**Producer Innovation Fast-Track Participant Report**

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| **Project code:** | P.PSH. |
| **Project Name:** | Solving the Sulphur Story |
| **Project Lead Name:** | Nancy Spoljaric |
| **Report number:** | Progress Report for MS3 |
| **Date:** | 30th Sept 2018 |
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**Participant Report**

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| 1. Project objectives
 | 1. To determine the distribution and content of extractable S in five (5) soil profiles under diverse paddocks of each of the three (3) main soil types on the Monaro (i.e. basalt, granite and shale-derived soils) to ascertain the following;
	1. the S status of soil beyond that already known from the annual testing of surface soils (0-10cm)
	2. to understand the distribution and movement of S in the soil profile that has been previously applied as fertiliser (by soil testing to 50cm rather than the current testing 0-10cm)
	3. documentation of S leaching effects and plant availability in root zones
2. Determine responses to fertiliser applications
3. Apply gypsum (the most commonly used S fertiliser) at the 15 sites at two rates of application (Nil and +S) in a replicated trial design to ascertain:
4. the pasture responsiveness of the site to S fertiliser
5. the soil test response to S application to develop a guideline for fertiliser application rate calculations

3. Participate in Producer Innovation Fast Track activities provided by MDC |
| 1. What work has occurred on your project since your project started or the last report? Outline any technical issues you have had.
 | Our previous report described progress in three areas of work: 1. **Response of subterranean clover to S on soils with different starting levels of extractable S in the surface soil (0-10 cm).**

In May and June 2018, 15 field sites were set up across the Monaro region (Table 1) to investigate the response to S application (nil or high S) of a sown subterranean clover pasture. A subterranean clover-rich pasture sward is being used a “bio-indicator” of S-responsiveness of each site. 1. **Response of the KCl40 soil S test to application of S.**

At a subset of six of the sites (two sites on each soil type) an additional experiment was set up to investigate the soil test response to S application. Treatments received ‘nil’, 15, 30 or 45 kg S/ha as gypsum with three replicates. 1. **Deep soil coring to assess distribution of S in soil profiles.**

Concurrent to the setup of the sites, deep soil cores were taken or attempted at each of the 15 field sites. Five replicate cores to a depth of ~80-100 cm was taken around the perimeter of the plots sown to subterranean clover. Deep soil cores could not be taken at six of the sites on the Cooma side of the Monaro region which had received the lowest rainfall. The soil was very dry and coring was impossible. These sites will be revisited when there is sufficient rainfall to permit coring. **Progress since this last report ie July / August / September**Deep soil cores (0-80 cm) were taken in May and June 2018 at 9 of the 15 sites. Soil at the remaining 6 sites is still too dry to core but sites will be revisited when there is sufficient rainfall to permit coring. For the previous three months the district has remained extremely dry with no significant rainfall occurring at any of the trial sites. Soils from those sites that have been cored have been processed (dried, sieved) and all required soil chemical extractions completed (KCl40 extraction for sulfur, Colwell extraction for phosphorus and potassium, and 1:5 CaCl2 for pH and aluminium).***Analysis of these extracts is currently being finalised and will be reported on-track at the next Milestone.*** Initial reports in June to July were that the subterranean clover that had been sown at the field sites had germinated reasonably well at sites near the Bombala side of the Monaro. This area had received the most rainfall and germination was also helped by farmers applying water to the plots. However, rainfall over July to September has been below average and current indications are that the subterranean clover is patchy across the plots and failed to establish at some sites on the Cooma side of the Monaro. Plots will be examined over the next two months to assess whether there is sufficient clover cover/ dry matter to harvest. If there is insufficient material, the subterranean clovers will be allowed to set seed and it is anticipated that this will provide a seedbank for re-establishment of the experiment next season. Sites that have completely failed will be over-sown. Once soil analyses have been finalised, work will focus on assessing trends in the S down the soil profiles and how this relates to S fertiliser history.  |
| **Table 1** Summary of sites set up in May and June 2018, and progress in deep soil sampling. Tick mark indicates setup/ coring is complete. |
| 1. What have you / the group **found or observed** whilst undertaking your project?
 | Seasonal conditions can have a significant impact on sub-clover germination as well as timing of sowing (several sites were sown perhaps a little too late ie. outside of the window for successful clover establishment.) This was unavoidable and due to the fact original sites selected on a soil test history, proved to be too rocky and inaccessible to go ahead and establish the trial once on-site. Landholder opinion gathered prior had suggested sites would be okay. Our sites are scattered across areas with considerable variation in rainfall, elevation, aspect, soil type. All these “environmental” factors can have a substantial impact on site success in terms of data collection. |
| 1. How will your project results improve your business productivity and / or profitability?
 | -understanding how to interpret the universally poor S test results for 80% of paddocks (all three major soil types) across the Monaro and subsequent ability to correct S deficiency and/or understanding how to access it better will either increase production and/or enable better informed and economic decisions on fertiliser choice, quantity and application rates.  |
| 1. Since starting your project, what **limitations / issues** have you encountered in accelerating innovation capability development? *(outline as many as you need to)*

*These could be:** *Contextual*
* *Process oriented*
* *Resources (access to people, funding, previous work)*
* *Skills and training*
* *Tool and decision making support*

*This question is about the people and processes involved in the project, rather than technical aspects of the project.* | Once the results have been distributed, evaluated and interpreted for producers, then the measurement of capability development can occur.Our main limitation has been **seasonal conditions** with the lack of rainfall impeding progress on both sub clover germination and establishment and the completion of deep soil coring. |
| 1. Since starting your project, what **insights or learnings** have you had about accelerating innovation capability development? *(outline as many as you need to)*

*These could be:** *Contextual*
* *Process oriented*
* *Resources (access to people, funding, previous work)*
* *Skills and training*
* *Tool and decision making support*

*This question is about the people and processes involved in the project, rather than technical aspects of the project.* | The following shifts in attitudes, interest and thinking have been observed among MFS members:-increased awareness of S fertiliser issues on the Monaro and the lack of scientific evidence/trial work to date for Monaro soils on the whole issue of S deficiencies and how much S is limiting growth;-skills levels of producers in regards to understanding complex soil/plant interactions is increasing;-improved knowledge is expected to increase willingness to access cash flow to apply fertiliser;-attitude to the value of fertiliser investment is improving. |
| 1. What **actions or decisions** have you done (or could you do) to overcome the limitations, and action the insights, identified in 5 and 6 above?
 | No deviation in terms of actions and decisions has been needed as the project is progressing well against the original plan. As mentioned our main challenge which has impacted on progress has been the seasonal conditions which are out of our control. The only option if we do not have sufficient harvestable material across sites is to maintain the sites for a second season and allow the seed that has been set to regenerate the following year providing adequate rainfall is received. |
| 1. How is this program helping you and / or your group, accelerate innovation capability development?
 | -this program has provided a financial incentive and crucial support for MFS to be able to contract CSIRO to conduct this research; the result so far is a much more serious research effort and better research outcomes are anticipated from such a partnership. Locally validated, evidence based results will drive adoption and practice change on the ground at a much faster rate than general, generic based Industry information. |
| 1. How satisfied are you with the benefits of the Producer Innovation Fast Track Program (please circle)
 | Least satisfied 1 2 3 4 5 6 7 8 9 10 Most satisfied |
| 1. How could the MDC Producer Innovation Fast-Track program support you more to accelerate capability development?
 | No further suggestions at this stage. |
| 1. Any additional feedback, blogs, photos or video you would like to share with MDC?
 | See photos attached |

Please send your completed report to Renelle Jeffrey at fasttrack@mla.com.au