candidate sites for auditing identified.
- Trial Protocols
- Identification of additional measures and the potential for "value adding"
- Develop a value proposition for the improved analysis of trials
- Trial Manager/Operator protocols and audit process
- Develop an audit and accreditation process for trials
- Processes for reporting and branding audited trial data
- Outline of Candidate methods for delivery of data
- Governance and Operational management of the auditing and accreditation program

Reports on all these objectives have been delivered and are contained in the appendices.

The broader issue is whether there is agreement and in principle support for this program from seed companies. There is a general admission from seed companies that "something" needs to be done in the seed industry and from that point of view many companies are prepared to entertain this program. All of the main seed companies have been involved in the development process, however, predictably, there were several different views about exactly what was required and how it should be applied to them. At this stage all the companies are considering their position as well as looking at each other to see who "jumps first". There is in principle support to do something and many agree that this program is promising however final decisions have not been made by the companies.

6 Impact on Meat and Livestock Industry – now & in five years time

The development of a seed company trial based auditing and accreditation program, even if fully implemented this year, will take some time to generate information that could be useful to farmers. The shortest time frame for trials is 12 months however many species that are relevant to sheep and beef farmers are long term perennials and must be trialled for a number of years before information can be reliably released. Therefore the direct impact now of this program would be minimal.

There are however a number of other issues at play here.

The overall purpose of this program in the end is to ensure that farmers are being supplied with high quality, objective data that would allow them to make better decisions about what they grow on their farms. Simply supplying the information is not enough. What needs to occur hand in hand with this program is an education program/strategy that teaches farmers about what to look for in trial data and what to ask their local agronomists. There is no point in having trial data available if they farmers do not ask for it and don't understand it. The creation of discerning farmers will take time and needs to commence now in order for any trial work released under the banner of an auditing and accreditation program in the future to be fully appreciated.

There are several steps that can be taken along this education and promotion pathway that include:

- The use of data from the related independent trial program (PA – independent trials) as an education tool to help farmers understand what to look for
- The development of the Pasture Picker website to incorporate trial data from a range of sources (which will in the future be audited etc)
- The promotion of the Auditing program to the wider industry (including farmers) via a range of media (eg Grassland soc, Pasture Updates, ASF, MLA publications etc)
- The listing of trials, companies and people that are part of the program, showing the accreditation status. Ie whetting the famers (and advisors) appetite for information to come AND putting some pressure on seed companies to contribute successfully and then publish.
- The development of other – non-seed company trials and delivery nodes that could BOTH feed data through the Auditing program as well as aid the development of discerning farmers
- Promotion of the value of responsible pasture renewal

So, if an auditing and accreditation program was introduced now and all opportunities were exercised to progress down the track towards more discerning famers – including the above points then in 5 years time I see the following benefits:

- More discerning farmers (and advisors) actively seeking reliable and quality trial data to make decisions about what they use on their farm resulting in
    - The beginning of better farmer returns by using more advanced plant genetics to compliment the advanced animal genetics and production systems
    - The beginning of Greater Confidence by farmers and advisors in the use of new plant genetics leading to increased renewal rates
    - A re-focus of the pasture seed supply chain on delivering good quality plant genetics matched to the farmers production system RATHER THAN the frequently price driven focus
    - A seed industry that is beginning to be rationalized with fewer low value cultivars and a focus on cultivars that give greater farmer returns – leading to the circular feedback loop of better seed company returns and a clear signal for seed companies to invest in better plant genetics.
    - The protection of both farmers and the seed market from the flooding of cheap, potentially inferior, overseas plant genetics with NO testing

7 Recommendations

7.1 Site Inventory completed and candidate sites for auditing identified.

As part of the Auditing and Accreditation program I recommend that a trial register be established to highlight the size of the national program and indicate which trials is part of the program. Trial status in terms of time to completion etc needs to be clearly stated. This will put pressure on companies to publish data from sites as they cannot be “hidden” and if data is not to be published then they may be asked to explain why. Currently there is little if any pressure on companies to publish trial data and if there is an unfavourable result the data is generally buried and never published.

In the longer term such a register will help create a better understanding of the pasture trial space and will aid the development of a more mature industry and markets.

7.2 Trial Protocols

That the protocols be adopted and form part of any future AAP. Further, I recommend that there be the capacity to review of these protocols further from time to time as new methods and technologies become available. These protocols should be used in any future regional trial program.

7.3 Additional Measures and Value adding

Begin investment in better data so that the information exists to better educate and inform farmers - beginning in say 3 years– as they start to become ready for it. This will then drag the rest of the market (in terms of seed company trials) up to match. Further this will help refine the market towards better genetics that offer farmers more value.

There will be a need for market education in this process and avenues such as regional trial delivery nodes, Pasture Updates, MLA publications, grassland societies, direct approaches to retailers all need to be considered.

7.4 Value proposition for improved data analysis

This section is dependent on some work yet to be done by a consultant statistician and therefore cannot be reported on.

7.5 Trial Manager/Operator Protocols and Audit processes

That these processes and procedures be adopted in any future AAP.

If an AAP does not exist but MLA are to set up and run their own trials then it is strongly recommended that it engage with the same group in a similar way (although obviously not for auditing and accreditation) to ensure the best outcomes for the trials, farmers and industry generally. There are some innovative people within the seed industry that are passionate about bringing about better results for farmers and it is important that they be treated as a valuable resource and utilized.

7.6 Audit and Accreditation process for trials

Work with the ASF to drive the implementation of this program for the industry and farmers benefit.

If the ASF fail to act and there is good company support then look to still implement the program. If the ASF fail to act and seed companies do not wish to participate then there is little point in pursuing this further.

Permit the longer term evolution of the program as “conditions” change and mature.

IF there is not AAP for seed company trials then there is still significant value in using this program or a modified version of it to ensure consistency within any MLA pasture trial program.

7.7 Reporting and Branding of audited trial data

Accept the guidelines as outlined.

MLA to invest in a brand development strategy and subsequently the deliver process

Seed companies participating in the program co-invest through marketing material in the marketing of the brand and program

Seed companies commit to delivering to the market a consistent positive message regarding the Auditing and Accreditation program.

7.8 Candidate methods for delivery of audited trial data

Do not force this issue at the moment with seed companies. Re-visit it in 3-5 years once the AAP is up and running.

In the meantime, consider implementing this approach – perhaps via the Pasture Picker – and incorporate any trials that the MLA may run PLUS look to find ways of incorporating data from a range of other programs such as Evergraze, Futurefarms CRC etc.

7.9 Governance and Operational management of an Auditing and Accreditation program for pasture seed trials

Consult with the ASF in the process of deciding how to proceed.

Keep the structure simple – but try to place the management at arms-length of all stakeholders.

7.10 Cost of Implementation

Work to unite AWI, DA, MLA and GRDC in participating as funders of this program in a stable, long term partnership.

Ensure that seed companies are confident that this will be a long term/ ongoing program by making a long term commitment to funding and promotion.

8 Appendices

8.1.1 Appendix 1a - Site Inventory completed and candidate sites for auditing identified

A breakdown of the trials by species group and state is included below:

Table 1: Proportion of total national trial program represented by species group and state based on actual data provided by seed companies.

State	Annual /Italian ryegrasses	Perennial ryegrass	Tall Fescue	Cocksfoot	Phalaris	Lucerne	Sub Clover	Other legumes	Forage	Total
NSW	7.4%	10.1%	4.2%	2.1%	2.1%	10.1%	3.2%	3.2%	4.2%	46.6%
QLD	1.1%	0.5%	0.5%			0.5%				2.6%
SA							1.1%		1.1%	2.1%
VIC	12.2%	14.8%	2.1%	1.1%	2.6%	3.7%	4.2%	3.2%	4.8%	48.7%
TOTAL	20.6%	25.4%	6.9%	3.2%	4.8%	14.3%	7.4%	6.3%	10.1%	

Comments:

Table 1 is extremely useful data and help shed light on a range of issues. For instance, it is clear that seed companies consider Victoria to be the number one state for pastures, as indicated by the greatest total number of trials and the highest density of trials per unit pasture area (pasture production area figures are not presented). Further, it should be recognized that the NSW figures are exaggerated a little by the location of the Heritage Seeds research station just over the Victorian border in Howlong. Many of the ryegrass species trials at Howlong will be focussed at the higher value, more competitive Victorian market.

Another interesting point is that the investment in deep rooted, persistent perennial pastures such as Tall Fescue, Cocksfoot and Phalaris (all combined with Sub clover) represents a total of 23% of all trials. The total of the ryegrasses on the other hand are exactly double this.

Main Measures recorded

The main measures are yield and persistence. It is rare that other measures are included. Rust for instance is rarely targeted in a trial program however if it occurs it is usually recorded. Specifically targeted trials for rust are run at Gatton in QLD and have been used for many years by seed companies as the basis of their rust screening programs however this rust screening service has recently shut down due to lack of government support.

The dominance of yield then persistence as a key measurement to be gained from trials is a reflection of two things:

1. Seed companies see these characteristics as the drivers for farmer selections and,
2. These are relatively easy to measure

Although there is regularly talk about feed quality parameters, it is very clear that the number one driver in any production system is still quantity of feed produced. Number two in many instances will be the time of the year and then number three will be pasture persistence. In some regions persistence will be the number one driver HOWEVER, if a farmer in such a region is led to believe that variety X, Y and Z are all equally persistent then dry matter production will be the next key trait considered, if they are discerning.

Sub Tropicals and Tropicals

Although information on sub tropical or tropical trials was very clearly requested both in writing and verbally, numerous times, was none provided. I do believe that there are a few trials underway but they were never mentioned or listed. This group of species is used in Central and Northern NSW as well as in QLD however my discussions with seed companies indicated that;

- There were very few cultivars within each species
- There was virtually no commercial incentive for trialling them
- That these species tended to be mixed together and sown in shotgun mixes
- It was unclear in this situation and market if cultivar information would be of any value.

In short, I was informed that the sub tropical and tropical pasture market is very poorly developed in terms of options, competition and understanding of different species. It was recognized that there may be some opportunities in this market for those companies that had such species but it was too early to commit significant resources (comparatively speaking) at this stage.

Holes in the Market

Numerous companies provided information for this section. There were a lot of common areas, some obvious biases in some cases and also some excellent general suggestions. Overall the companies expressed a strong interest in additional trials but for reasons detailed later were reluctant to pursue these locations / trials on their own. I see this as a significant opportunity for some unique collaborative work. Seed companies are reluctant to take all the risk themselves, however they are very keen on exploring these markets and it would be to the advantage of producers in these regions for this work to occur.

Regions where (more) trial work is required/desired along with recommended species are outlined in the Investment priorities paper (appendix 1b). These are essentially the un-edited versions of their responses to my questions on this topic. Topics, regions or species that are repeated indicate that more than one respondent made the suggestion.

If I was to summarize the results I would suggest that:

- **Broadly, there was a need for much greater work in exploring, defining and demonstrating the zones of adaptation for a wide range of species across all states**
- **Particular focus should be placed on dryland and "marginal" regions for all species and states**
- **Sub -tropical and tropical species are an undeveloped market in terms of cultivar options within a species with low incentive for seed companies to invest in trials across a range of environments.**

Interestingly, although some of the regions mentioned were obvious candidates, there were still suggestions for trials in areas that I would have suggested were adequately covered, such as the ryegrasses in N and S Victoria.

Across the board, when asked why they were not already running trials in these regions with these species, I received the same response.

- Commercial reality – financial returns are low, risks are high, adoption rates are uncertain and may not be high initially
- Resources – sometimes these were related to the above commercial reality – the resources to run trials are finite and tend to be concentrated in areas with the greatest potential return and/or highest risk of loss. Resources were defined in terms of BOTH finances AND people with the necessary skills.
- Lack of competition – in some species there are only one or two companies operating and there is neither the market necessity or commercial incentive to run more trials.

Candidate Trials for Auditing

This question presents a number of challenges. Firstly, the actual question posed was "Candidate Sites…" however as the Auditing and Accreditation program developed it has become clear that NOT sites but trials should be audited and accredited. This issue is discussed elsewhere.

Further, without first having defined the requirements of an auditing program there is no way that a definitive decision could be made about a trials potential for auditing. Trial protocols are now well defined and while the details of trial auditing and accreditation protocols and procedures are not included in this milestone report, it is very clear that no trial currently sown can be adequately audited for its inclusion. It is too late – the process involves checks and inspections which should already have occurred. Therefore, there are no current candidate sites for auditing.

However, the information summarized and shown in table 1 previously can be used to develop a reasonable picture of the potential number and diversity of sites that will need auditing and accreditation.

Working through this issue with seed companies there was identified a proportion of trials that would be very unlikely to be subjected to any auditing or accreditation program. These were essentially Breeders trials where germplasm was under evaluation, sometimes for the first time. A second group of trials was identified as being likely to be excluded or to fail the auditing and accreditation process. These trials were generally located in more marginal areas and had a kind of loose dual purpose of demonstration/marketing and data collection. Management of these trials was less rigorous, often by someone from outside of the research team, plus measurements were often visual

and not always regular. In many cases these trials reverted over time to quasi persistence trials where visual scoring was used to monitor persistence under “normal” grazing conditions. These are in effect replicated demonstrations.

There are a number of very good technical reasons why these trials are not robust enough to be included in an auditing and accreditation program. Seed companies often pre-empted these reasons in discussions and were hesitant about their inclusion. This group of trials was more variable between seed companies, some not including them at all in trial inventories while others did.

Incorporation of this information allows an estimate of the potential number of candidate trials for the auditing and accreditation program. This will be important for working out the resources required for such a program.

Table 2; Candidate trial numbers for the auditing and accreditation program – assuming a small level of creep in total trials as the program becomes readily accepted and trials reach their conclusion.

	Annual /Italian ryegrasses	Perennial ryegrass	Tall Fescue	Cocksfoot	Phalaris	Lucerne	Sub Clover	Other legumes	Forage	Total
Total	60	74	20	9	14	42	22	18	29	288
Number re-sown each year	50	25	4-6	2-3	3-4	8-10	18	18	29	162
Candidate Trials Year 1	33	17	4	2	3	7	12	NA	NA	78
Total in Year 2	40	34	8	4	6	14	14	NA	NA	120
Total in Year 3	40	51	12	6	9	21	14	NA	NA	153
Total in Year 4	40	60	16	7	10	28	14	NA	NA	175
Total in Year 5	40	60	16	8	11	30	14	NA	NA	179

8.1.2 Appendix 1b - Priorities for Investment into new trials

This list is based on feedback from seed companies regarding the regions and species they felt most needed attention. It is in part a reflection on the market potential, the product portfolios of seed companies and their current barriers to accessing these regions. This cannot be considered an assessment of most need from the farmer's perspective. The priorities are based on the cumulative feedback from seed companies combined.

Primarily this list is driven by zones. In any particular zone, dependent on soils, management and the local climate, there are a range of species that should be considered. At times some of these will be failures, and if so this should not be viewed as a failure as it demonstrates the unsuitability of a species to those particular set of conditions. This is just as or more valuable as finding a species that survives at a site and helps to defined the boundaries of adaptation.

Region/Zone	Species	Priority
Vic, Western region, 500-700mm rainfall zone	Lucerne, Bromes, Phalaris, Cocksfoot, Tall fescues, Sub clovers, other annual legumes	A2
Vic, Western region, <550mm zones	Medics and short season annual legumes, especially for mixed farming	B
Vic, Eastern region, 500-700mm rainfall zone	Lucerne, Bromes, Phalaris, Cocksfoot, Tall fescues, Sub clovers, other annual legumes	A1
Vic, N & NE regions, 450-700mm rainfall zone	Lucerne, Bromes, Phalaris, Cocksfoot, Tall fescues, Sub clovers, other annual legumes	A1
NSW slopes	Lucerne, Bromes, Phalaris, Cocksfoot, Tall fescues, Sub clovers, other annual legumes	A1
NSW Tablelands	Lucerne, Bromes, Phalaris, Cocksfoot, Tall fescues, Sub clovers, Ryegrasses	A2
NSW Coastal	Lucerne, Bromes, Phalaris, Cocksfoot, Tall fescues, Sub clovers, Ryegrasses, other annual and perennial legumes	B
SA SE Corner	Lucerne, Bromes, Phalaris, Cocksfoot, Tall fescues, Sub clovers, Ryegrasses, other annual and perennial legumes	B
SA 450 – 700mm region	Lucerne, Bromes, Phalaris, Cocksfoot, Tall fescues, Sub clovers, other annual legumes	A2
WA – temperate pasture zone	Lucerne, Bromes, Phalaris, Cocksfoot, Tall fescues, Sub clovers, Ryegrasses, annual legumes, Sub-tropical and tropical species	A1
WA – Nth of Perth	Sub-tropical and tropical species	A2
QLD – SE region	Lucerne, Bromes, Phalaris, Cocksfoot, Tall fescues, Sub clovers, White and Reg	B

	clovers, Ryegrasses, sub-tropical and tropical species	
QLD – all other regions	Sub-tropical and tropical species	A1
Tasmania –	Lucerne, Bromes, Phalaris, Cocksfoot, Tall fescues, Sub clovers, other annual legumes	B

Priority Order:
A1= Highest
A2=High
B=Medium

In general it was stated to the author that species management information is critical and severely lacking, limiting the uptake of new technologies. This area needs to be developed with old and NEW cultivars (and species), using early guidelines developed as a starting point to check and develop guidelines for new technologies (species or cultivars).

The fact that the region made it onto the list gives it some priority. All regions not listed have a lower priority.

8.2 Appendix 2 – Trial Protocols Manual V3 February 2011.

Please separate file called “Trial Protocols Manual V3 February 2011”.

8.3 Appendix 3 – Additional Measures and Value Adding

During the course of the first round of one-one meetings with seed companies the issue of additional measures was addressed. Seed companies were presented with a list of possible additional measures, provided an opportunity to suggest measures not already listed and then were asked to rate these measures in terms of importance. A discussion was had after this about the likelihood that these measures might instil greater confidence in producers purchasing pasture seed. The following table outlines the range of additional measures.

Table 1: Additional Measures – accumulated responses from 7 seed companies.

Measure	Value to Producer	Value to Seed Co.	Currently done?
Feed Value – (ME, CP, DOMD/DMD, NDF/ADF)	Very High	Very HIgh	Limited – No
Season Length	High	High	Limited
Growing Season Rainfall	High	High	Limited
Rainfall distribution	High	High	Limited
Seasonal DM Production	Very High	Very High	Yes
Seedling Survival (grasses)	Nil	Some	Limited-Nil
Seedling regeneration/ recruitment (Ann legumes)	Medium	Medium	Sometimes
Persistence	Very High	Very High	Yes (need standard)
Daily Growth rate	Medium-High	Medium	Limited
Animal Production (predicted)	Very High	Very High	Limited (modelled)
Economics	Very High	Very High	Limited
Relative Feed values	Nil	Nil	No
Energy Density	Nil	Nil	No
Adaptation Index	High	High	No
RUST	High (1)	High (1)	Limited
Utilization	High (1)	High (1)	No
Maturity	High (1)	High (1)	Limited
Seedling Vigour	High (1)	High (1)	Limited
Days to Emergence	High (1)	High (1)	No

Note, characters with a (1) were supported by only a few seed companies. Rust measurements in particular are confined to a particular set of trials at Gatton where it has been recorded for industry for some time now.

Discussion

In practically every discussion on this topic seed companies indicated that yield was the number one measure above all else that meant something to producers. This was clearly reflected in the discussion on Seasonal Dry Matter Production where every company said that it was of high value to farmers, of high value to the seed companies (in promoting their cultivars) and that it was a feature of their measurement and reporting of trial data. The other key measure rated as being very important was persistence – and that too was a character that seed companies currently measured. As far as seed companies were concerned, they are already covering the two main measures of most importance to them and producers within the bounds of their own limited resources.

When additional measures outside of yield and persistence were considered there were three characters that scored very highly as being of value to producers and seed companies. These measures were Feed Value, Animal Production and Economics. There was general agreement that the Animal production figures could be modelled off the Feed Value figures (and of course yields) however there was some suggestions by a couple of seed companies that it would be good if the animal production figures could be validated somehow. All three sets of measures can be related. In essence, feed quality and yield data generated from trials can be used to derived potential animal production figures which in turn can be applied to economic models to producer financial results in terms of $/ha or similar.

Seed companies view these additional measures as a potentially valuable tool in helping them to differentiate their cultivars from others, particularly the common or non-proprietary lines. They also see these measures as a valuable way of demonstrating the additional value of newer cultivars specifically bred for improved feed quality characteristics. This distinction can be hard to make on yield alone and it is still early days in terms of development and market acceptance for the use of feed values and animal/economic derived measures. Further, the cost of generating the feed quality data is prohibitive on a large scale and the models for the derived measures are not broadly available. These issues will need to be addressed if these options are to be pursued.

However, when coming back to the question of “information required by producers to instil confidence in purchasing pasture species”, there is no belief amongst seed companies that these additional measures are what is required. Improved confidence of producers will come down to other issues including:

- Improved integrity of seed companies (and retailers) and trial data (ie trust in the supplier)
- Fewer “rogue elements” in the seed industry producing poor data/cultivars (ie reduced risk of failure)
- Better information flows to producers and retailers (more, unbiased, reliable etc)
- Improved preparation and sowing practices (again, reducing risk)
- Better management of seasonal conditions and better decision making (eg when to/not to sow, spring sowing, grazing management, fertilizers etc)

Seed companies generally (although not all) consider that some sort of auditing and accreditation program – a quality assurance program – would address a number of these areas. They are not convinced that a National Variety Trial program based on their own trials is an option and they did not want an independent body to set up a large scale NVT that would operate in competition with their own research teams and data. Seed companies would like to see further work done in the areas such as reducing risk and improving establishment success (fertilizers, seed coatings, inoculation of legumes), better management for improved persistence, greater understanding of pasture species requirements in marginal areas. The issues mentioned are by no means comprehensive, just a sample. A concept raised was the Pasture Renewal Charitable Trust – something that was floated in New Zealand recently but which seems to have failed to gain any legs (and I think has now folded).

I would recommend further work in this area with seed companies in order to set down the precise issues as they see them and then the joint development of a vehicle that can deliver on these issues.

I suspect that the combination of pasture trial auditing and accreditation AND some sort of joint vehicle for delivery in other areas as outlined, could result in a significant change in the pasture market and in producers confidence.

8.4 Appendix 4 – Auditing and Accreditation Manual

Please see separate file (formatting of manual is not retained in included in this file)

8.5 Appendix 5 – Delivery of trial data from an independent source

"Outline of candidate methods for the delivery of site data from an independent source". This is essentially Task number 8 as outlined in the Project contract. The details of this task are included below:

- Describe a procedure to deliver the tested data to producers from an independent source enabling producers to determine the best adapted species / cultivars to their region for their targeted need
- This could include ability to detect local performance compared with aggregated performance across sites, for the key traits of interest; clustering of like performance, highlighting significantly different outliers or similar
- This may be via an interactive web site or other methods, but is to enable confidence in performance of species in local areas
- The Grains NVT and SheepGenetics processes should be considered. If a web based platform is most appropriate, modification to the Pastures Australia's Pasture Picker should be identified.

General Discussion

Firstly, lets address the issue of species evaluation. The comparison of different species within the one trial is not part of the trial protocols and is largely not done by seed companies. The trial protocols developed are for the comparison of cultivars within specific species groups and do not cover multi species trials. Seed companies locate trials according to the species they are working with, the potential for market growth and development (and profit) and, in part, the proximity of trial resources. Not many companies actively work at the same site with a sufficient range of species that would enable comparisons between species at the same or nearby sites. For MLA to deliver data to producers that would enable them to determine the best adapted species it will have to invest a combination of computer modelling, species comparison trials or perhaps best of all, cultivar evaluation trials of a range of species all located at the same site.

The second issue concerns the likelihood of trial data belonging to seed companies being delivered via an independent source to producers. This is very unlikely. At this stage an insistence that this be part of the first phase of an Auditing and Accreditation program would result in the majority if not all seed company's walking away from the program. The strong preference is for seed companies to retain control over the release of their trial data. The adoption of a basic Auditing and Accreditation program by the seed industry would signal a significant and large change. It will need time to come to terms with this and be ready for further change. Small steps. In time this might be possible.

If I was to assume that independent delivery of trial data was an option then such a program is outlined below:

Scope

To be effective, delivery of information to producers must occur alongside supporting programs that engage with seed retailers and wholesalers (assuming seed companies are already on side). This will help ensure that the messages are consistent and more broadly accepted.

Use of Data

A number of steps and protocols are suggested.

1. Assert that any trial that goes through the accreditation program must be published
2. Provide for a grace period of 6 months from the close of the trial to the first use of the data via the independent site. This gives the owners first use of the data and provides a clear timeline for when it will be available to the public by other means.
3. During the 6 month grace period the company concerned has an opportunity to present a case for not publishing the data. The only acceptable reason is that for some reason the results are atypical and potentially misleading. If this is accepted then the data cannot be published anywhere by either party. This decision would need to be made by a panel comprising the AAP steering group.
4. Recognize the source of the data.
5. Present a balanced case and adhere to the same rules for release and presentation of data as the seed companies (see trial protocols document).

What Measures and Analysis?

The three most important characters to present are seasonal and total Dry Matter (DM) production (kg/ha) and persistence. A third important feature although less often measured is feed quality. Generally the first three will be available for most species.

Producers need to be able to view trial data aggregated over similar regions and from data sets that are no more than 5 years old and with a bias towards the performance over the previous 3 years. A time limit is needed to reflect product life cycles and keep data current. Data from 5 years or more ago may well contain comparisons with cultivars that are no longer commercially available.

In addition, producers should be able to view aggregated local trial data from the same time period. The minimum number of local data sets to be aggregated is three. This provides for some room for seed companies to differentiate themselves and retain value in having their own data sets to work with.

Mode of Delivery

There is currently no regionalized equivalent of the GRDC updates for pastures. Therefore there is really only one acceptable medium, the internet, for reaching the greatest number of producers. The platform already exists in the form of the Pasture Picker. It already allows producers to input regional and site specific information and it producers a list of species appropriate to that situation. Currently, clicking on a species name results in the accessing of a fact sheet for that species. It is at this level that a number of new additions and options are necessary. They are as follows:

- To decide between species, (assuming that there is data available) the producer should be able to click a “compare species” check box which activates a tool that produces species comparison trial data or an analysis that combines different trials to provide the comparison of species in terms of seasonal production, total production, persistence and quality.
- Clicking on an individual species should result in the species fact sheet as well as an option to view the aggregated regional and aggregated local region trial data for that species.

These comparisons should be printable, must recognize the sources and must be branded with the Auditing and Accreditation Program logo.

8.6 Appendix 6 – Auditing and Accreditation Program – Governance and Operational Structure

Private plant breeding and seed companies dominate the pasture seed industry in Australia. The current environment is fiercely competitive and highly protective of individual IP and markets. From a producers perspective there is a lack of integrity, confidence and value in the data producer by seed companies for marketing purposes.

In this environment something needs to change in order to increase integrity and confidence in the information sources, and encourage producers to re-evaluate the information available to them and make better choices about the pasture seed they buy.

Currently, it is proposed that the putting in place of a national Auditing and Accreditation program for pasture seed industry trials is the most effective model for bringing these changes about. If this is to be the case then there are some fundamental concepts that need to apply to the governance structure of this program. They are:

- Accountability
- Transparency
- Independence
- Protection of IP

The GRDC NVT program is an excellent model for this type of program. The pasture equivalent would look like the following;

- A non profit company be set up (eg Australian Forage Trial Accreditation Program –AFTAP), and under a service agreement with PA be charged with the responsibility of managing the Auditing and Accreditation Program (AAP) and providing information and services derived from the AAP to both contributors (seed companies) and producers.
- The trustees of AFTAP would include PA (or MLA, DA, GRDC) and the ASF.
- The trustees would provide one member each to sit on the AFTAP management board.
- Pasture trials would be owned and run by;
    - Pasture Seed companies – own trials
    - PA (or MLA) – where additional trials have been identified and contracted out by PA as required (due to market failure)
- Data analysis could be conducted by an independent third party under a service contract with PA or AFTAP
- AFTAP would manage these service contracts.

It is expected that the majority of trials would be owned and funded by the seed companies themselves (ie their existing trial programs) however PA would fund the AAP to add value to the resource created by seed companies and address those issues raised earlier.

Accountability

Accountability to the stakeholders would be achieved by having AFTAP reporting back to the trustees – being the ASF and PA. Stakeholders of PA and members of the ASF would be able to raise issues and address any concerns through their respective bodies.

Transparency
Having clearly defined structures and processes that are open for scrutiny ensures transparency. In addition, processes will need to be put in place so that there are clear lines of communication between seed companies, ASF, PA and the AFTAP. Communication channels need to be efficient and responsive so that AFAP is seen to be readily accountable to its stakeholders. There also needs to be very clear processes for the handling of queries and disputes in an efficient and timely manner.

Independence
Due to the likely involvement of a numerous IP owners it is critical to the integrity of the AFAP that it be independent of both the research corporations, the ASF and any of its members. This is also important with respect to being able to promote information that passes through the AAP as having been independently verified etc. A key aim of this program is the improvement of integrity of data presented by pasture seed companies in the market place.

Protection of IP
The AFAP must safeguard the individual IP owner's data from their competitors as well as from other non-owner groups such as PA.

Review and Improvement
Further, the Auditing and Accreditation program must be allowed to evolve and change in an ordered way with significant consultation with industry. It is proposed that workshops be held twice yearly (or at least annually) where seed companies, through their trial managers and operators, could work together to on issues such as the review and development trial protocols and auditing and accreditation processes. This workshop may well be the same function at which trial managers and operators attend to maintain their accreditation status.

8.7 Appendix 7 – Direct Costs of Implementation - Estimate

The following are some preliminary calculations. All costs are excluding GST.

There are some obvious costs in setting up the web based platform using similar resources as per the GRDC – NVT program. These are estimated below.

ITEM	Time	Cost
Start Up Costs		
Web Platform – design and delivery		$20,000
Web design and service		$5,000
Liaise with ACAS to set system up	3 days	$3,000
Testing of system	1 days	$1,000
Brief and Liaise with consultant statistician	1 days	$1,000
Total		$30,000

Running the induction program to introduce new trial managers and operators into the program is costed as follows:

Manager/Operator Accreditation and Auditing	Time	Cost
Induction workshops (4 – VIC, NSW, SA, TAS or WA?)		
Preparation	4 days	$4,000
Organisation of each event	1.5 x 4 = 6 days	$6,000
Presentation	1 x 4 = 4 days	$4,000
Applicant management (reviewing and following up on applications received)	2 days	$2,000
Total		$16,000

At least once per year (and preferably twice) there should be a review workshop that allows continued development of the AAP program plus would double as an approved accreditation maintenance workshop for managers and operators. A cost estimate per workshop follows:

AAP review workshop	Time	Cost
Organisation	2 days	$2,000
Presentation	4 + 1 days	$5,000
Reporting	2 days	$2,000
Venue		$3,000
Total		$12,000

Cost estimates for the Auditing and Accreditation of trials on a PER YEAR and a PER TRIAL basis have been provided below. There is significant difficulty in getting this precisely right as the actual location of each trial is unknown at this stage, plus each item assumes that there is nothing wrong with the trial that requires additional follow up work and reporting.

Trial registration	**Time**	**Cost**
Provisional and full registration	0.25hr	$30
Statistician design check	$150/trial	$150
Trial Inspections		
Establishment (includes reporting)	0.35 day	$350
Annual (includes reporting)	0.35 day	$350
Travel	(2 x $110)	$220
Method Check	(time and costs averaged down to a per trial cost even though not all trials will be inspected)	
DM Yields	0.15 days	$150
Travel		$55
Persistence	0.15 days	$150
Travel		$55
Data Checking		
Statistician Costs	2 x per year $100/inspection	$200
Reporting and monitoring costs	0.5 hrs/year	$60
Record Keeping		
Field book inspection including spot check of seed supply documents	0.1 day	$100
Travel		$30
Grand Total		$1,900 per trial per year

If it is assumed that there will be 80 trials entered in the first year then the trial auditing cost is $152,000 – for the calendar year of 2011.

Total Cost estimate in the first year is $210,000.

The people cost has been based on a standard consultant rate of $1,000 per day. It is likely that this will be necessary in order to attract someone with the necessary skills, experience and trust across the seed companies concerned. It is also likely that some continued development of the program will occur in the first 1-2 years and that a higher level of skill and experience will also be required for that. Beyond that it may be possible to reduce the rates however it is likely that growth in the program and the addition of new trials along with existing trials will see costs increase substantially to somewhere between $300 and $500,000 per annum.

Cost of Additional Measures

The main additional measures that have been reported as being of value in the future are feed quality, animal production (predicted) and economic modelling.

Feed quality measurements could be estimated as follows:

Species to be tested	9
Check Trials per species	3
Replicates per trial	3
Harvests per year	5
Cultivars per trial	15
Total number of Samples	6,075
Cost per sample (including collection and delivery costs)	$50
Total Costs per year	$303,750

There is work underway that may provide some evidence to assist in reducing the number of samples needed per year while still providing the necessary information. Please consult the author for further details.

New Sites

In my experience, the cost of set up and running of new sites with multiple trials at the one site could become nodes for the delivery of information vary depending on location, species mix and type. An allowance of $15,000 per trial (NOT PER SITE) per year would be reasonable. It is recommended however that multiple trials be located at the one site for greater efficiency of trial conduct and information delivery. Further, this cost is for just the trial work and DOES NOT include analysis, any detailed reporting or extension. Nor does it include any development work in setting up such a local program.

In addition to this the extension of messages from these nodes requires the allowance for extension personal. There are numerous avenues for taking advantage of existing programs as well as introducing new personal and so this section is a little hard to estimate without a clearer brief on what is available at each location.

In the scenario where multiple trials are located at the same location (and therefore the per trial cost is below $15,000) and an active extension person is contracted to work with the trial operator across a couple of sites then I would expect that the per site cost (ie multiple trials at one site, several sites in the region or located within travelling distances of other regions) would be $80-$100,000 per annum. A proposal that was recently costed which included extensive trial work at a couple of sites in a region plus the employment of extension personal to actively work with the region and deliver results has an estimated budget of $140,000 in the first year, rising to slightly higher in the second and third as more farmer activities occur.