

final report

Project code: B.PBE.0020

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Date published: 31 May 2015

PUBLISHED BY
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NORTH SYDNEY NSW 2059

Pasture Variety Testing - Central NSW

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

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Abstract

The Central Tablelands of NSW pasture variety testing trial has again experienced some 'trying' conditions during the last 6 months, which unfortunately rounds off three years of very challenging seasons. December and January rain failed to materialise into an autumn, with February and March recording well below average rainfall. April provided some much needed rain, however soil temperatures were already starting to decline and pasture growth was slow. Only one grass species, cocksfoot, produced any dry matter of note, while the Lucerne trial generated enough growth to warrant a dry matter measurement. Year three persistence measurements were obtained from the Lucerne; however, the sub clover species has not emerged well enough to date to determine establishment for this autumn. Overall, the whole site has shown strong differences in persistence within nearly all species, and accordingly, dry matter production has followed suit. The Perennial Ryegrass (PRG) trial is reflecting some strong 'performers', while at the same time, proving the demise of other varieties. Similar trends appear in the Lucerne trial, particularly when comparing the more winter dormant verse winter active varieties. The variations in the other grass species (Fescue, Phalaris and Cocksfoot) are less defined. Rainfall for the period since milestone 7 has been November and December 2014, 19 mm and 118 mm respectively, and this year, 2015; January of 89 mm, February 40 mm, March 9.5 mm, April 145 mm and May 50 mm. By comparison to historical periods, the total for this period is very similar. However, the two very good months have been offset by a very dry start, and two well below average months. These large variations are constantly applying or releasing the 'hand brake' from a pasture growth perspective. Dry matter measurements have been taken as required from all the grass species and the Lucerne trials since the last report (Nov 2014), but no clover dry matter has been recorded.

Success in achieving milestone

All six trials have experienced below average rainfall for much of this trial period. Dry matter (DM) production has suffered as a consequence, with measurements over the trial period well down on predicted production. For this latest milestone period (Nov '14 – May '15) three DM measurements have been taken from the lucerne, two from the cocksfoot and fescue trials, and only one measurement from the PRG and phalaris trials. No measurements have been achieved from the sub clover trial, which would be expected over the summer/autumn period. The release of the 2014 trial audits in January 2015 provided acceptance of all trial parameters, with direction for ongoing broadleaf weed control as required.

Activities that have occurred since milestone 7 have been listed in the separate attached "PVTN Field Trial Activity Log – Milestone 8". A total of 9 DM measurements have been taken since milestone 7, with 13 site visits since 17th November 2014 covering all activities, DM measurements, persistence counts, weed and insect inspections, and a field day, with approximately 40 attendees.

Site inspections/data.

The data collected to date is presented here pictorially and in figures. All data has been sent to Payam at Uni of Wollongong as requested. No analysis has been reported back as yet.

Perennial Ryegrass

The perennial ryegrass trial has seen the greatest variation within a species with respect to persistence (figure 1). While the 'species' average of persistence is 53%, the range within the varieties is from 11% to 79% (figure 2). This decline in persistence has occurred in less than three years, which, if replicated in the commercial grazing districts surrounding the trial, would be disastrous. That said, some varieties are persisting very well and it would be very rewarding to continue to measure and monitor the performance of these varieties for another two years at least. There were no issues of concern raised in the 2014 Audit report.

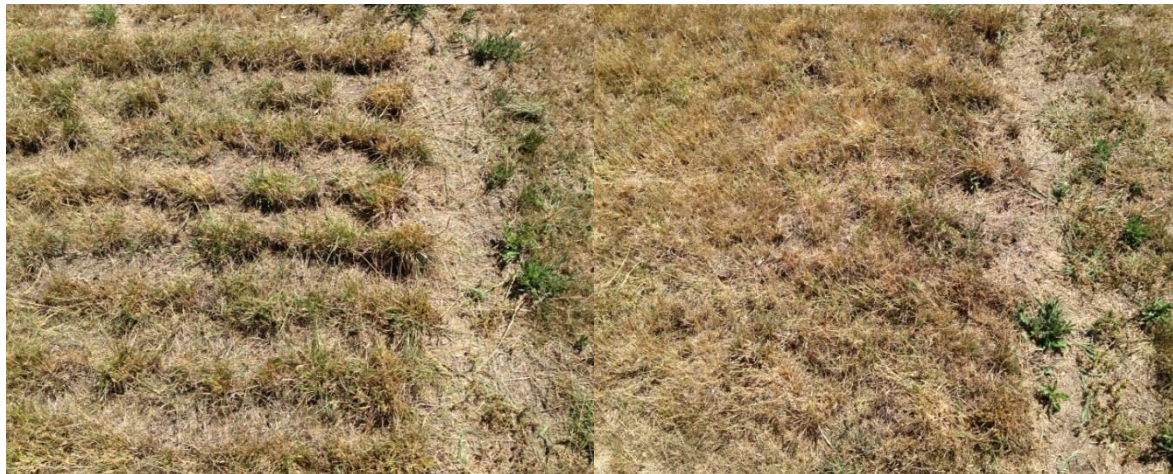


Figure 1: PRG persistence evident in rows of one variety (left) vs a complete loss of variety and covered in rubbish (right) taken on 17th February, 2015.

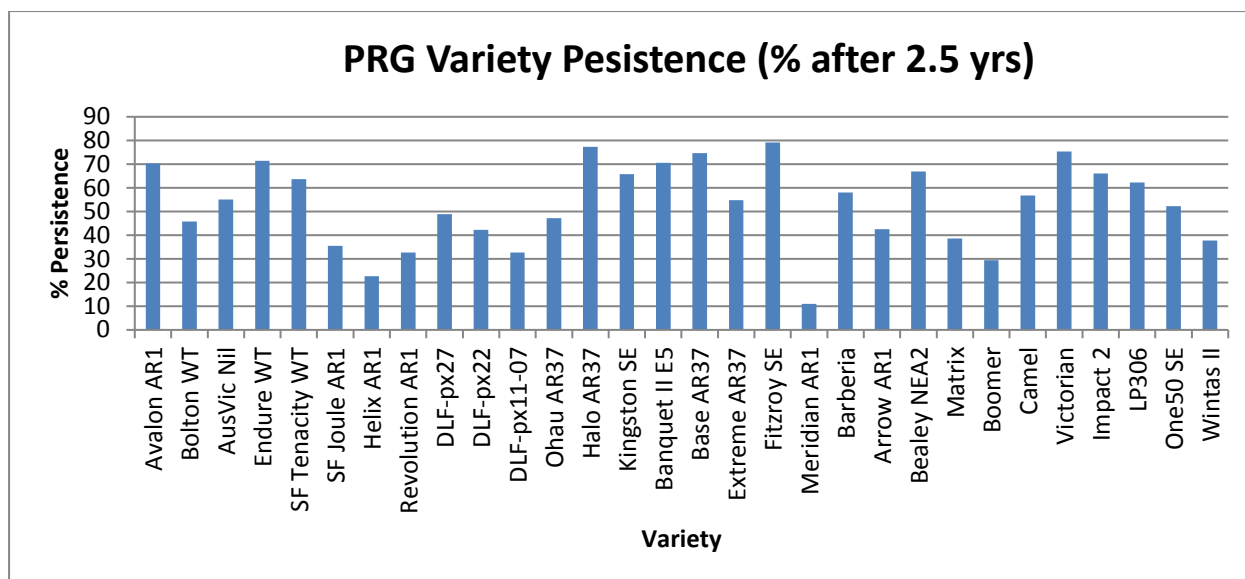


Figure 2: PRG persistence by variety after 2.5 yrs since establishment.

Total dry matter production for the three year term is starting to see a few varieties rise to the top (figure 3). While not large in quantities on an annual basis, the balance between production and persistence will always be a challenge.

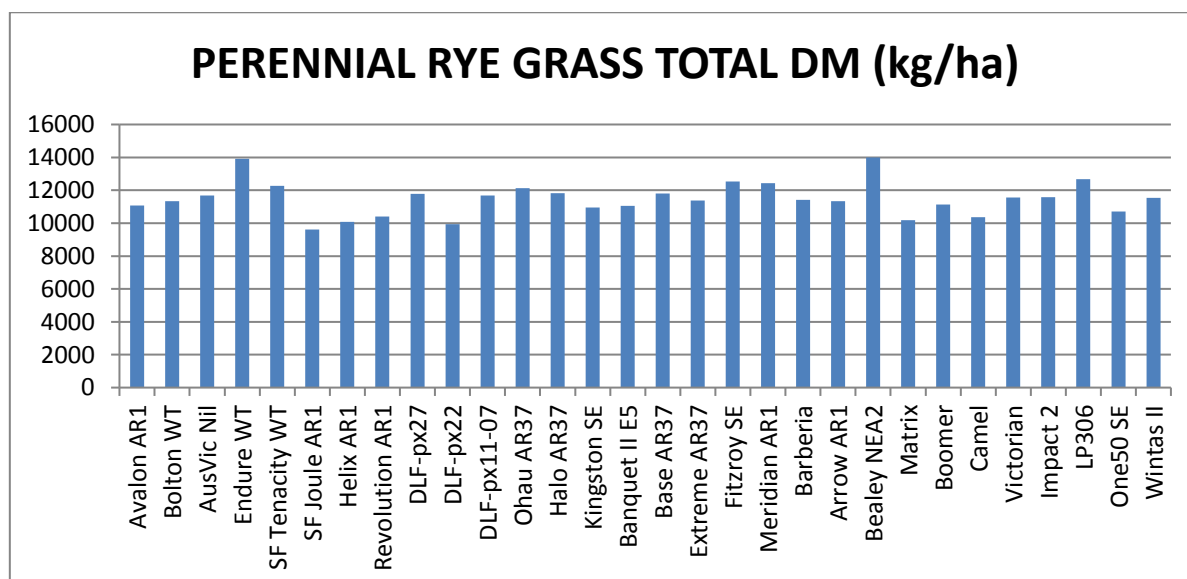


Figure 3: Total Perennial Rye Grass DM for the term of the trial

Fescue

The least performing species, on average, of phalaris, cocksfoot and fescue in terms of dry matter, with only the PRG average below it, yet in average species persistence, fescue is the least persistent. That lack of consistent summer rain has really impacted on this species. Figure 4 clearly shows how some varieties have really thinned out, particularly in the hot, dry summer just experienced. DM (figure 5) shows most varieties performing similarly, however an 'industry accepted' very soft variety, Advance Max P has really struggled in the absence of consistent summer rainfall. There were no issues of concern raised in the 2014 Audit report.



Figure 4: Left - Fescue just prior to the November 2014 DM measurement, and right, showing variation in plant persistence within the plots, taken 14th April 2015

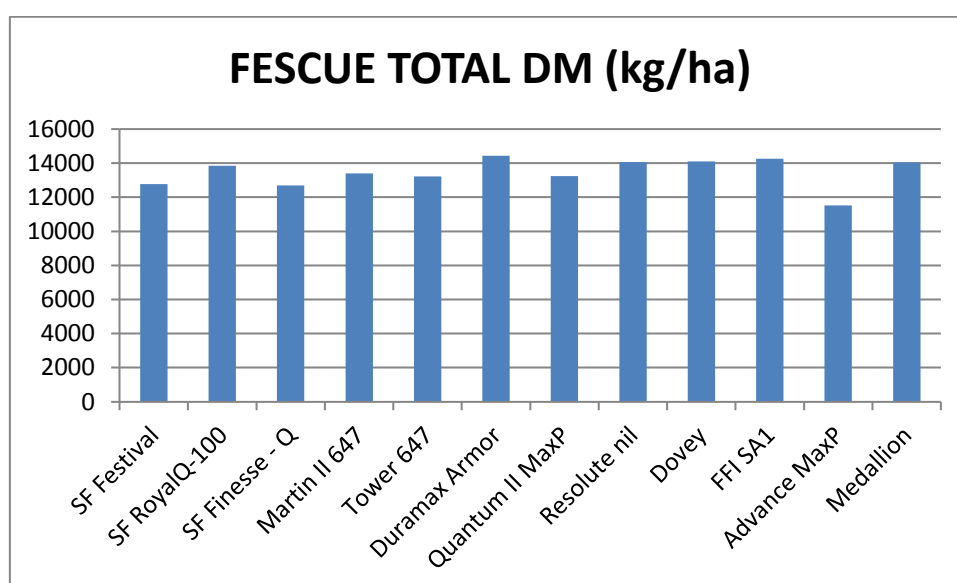


Figure 5: Total Fescue DM for the term of the trial

Phalaris

All phalaris varieties have performed similarly in total dry matter production (figure 6) with no clear 'winner'. The performance of some varieties was stronger in years one and two, and are starting to decline now. Such a parameter is not reported in total dry matter data over the term of trial, which can lead to mixed messages being interpreted. By adding the persistence data (figure 7), a different message to the grower may be achieved. Overall at the Blayney PVTN site, phalaris has been the second most persistent species, and has produced the second most amount of dry matter.

Figure 8 shows that despite wonderful Christmas 2014 rain and follow up in January 2015, the phalaris trial did not produce significant amounts of new dry matter. It was not until after the 'above average' April rain, that the phalaris varieties have started to perform (figure 8 right). These plots are nearing another DM measurement now, albeit not in time for this final milestone report. There were no issues of concern raised in the 2014 Audit report.

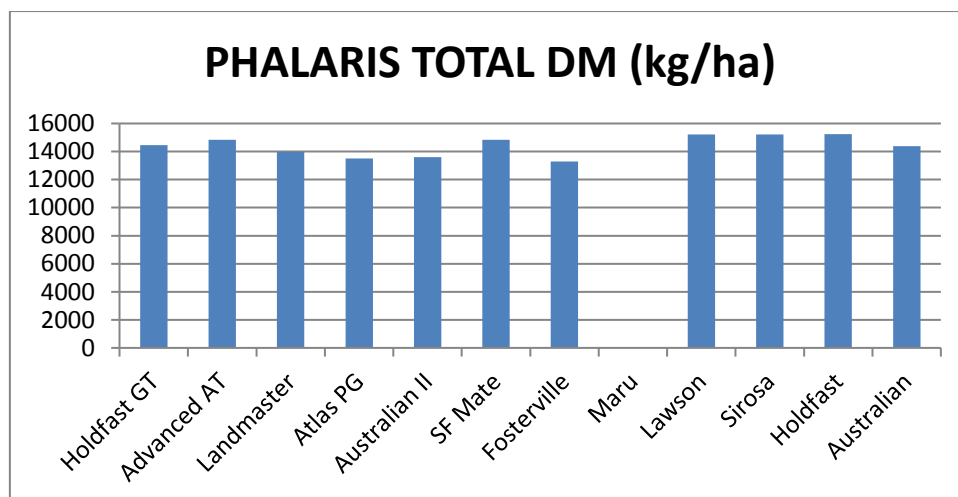


Figure 6: Total Phalaris DM for the term of the trial

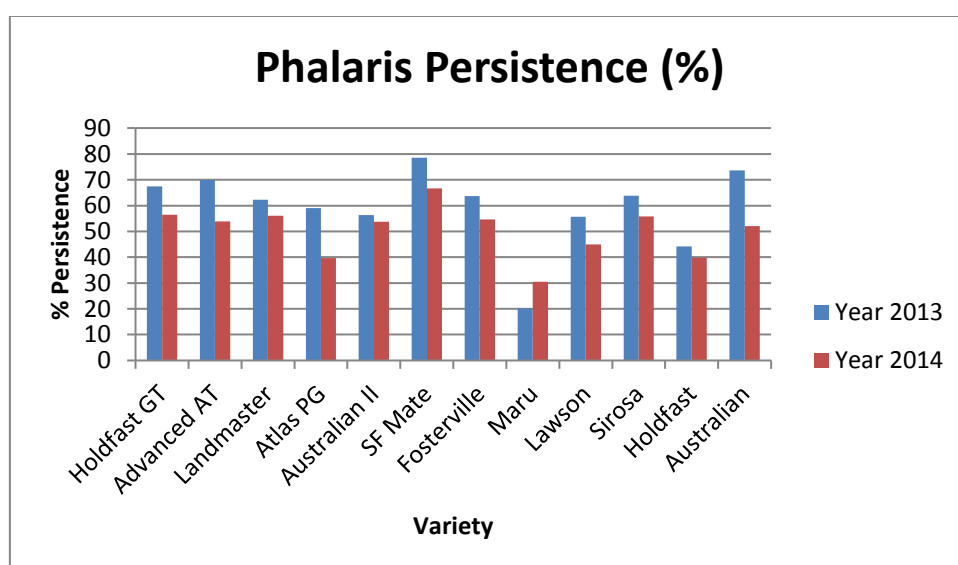


Figure 7: Phalaris persistence (%) measured by variety, 2.5 yrs since establishment



Figure 8: Phalaris taken 16th February 2015 (left) lacking response to the December and January rain, and after very good April rain (right) taken 18th May 2015

Cocksfoot

The standout species of this whole trial site without question. Total DM production (figure 9) and persistence (figure 10) of the Cocksfoot species has been superior to all other trials, legumes included. Following DM measurements, the cocksfoot has consistently impressed with its speed to regrow. Figure 11 shows the responsiveness of the cocksfoot to the summer rain by comparison to the phalaris plots on the left hand side of the cocksfoot trial, and also showing good persistence in plot density.

The average persistence of the cocksfoot species is 70%, but again, has varietal persistence ranging from 33% to 94%. Some varieties have started to decline, and in particular the Mediterranean variety Kasbah, while others have remained very strong since establishment. Dry matter production of cocksfoot is a tonne/ha better on average than the next best performing species phalaris. There were no issues of concern raised in the 2014 Audit report.

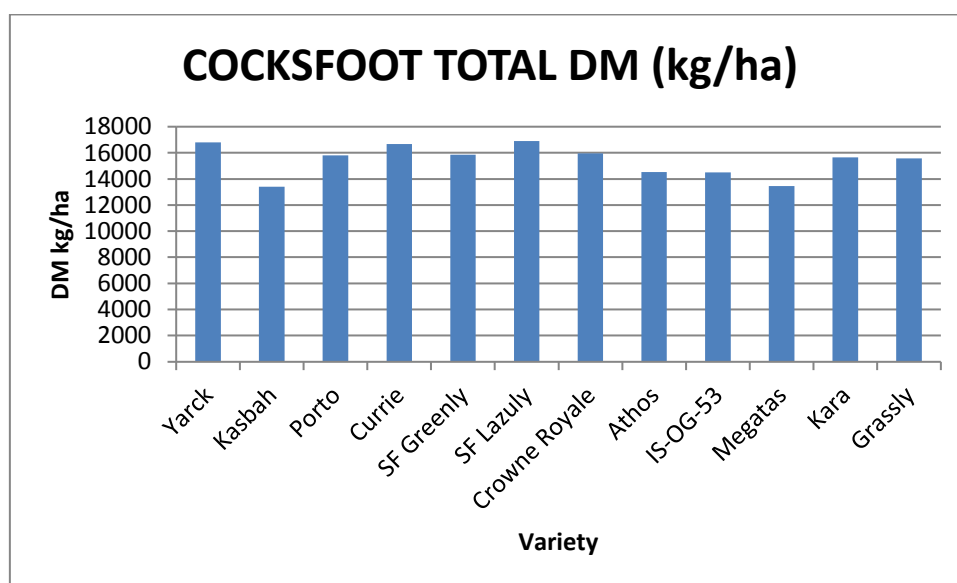


Figure 9: Total Cocksfoot DM for the term of the trial

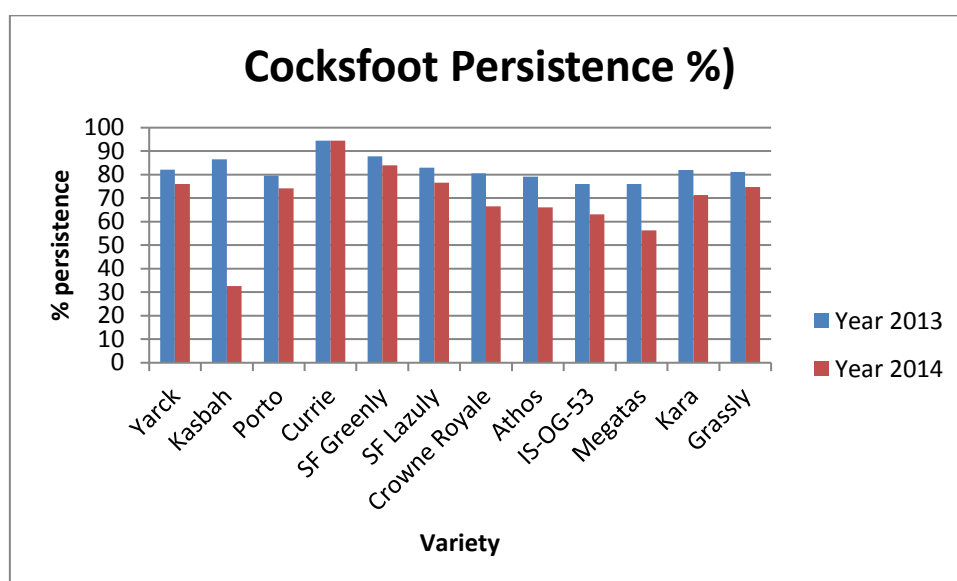


Figure 10: Cocksfoot persistence (%) measured by variety, 2.5 yrs since establishment



Figure 11: Cocksfoot taken 3rd March 2015 (left) with plenty of green DM production responding to summer rain, and great plant density persisting well into year 3 (right) taken 18th May 2015.

Lucerne

As highlighted this time last year, the persistence of the lucerne trial took a major 'hit' over the second summer, but pleasingly, very little further decline in persistence has taken place since (figure 12). Three dry matter measurements have occurred since the last milestone, the most of any species at the site, bringing total dry matter (figure 13) to approximately 13 tonnes. Given the 'apparent' increasing variable nature of the rainfall, it is increasingly important to the grazing enterprise that production can occur year round. Getting the right species / varieties into that grazing system will become even more important in the future.

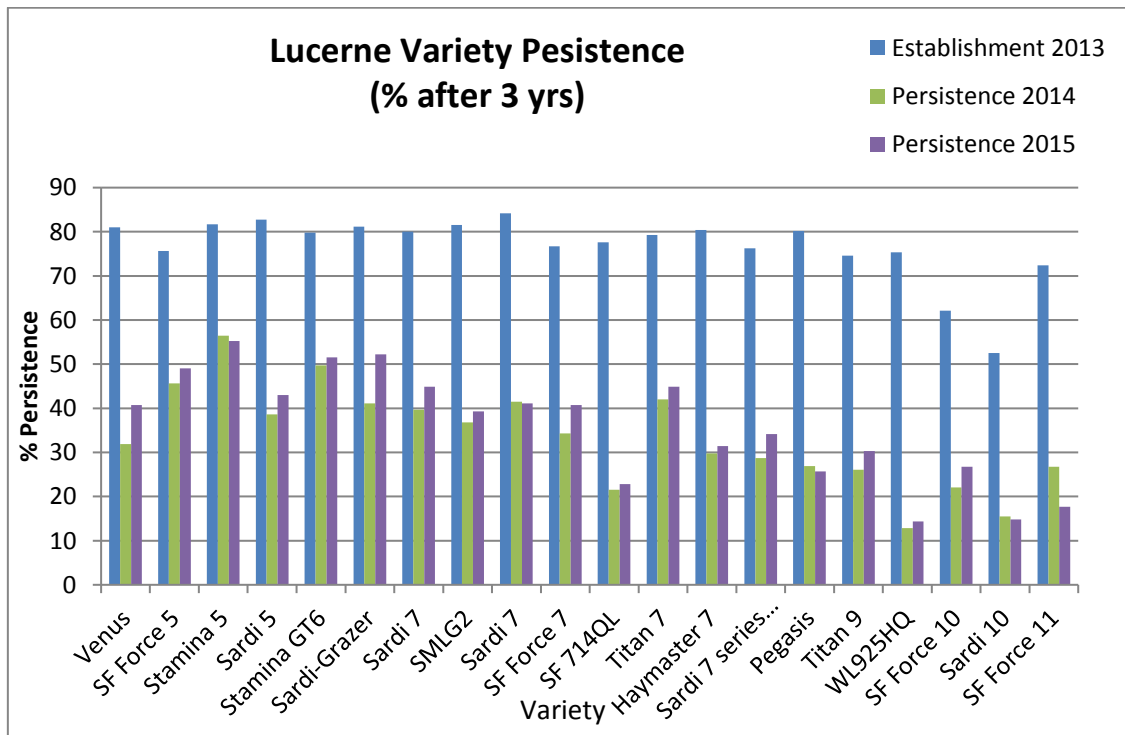


Figure 12: Lucerne persistence (%) measured by variety, 3 yrs since establishment

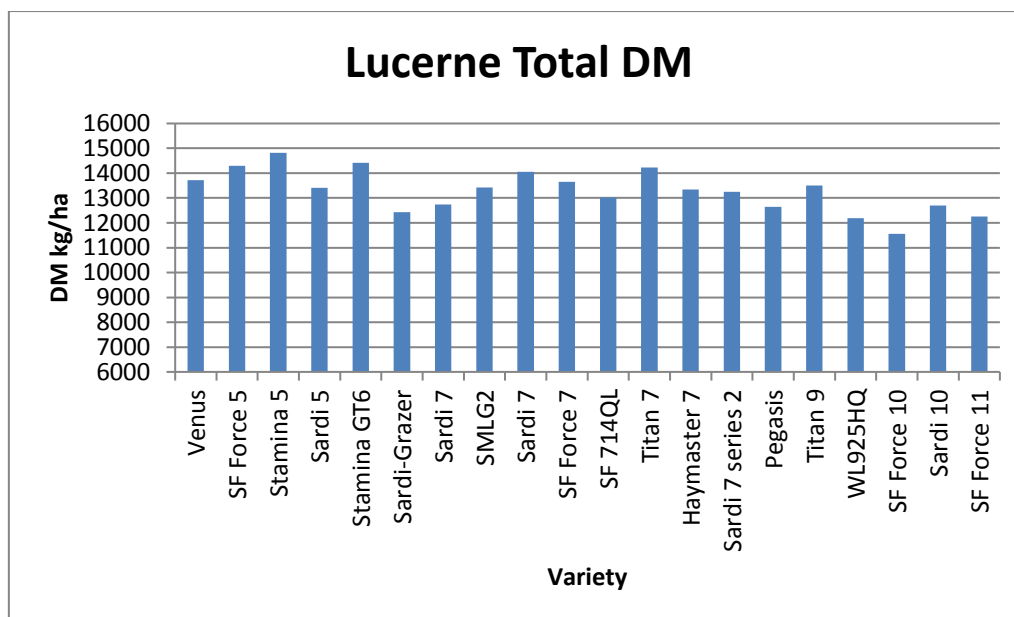


Figure 13: Total Lucerne DM for the term of the trial

The 'summer active' lucerne varieties (figure 14) on the southern end of the lucerne trial appear to be persisting and producing more dry matter than the more 'winter active' species (figure 14). This observation has been noted previously in other work, and it would be considered accepted by industry that the 'winter active' varieties do not persist as well as the 'summer active' varieties under grazing conditions. Grass and broadleaf weed control was mentioned in the 2014 audit and was addressed.



Figure 14; 'Summer active' Lucerne varieties (left) showing greater persistence through plant density than the more 'winter active' lucerne varieties on the right (both taken 18th May 2015).

Sub Clover

The sub clover trial has not had any measurements taken during this milestone. As an annual species, the dry spring of 2014 saw all varieties seed early. Obviously no dry matter production occurs over the summer months (figure 15), and it has only been the April rain that has created germination for 2015 (figure 15). No 'establishment' counts have been possible to date, soil temperatures have declined rapidly and emergence has been slow. Again, grass and broadleaf weed control was highlighted in the 2014 audit, and control measures were put in place and spraying activities conducted as per the 'activities' report.



Figure 15: The sub clover trial, taken 3rd March, 2015 (left) and 14th April (right) showing emerging cotyledons at best at this time.

Review – issues and suggestions to MLA about conduct of trials

Mentioned in earlier reports, a key issue in establishment of all species at this site was the significant delay in obtaining seed, which delayed seeding 6 weeks from the desired time. In cold environments, where soil temperatures decline quickly, seeding must occur in April. This is a major commercial focus that, as advisors, we are constantly requesting of our clients; plan, plan and plan. Getting land preparation and seeding time right is critical to a successful pasture.

Underlying all this delay however, was the inability of MLA to get out co-operator contracts. From the 'tender submission date' of August 31st, 2011, it was not until April 2012 that I was formally contracted to commence the work. Again, what planning and preparation can take place in a month? The time allowed before sowing was totally insufficient. I requested the opportunity to better prepare the site over the next 9 months and get everything done in a more timely manner, but that was declined. "It must be sown in 2012" the only direction given, which meant some compromises were already 'accepted' before the trials were even planted. Had it been a commercial paddock with a client, I would have simply suggested to the client to plant a short term forage crop, prepare the site over spring / summer properly, and the pasture establishment goals would be significantly better.

Once planted, this site has done as well as could be expected. Obviously time frames and pasture research tend to fight against each other. Persistence, for example, over 2.5 or 3 years, while useful, does not provide any guidance to a farmer on what to expect if aiming for a long term (>10 year) pasture. Costs for such research are significant, and I fully understand those constraints. However, if such data is to be requested by the seed and pasture industry, less projects over longer terms is the only way to manage the cost exposure.

Statement of trials recommended for further monitoring

Given the data collected to date, and an established site, a huge opportunity exists on such sites as the current PVTN to continue the 'persistence' work that the industry is so keenly seeking.

At Blayney, the recommendation that I can propose, is to continue with the site, ideally for three years, with the simple goal of measuring persistence. For the PRG trial, selecting from the current data of 30 varieties the 'top 15' for example, would reduce the ongoing trial costs. While travel to/from the site is still required and not reduced, time taking measurements would immediately half.

Of the other species, what further persistence data that can be obtained from the sub clover species trial is questionable, and so reliant on seasonal conditions. I question if there is 'commercial value' is continuing such a trial. The lucerne trial would fit into a similar situation. There is data aplenty about lucerne, perhaps not 10 year plus persistence data, but is that what we really expect of such a plant. Grasses yes, but maybe we need to refocus just where lucerne fits in the 'longer term' pasture. Is it the variety, or the person in charge that has a greater determining factor on persistence, especially of lucerne. Additional to the above rationale, the lucerne trial at Blayney has seen some soil type influences which has significantly impacted on the trial, and although not statistically analysed yet, I suspect the data will have a lot of 'noise'.

To the other grasses, Phalaris, Fescue and Cocksfoot, these are key species of the tablelands pasture base, and I would strongly encourage these trials to continue. How much more dry matter data is required is very questionable, however the persistence data, I believe, is invaluable. The base data is all there, and with site maintenance and persistence measurements only, costs will again be significantly reduced. It would be a shame to see MLA or the seed industry throw potential long term data sites out after just three years.

Yes, it can get dry, however it does rain, and this site has great potential to display to all visitors, the value of a certain species or variety over the longer term. Indeed, that is nature and what is enabling some species / varieties to shine while others falter.



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