Healthy Subsoils Produce More Red Meat

The 'Healthy Subsoils Produce More Red Meat' project is the first of its kind in high rainfall pastures and aims to improve the productivity of grasslands through various subsoil amelioration treatments.

This article presents the first full round of results obtained, which shed light on the effectiveness of different subsoil treatments so far across the three different demonstration sites. The various treatments and their impact on the ryegrass plus companion species pasture response in terms of dry matter yields are discussed.

Introduction

'Healthy Subsoils Produce More Red Meat is a Meat & Livestock Australia (MLA) Producer Demonstration Site project. It was initiated with the primary objective of demonstrating how to enhance the productivity of grasslands pastures.

The demonstration project, funded by MLA supported by collaborating partners including Melbourne Polytechnic, LaTrobe University, the Grasslands Society of Southern Australia and Agridome Consultancy, aims to demonstrate techniques considered best practice in soil science that have been shown to improve yields in various crops in the grains industry.

This article presents an update which follows on from earlier articles that can be found in previous editions of the Grasslands Society Newsletter. Here the first complete round of data collection from the three host demonstration sites, Boorolite, Coldstream, and Delatite, are presented for the first time. We assessed the impact of various site-specific prescription subsoil treatments on ryegrass plus companion species grasslands pasture and forage yields.

Materials and methods

This demonstration project is being carried out at three different locations. Each location tested different combinations of subsoil amelioration treatments. The treatments were applied in the summer of 2022 at the Delatite site and during the summer to early autumn period of 2023 at the other sites. The treatments were prescription designed for each site based on expert opinion from extensive soil testing carried out at each site in the year prior. The plots are around one to two hectares in size at each site and are harvested by collecting three quadrats from each plot and drying them in an oven to determine the total weight of dry matter (kg DM/ha).

There have been one or two other harvests conducted from the Delatite (Forage Brassica) and Coldstream (prior to first graze) sites before these results, however there were no significant differences observed between any of the treatments until now.

The treatments applied at each site, along with the obtained results and statistical parameters, are summarised below.

Boorolite treatments	Boorolite 16.10.23 (kg DM/ha)	LSD
4t/ha lime + 15–20t/ha poultry litter + deep rip	6,813.3	a
4t lime + deep rip	5,393.3	ab
1t lime+ 15–20t/ha poultry litter (Speed disc to 5cm)	5,200.0	ab
3t lime control	4,286.7	b
LSD (P = 0.05)	1,929.2	
Treatment F Pr.	0.089	
CV%	17.8	

Coldstream treatments	Coldstream 17.10.23 (kgDM/ha)	LSD
Deep placement poultry manure	2,406.7	a
Control	2,013.3	ab
No lime	1,716.7	b
Soilkee – 1st treatment to be applied spring 2023	0.0	
LSD (P = 0.05)	606.6	
Treatment F Pr.	<0.001	
CV%	19.8	

Treatments – Ryegrass pasture	Delatite 26.9.2023 (kg DM/ha)	LSD
3t lime + deep ripped	3,125.5	a
3t lime + 20t manure + deep ripped	3,049.8	a
3t lime control	2,344.5	ab
3t lime + 20t manure	1,857.8	b
LSD (P = 0.05)	1,085.9	
Treatment F Pr.	0.081	
CV%	20.9	

Results and discussion:

At the Boorolite site, the treatment with 4t/ha lime + 15–20t/ha poultry litter + deep rip exhibited the highest forage yield, with 6,813.3kg DM/ha. Although other treatments also showed promising results, the deep rip combined with poultry litter and lime application appeared to be the most effective at enhancing forage production.

At the Coldstream site, the deep placement poultry manure treatment significantly outperformed the other treatments, resulting in 2,406.7kg DM/ha of forage yield. This treatment was followed by the control treatment, which yielded

2,013.3kg DM/ha. The absence of lime had a noticeable negative impact on forage production at this site.

The Delatite site showed that the treatments with lime combined with deep ripping or manure application (or both) led to higher forage yields compared to the control and manure-only treatments. The treatment with 3t lime + deep ripped resulted in the highest forage yield of 3,125.5kg DM/ha.

Conclusion

The first round of results from the 'Healthy Subsoils Produce More Red Meat' subsoil amelioration project provides valuable insights into the effectiveness of various subsoil treatments on enhancing forage yields in grasslands. The outcomes vary across different sites, highlighting the importance of site-specific management practices. The combination of deep ripping, lime, and poultry litter appears to be a promising approach for improving forage production. These findings will contribute to the development of sustainable grassland management strategies, ultimately benefiting livestock producers and the agricultural community. This project is in its infancy and will continue until 2028, with updates being provided regularly via seminars and field walks and the Grassland Society newsletter. If you would like further information regarding this project or would like to investigate your subsoils, please reach out to Matt at Agridome Consultancy on Mb: 0438209707 or E: matt@agridome.com.au.

Acknowledgments

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AgriFutures Pasture Seeds

Project team members Wesley Moss, Andrew Guzzomi, Megan Ryan, Emma Rodham, Manager, Levied Industries – Pasture Seeds Program, and Phillip Nicholls.

Free screening service to test for insecticide resistance in the redlegged earth mite

Growers and advisors across Australia are being called on to send in samples of redlegged earthmite (RLEM) to help detect the spread of insecticide-resistant populations.

Cesar Australia is offering a free screening service to test for insecticide resistance in the RLEM within South Australia, Victoria, New South Wales and Tasmania. The screening service is at no cost for Australian pasture seed growers and advisers, thanks to co-investment by AgriFutures Pasture Seeds Program. This investment adds to a larger program funded by Grains Research Development Corporation (GRDC), enabling some research activities in grains systems to be extended to pasture seed producers.

The RLEM (Halotydeus destructor) is a major pest affecting the pasture seed industry, as well as many other pastures and cropping industries. The chemical insecticides that are available for RLEM control are becoming less effective due to the evolution of resistance. This is because of the heavy reliance on the three registered chemical groups to control the RLEM – synthetic pyrethroids (SPs), organophosphates OPs, and neonicotinoids.

Insecticide resistance in the RLEM is increasing across southern Australia. Resistance to both SPs and OPs is now widespread across Western Australia, and is present in several areas within South Australia, and Victoria. In the last year, the research team have detected a significant increase in insecticide-resistance in pasture seed paddocks within the south-eastern region of South Australia.

The project team are particularly interested in hearing from growers or advisors who have experienced recent, or past failures or have paddocks that are frequently impacted by the mites and often require spraying, or where mites are not being controlled by seed treatments.

This project will not only help detect any resistance before it becomes more widespread, but will also help identify the best control options for growers.

Cesar Australia will be undertaking field trips in the coming months to collect RLEM for resistance screening, so get in touch if you would like to discuss RLEM collection from your area. The target areas for this year's resistance screening are New South Wales, the mid-north and south-east regions of South Australia and the Eyre Peninsula. A collection kit can also be provided containing the necessary equipment to collect and send mites in for screening if required.

New Committee Member

The Limestone Coast branch has welcomed a new committee on board, Molly Kalman. Molly works from the Elders Naracoorte branch as a Livestock Production Advisor and will be a great addition to the committee. The branch is also doing a trial of brassica crops and their response to Nitrogen in collaboration with the Kangaroo Inn Area School, local rural retailers in Millicent and others but with the lack of rainfall at the start it hasn't produced the desired results. The branch is also planning an information day in February on carbon abatement and what we can do on farm, details to follow.