FARM WALK-Improving Production on Non Wetting Sands & WORKSHOP-Carbon, Climate & your Farm - making sense of it

Thursday 18th August 2022

9.00am - 3.30pm

Light lunch & refreshments provided

See program below & on back Drop in to sessions that interest you

REGISTRATIONS essential;

Email: tstrugnell@coorong.sa.gov.au

Text: 0427 750 050

Register by Monday 15th August

FARM WALK-MLA Sandy Soil Project

Dr Melissa Fraser - *Soil Function Consulting*

9.00am Corner Cold & Wet Road & Richardson Road FIELD

Visit demonstration site treatments; Deep Ripper with inclusion plates, Bednar Terraland, Peats Soil Compost and Fertiliser - exploring soil & plant growth response

WORKSHOP-Carbon, Climate & your Farm

12 noon Coonalpyn Football Club
Dukes Highway COONALPYN

Overview of current carbon climate -Global trends, Climate Emissions Reduction Facility (*CERF*)

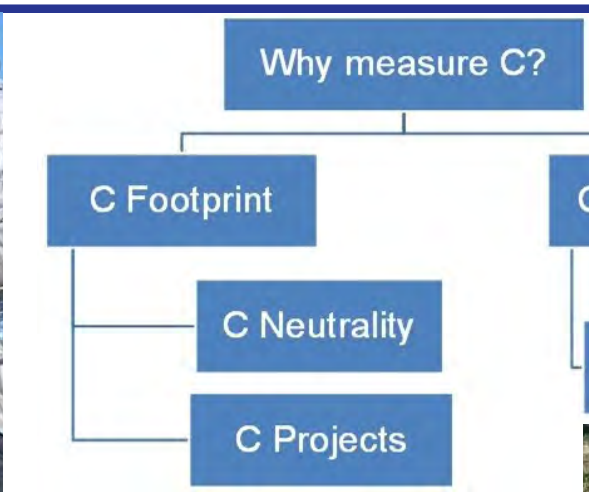
Methane emissions in livestock - can we manage it?
Emma Winslow, SARDI

Seasonal outlook & current climate trends
Darren Ray, Consulting Climatologist

Understanding On Farm Carbon Footprints
Felicity Turner, Turner Agribusiness

The capacity of our soils to store Carbon
Update on recent SA based work
Amanda Schapel, SARDI

CONCLUDING WITH PANEL DISCUSSION



Australian Government
Department of Agriculture, Water and the Environment

Future Drought Fund

FRRR Foundation for Rural Regional Renewal

mla MEAT & LIVESTOCK AUSTRALIA

This project is supported by FRRR, through funding from the Australian Government's Future Drought Fund

COORONG DISTRICT COUNCIL

Coorong Tatiara Local Action Plan

Australian Government

National Landcare Program

Landcare Farming

National Landcare Network

FARM WALK FIELD Improving Production on Non Wetting Sands & WORKSHOP COONALPYN Carbon, Climate & your Farm - *making sense of it*

Thursday 18th August 2022
9.00am - 3.30pm Light lunch & refreshments provided

Stop	Item	Speaker	Organisation	Location	Time	BOOKLET PAGES
1	**MEETING POINT** Corner Cold & Wet Road & Richardson Road FIELD	WELCOME & OVERVIEW OF THE DAY	Coorong Tatiara Local Action Plan	FIELD	**From 9.00am**	3. Pre event evaluation 5. Improved Grazing Production on Non Wetting Sands
2	**FARM WALK-MLA Sandy Soils Project**	Dr Melissa Fraser	Soil Function Consulting	'Midway' – Richardson Road Meat & Livestock Australia Sandy Soils Demonstration Site *FOLLOW FARM WALK SIGNS*	**9.30am** *2 hours*	8. Soil organic amendments 15. Non Wetting Sands & Veldt Grass Project 19. Post event evaluation
	Travel to	***Coonalpyn Football Club***	**Dukes Highway**	**COONALPYN**	**11.30 am**	
	BBQ LUNCH				**12 noon - 12.30pm**	
3	**Welcome & Introduction**	Tracey Strugnell	Coorong Tatiara Local Action Plan		**12.30pm** *5 minutes*	
4	**Overview of current carbon climate** Global trends, Climate Emissions Reduction Facility (CERF)	Emma Winslow	SARDI		**12.35pm** *20 minutes*	
5	**Seasonal outlook & current climate trends**	Darren Ray	Consulting Climatologist		**12.55pm** *30 minutes*	
6	**Understanding On Farm Carbon Footprints**	Felicity Turner	Turner Agribusiness		**1.25pm** *25 minutes*	
	QUICK BREAK				**1.50 – 2.05pm** *15 minutes*	
7	**The capacity of our soils to store Carbon** Update on recent SA based work	Amanda Schapel	SARDI		**2.05pm** *30 minutes*	
8	**Methane emissions in livestock can we manage it?**	Emma Winslow	SARDI		**2.35pm** *30 minutes*	
9	**PANEL DISCUSSION**	**ALL SPEAKERS**			**3.05pm**	
	FINISH				**3.30pm**	

PRE EVENT EVALUATION

FIELD FARM WALK - Thursday 18th August 2022

Improving Production on Non Wetting Sands

Please complete this QUICK evaluation either by;

Scanning in the logo top right with your smartphone and completing on line, OR

Please complete this paper version, tear out of your booklet and give to Farm Walk Facilitator Felicity Turner

NAME:

ROLE: *Please circle*

Landholder	Adviser/Agronomist	Industry	Other

HOW MANY HECTARES DO YOU MANAGE?

Mixed Farming	Cropping only	Sheep only
Cattle only	Dairy enterprise	Other

HOW MANY SHEEP DO YOU RUN?

HOW MANY CATTLE DO YOU RUN?

SANDY SOILS

1= Low 5=Average 10=High

How would you rate your current knowledge around managing sandy soils to maximise production potential?

1	2	3	4	5	6	7	8	9	10

What rating would you give your knowledge of limitations of sandy soils BEFORE this session?

1	2	3	4	5	6	7	8	9	10

https://www.surveymonkey.com/r/P_FIELD

NOTES

IMPROVED GRAZING PRODUCTION ON NON-WETTING SANDS

DEEP TILLAGE CASE STUDY

This case study explores the effectiveness of deep ripping and nutrition on soil fertility and biomass production.

AT A GLANCE

Challenges

- Sandy soils are naturally deficient in most essential plant nutrients and are prone to compaction.

Opportunities

- Deep tillage can overcome compaction and reduce water repellence.
- Nutrient deficiencies can be addressed with fertilisers and organic amendments such as compost.

This paddock of veldt grass and lucerne was due for renovation. We were worried about establishing a new pasture as the soil is severely water repellent.

The demonstration lets us see and measure pasture response to different strategies at the paddock scale.

Nigel Williams
Owner Manager, Karwin Nominees - Field

BACKGROUND

An 18ha pasture paddock at Field, near Coonalpyn SA, was selected to demonstrate strategies to overcome sandy soil constraints. The paddock is characterised by deep sandy soils (Image 1) and a heavier flat on the northern end, where clay is found at 40cm.

Soil sampling in 2021 confirmed the paddock to be severely water repellent and deficient in potassium, with marginal sulphur and phosphorus. The deep sand had high soil strength below 25cm, indicating compaction and had low nutrient retention capacity throughout.

Consultation with local farmers confirmed they were interested in testing deep ripping strategies to overcome high soil strength and to treat water repellence, which is a very common constraint in the district. There was resistance to testing implements that invert or intensively mix the soil profile, as these practices can increase the risk of wind erosion.

In autumn 2022, treatments were applied on plots 1.6 ha in size to:

- Treat nutrient deficiencies using both mineral fertiliser and compost.
- Treat deep soil compaction.
- Dilute water repellent surface soil layers.
- Incorporate topsoil and nutrients into the subsoil.

These treatments are tested against a non-tillage control (Image 2) and will be monitored until 2025.

Image 1. Soil profile from the deep sand dune prior to any treatment being applied.

TREATMENT DETAILS

1) Custom Fertiliser: a blend of mono-ammonium phosphate, muriate of potash and sulphate of ammonia ($1596/t ex Meningie) was spread at 325 kg/ha to supply 30N, 33P, 50K and 20S kg/ha ($519/ha).

2) Custom Compost: 50% mushroom compost, 25% aged chicken manure and 25% cultured compost ($50/t landed) was spread at 4 t/ha, supplying 67N, 19P, 52K, 30S and 126Ca kg/ha ($200/ha).

3) Bednar Terraland Chisel Plough with Active-Mix tines: 6.2m working width, 15 tines on 43cm spacings. Tine shape provides easy soil penetration with optimised loosening to 55cm. Mixing and levelling in one pass, using hydraulic spiked roller packers. Approx. $150-165/ha contactor rate.

4) Agrowplow AP91 Deep Ripper with inclusion plates: 6m wide, 16 shanks on 54.5cm spacings. The shank is straight with a narrow profile to shatter compacted soil down to 60cm. Shallow leading edge tines work in-line with deeper rear tines to reduce draft force. Inclusion plates can be fitted to funnel topsoil into the rip line. Approx, $90-120/ha.

Image credit: Google Earth

Image 2. Trial map (9 treatments x 1.6ha).

1.CUSTOM FERTILISER

2.CUSTOM COMPOST

3.CHISEL PLOUGH + MIX

4. DEEP RIP + INCLUSION

RESULTS TO DATE

Penetration resistance (PR) is a measure of soil strength, indicating the presence of compacted or hard set soils. Plant root growth is restricted in soils with high strength, particularly when the PR exceeds 2,500 kilopascals (kPa; black dotted line, Figure 1).

- PR across the deep sand was measured in spring 2021, showing the soil strength increased down the profile, exceeding 2,500 kPa below 25cm (grey line, Figure 1).
- Deep ripping with the Agrowplow in Autumn 2022 reduced the PR throughout the profile to 45cm (green line, Figure 1).
- Chisel ploughing the soil with the Bednar Terraland also reduced the PR throughout the top 50 cm of soil (blue line, Figure 1).

Molarity of ethanol droplet test (MED) is a laboratory test that assesses the severity of water repellence. Samples collected after deep tillage showed:

- Control (no tillage) and the Deep rip + inclusion were both severely repellent in the 0-5cm layer and moderately repellent in the 5-10cm layer (MED 2.5 and 1.5 respectively).
- Chisel plough + mix showed some dilution, being moderately repellent in both depths (MED 1.5).

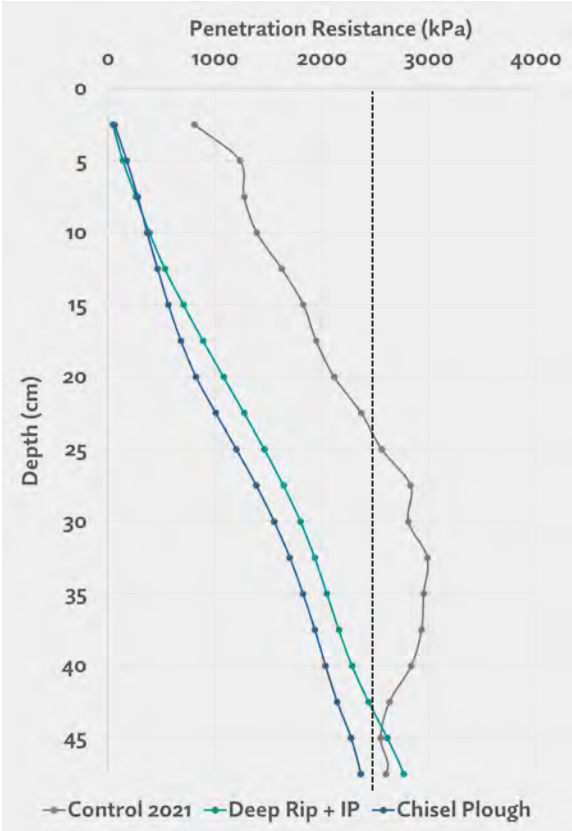


Figure 1. Penetration resistance (kPa) before and after deep tillage.

WHERE TO NEXT?

- The demonstration paddock was sown to Scope barley on 2 June 2022, following rolling.
- Post emergent herbicide was applied the week of 8 August.
- NDVI measurements will be collected through late winter and spring.
- Grain yield will be measured using a commercial harvester in each treatment plot. Recorded data will be extracted for analysis.
- The paddock will likely be sown to an annual crop in 2023; monitoring will continue.

Acknowledgements: Many thanks to Jo and Nigel Williams for access to paddocks, equipment and resources to deliver this case study. Thanks also to the project Steering Committee, Agrowplow for transport and use of their AP91 deep ripper, Henry Angas, WSB Distributors Karoonda, Earthserve, Swan Brothers Meningie and Peats Soil & Garden Supplies for ongoing support.

This project is supported by **Meat and Livestock Australia** and the **Coorong Tatiara Local Action Plan - Coorong and Tatiara District Councils**.

Project Duration: July 2019 to June 2026

Project manager: Dr Melissa Fraser, Soil Function Consulting. E:mel@soilfunction.com.au M:0407 773 369

Understanding soil organic amendments and their application in sandy soils.

Sarquin Hunt and Melissa Fraser,
PIRSA Rural Solutions
June 2021

Funded by:
Limestone Coast Landscape Board, Grassroots Grants

Key messages:

- Soil organic amendments can improve soil health through improvements to physical, chemical, and biological soil properties.
- An understanding of the soil constraints, and management objectives will ensure the most appropriate soil organic amendment for use is selected.
- Suppliers can develop custom blends to address multiple constraints common in sandy soils.

1. Introduction

There are over 1.2 million hectares of sandy soils across the Limestone Coast with low water and nutrient retention capacity, often resulting in poor plant health and soil function. Thankfully, these constraints can be treated with a range of soil management techniques to improve their productivity and resilience. These include practices such as clay spreading and targeted nutrient applications to treat chemical constraints, and deep ripping and soil mixing to treat soil physical constraints. Recent research on sandy soils across the southern cropping zone has explored the use of organic soil amendments such as animal manure, legume hays and compost to improve soil and crop health, generating interest in the broadacre application of these products.

Figure 1. Compost piles being turned to promote microbial activity and stimulating decomposition processes (courtesy Mulbarton Compost).

Organic amendments can improve many soil properties and as their use increases in popularity it is essential that the potential benefits of each amendment type and how they work is well understood. This factsheet provides a basic understanding of a range of products currently available in the Limestone Coast, and a brief overview of how they may contribute to a healthy soil.

2. What are soil organic amendments?

While there are multiple definitions for the term 'organic', for the purpose of this document, 'organic' refers to a product derived from living matter (plants and animals) and is non-synthetic. Unlike fertilisers, which are used to directly supply plants with nutrients, organic amendments can improve the physical and chemical properties of a soil, in turn improving biological function, and can be used to address single or multiple soil constraints. Additionally, amendments can improve

Soil Health

Soil health is the capacity of a soil to function as a vital living system that sustains plants, animals and humans.

plant health, enhance crop productivity, and increase water use efficiency, thereby leading to an increase in soil organic matter and carbon storage in soils.

2.1 A quick rundown on soil organic matter and soil organic carbon

Soil organic matter is comprised of living and non-living plant and animal matter and is critical to the function of a healthy soil (*Table 1*). Modifying physical, chemical, and biological soil properties, organic matter improves soil structure, increases water holding capacity and the retention and supply of nutrients, and increases resilience to changing environmental conditions.

Soil organic matter is composed of approximately 58% organic carbon (OC), which is particularly important for soil health[1]. Carbon from organic matter is consumed and utilised by soil microorganisms, stimulating decomposition of organic matter, increasing nutrient cycling, suppressing pathogens, and increasing aggregate stability. There are four main pools of organic carbon in soil: crop residues, particulate, humus and recalcitrant, each with increasing degrees of stability (*Table 2*). A soil's ability to retain and protect OC is determined primarily by its texture and the climate, hence there is no 'ideal' amount of carbon that any one type of soil should contain, however soils with less than 1% OC are often regarded as functionally impaired[2].

Table 1. Key functions of a healthy soil[3]

Productivity outcomes	Environmental outcomes
Physical support for plants	Filters and purifies water
Structure suitable for root growth	Detoxifies pollutants
Capacity for water infiltration	Provision of habitat
Supply of water and nutrients	Prevention of nutrient and sediment loss
Suppression of pests and diseases	Carbon sequestration

Table 2. Types of soil organic carbon[4]

Organic carbon pool	Sources	Size (mm)	Stability	Turnover time	Key functions
Crop residues	Plant roots and shoots, both in and on the soil	> 2	Readily available (labile)	Days	A source of energy for soil microorganisms; encouraging biological activity, biomass and enhancing biological processes.
Particulate organic matter	Plant and animal matter	0.05 – 2	Readily available (labile)	Years	A source of energy for soil microorganisms; encouraging biological activity, biomass and enhancing biological processes. Important for soil structure.
Humus	Decomposed organic material	<0.05	Resistant	Decades	All key functions, particularly nutrient retention.
Recalcitrant organic matter	Primarily charcoal	Variable	Very stable (inert)	Centuries	Can contribute to cation exchange capacity.

3. What sort of organic amendments are available in SA?

Below is an overview of several organic amendments currently available in South Australia, with a breakdown of the main benefits to physical, biological, and chemical soil properties.

Compost: Produced from a variety of organic materials, such as plant matter and/or animal manures, composts typically feature a high organic matter content. The addition of organic matter to a soil provides a myriad of physical, chemical, and biological benefits. The main benefits include increased organic matter content, cation exchange capacity (CEC), improved soil structure, nutrient supply and increased water holding capacity.

The basic composting process involves incorporating a mixture of nitrogen and carbon sources into a variety of other organic materials to stimulate microorganism activity and decomposition processes. Any product that is composted has been allowed to decompose for a period longer than 6 months, and often up to two years. The time the product has been left to decompose is referred to as the 'maturity'. The maturity of a compost tells a consumer that the product is essentially safe for use. Compost is considered 'mature' when the main decomposition processes have ceased. A good indicator of this is a product with a consistent texture and no large pieces of organic material remaining. Immature products, often referred to as 'hot', commonly contain decomposing microorganisms and very high concentrations and forms of nutrients which can be detrimental to plant health. The burning of plant roots and low germination rates are common upon application of 'hot' amendments.

The Australia Standard (AS 4454) outlines the requirements of a quality compost product. As this certification is on a voluntary basis, not all compost products have undergone this rigorous process, which guarantees a safe and controlled product. More information on quality assurance is listed below in the Quality Assurance section.

A variety of composted products are available in the Limestone Coast that are commonly used in viticultural and horticultural production (Table 3).

Chicken litter: Composed of chicken manure and bedding (roughly a 55:45 mix), chicken litter is rich in organic matter. The addition of organic matter encourages soil microbial activity, improves soil structure and aggregate stability, potentially reducing carbon turnover in soils. Improvements in soil structure can increase water holding capacity, however, there have been limited studies undertaken in Australia that demonstrate its effects other than its efficacy as a fertiliser. With no large local suppliers in the Limestone Coast, chicken litter may be cost prohibitive due to transport costs (Table 3).

Pig manure (composted): Commonly used for its fertilising effect, the high organic matter content of this product provides similar benefits to that of other composts. This includes improving soil structure, increasing nutrient retention, and providing resources for beneficial soil microorganisms. Composted pig manure undergoes the same treatment process as other composts, however, can slightly differ between suppliers. Although pig manure can be sold as a raw product (not composted), due to its high nutrient concentration its application can severely impact plant health. Additionally, raw pig manure has the potential to introduce pathogens (e.g. salmonella) and weeds to the soil. For these reasons, most pig manures sold commercially in Australia are composted. Composted pig manure is available from Bio Gro at their Wandilo site near Mount Gambier, and can be added to any other of their composted products if required.

Biochar: A carbon rich material produced by pyrolysis, biochar can improve soil structure, increase water holding capacity, increase CEC and improve soil fertility. Biochar has also been shown to improve nutrient retention, improve nitrogen cycling, reduce greenhouse gas emissions, and increase the potential for carbon sequestration. The actual benefits will depend on the type of material the biochar is produced from, and the soil type. For example, a plant/manure-based biochar will likely have greater nutrient content compared to a wood-based biochar which generally demonstrates a higher carbon sequestration capacity.

Table 3. Indicative pricing schedule (excluding delivery) as of May 2021. Please use this as a guide only; contact the supplier for a quote.

Pricing	Bio Gro				Mulbarton	Various	
	Horticultural Compost	Composted Manure	Organic Fines	Viticultural Mulch	Compost	Biochar	Chicken Litter (composted)
$/m³	13	38	16	13	42	600	N/A
$/tonne	20	72	30	27	80	1500	75

4. Key considerations when selecting an amendment

How you use organic amendments will be determined by your soil type and land use, your current management practices and objectives and the range of constraints present.

Consideration of the following will assist in selecting the most appropriate amendment for your soil:

- What soil constraints are present?
- What are your objectives – e.g. do you aim to improve general soil health, treat a single soil constraint, or overcome a combination of constraints?
- What is the composition of the products available?
- What application rate will you need, and will the cost be prohibitive?
- Was the amendment made in accordance with a quality assurance program?
- Is there information available that demonstrates the efficacy of the product? Have local trials been undertaken?

5. Identifying constraints

Table 4 outlines common sandy soil constraints that amendments may treat. Each of these constraints warrant careful diagnosis in the paddock, particularly when several different soil types are present. For further information on diagnosing and treating sandy soil constraints, a guide can be accessed here.

Table 4. Common constraints in sandy soils.

Physical	Chemical
Low organic matter Low water holding capacity Compaction Water repellence Poor aggregate stability	Low organic matter Acidity Low nutrient retention Naturally low P & K Aluminium toxicity

Figure 2. A sandy soil profile affected by four constraints that contribute to poor crop water use.

6. Product composition

Table 5 outlines important chemical characteristics of a variety of organic amendments available in the Limestone Coast. It's important to understand what is in your amendments to ensure that you are not exacerbating existing soil constraints or oversupplying nutrients that could be lost to the environment.

Many suppliers can provide laboratory analyses of their products, enabling you to select the most suitable amendment for your requirements. If an analysis cannot be provided, it is recommended that the amendment first be trialled prior to broad scale application.

Table 5. Selected chemical characteristics of readily available organic soil amendments in the Limestone Coast.

Chemical Characteristic	Bio Gro			Mulbarton
	Horticultural Compost	Composted Manure	Organic Fines	Compost
pH	7.6	7.9	8.3	8.5
EC1:5 (dS/m)	2.6	9.82	3.77	5.3
Moisture (%)	30.3	49	53.3	47.3
Carbon (%)	24.7	34.1	38.2	30.48
Organic matter (%)	42	58	65	-
Nitrogen (%dw)	1.28	1.83	1.2	1.44
Phosphorus (%dw)	0.26	0.72	0.28	0.29
Cu (mg/kg)	79	97.5	36.4	21.4
Zn (mg/kg)	169	388	129	90

Organic amendments can be used in isolation or as a blend in conjunction with suitable management practices to improve overall soil health. Suppliers can develop blends that address specific requirements (e.g. correcting a phosphorus deficiency), while keeping financial and management objectives in mind. Common additions include mineral powders, phosphorus, lime and gypsum.

To receive the maximum benefit from an applied organic amendment, it is recommended that when engaging with a supplier you provide as much detail as possible to ensure:

- the ideal soil amendments are incorporated into the finished product at the correct dosage;
- the best advice on application rate, method and timing is given.

Figure 3. Compost row being turned at Bio Gro Wandilo site with a Windrow Turner (courtesy Bio Gro).

7. Application rates

Application rates depend on soil characteristics, constraints, management practices and your objectives. Common application rates are provided in Table 6, however, these are only a guide. Please consult with your supplier to ensure you are applying amendments at the right rate, time, and place.

Table 6. Common application rates of organic amendments.

Organic Amendment	Application Rate (t/ha)		
	Broadacre Pasture	Viticulture	Horticultural Crops
Compost	1-1.5	8-15	5-10
Biochar	5-10	1-1.5	0.5-4.5

8. Quality assurance

For composted products, the Australian Standard for Soil Conditioners and Mulches (AS 4454) outlines the requirements of what constitutes a quality product. Products which are certified will feature the Australian Standard badge, and the manufacturers licence number. To gain this certification, a product must undergo pasteurisation, removing pathogens, weed seeds, herbicides, pesticides, and heavy metals. This certification ensures consistency of the product, and reliability that compliance to these standards is maintained.

9. Soil amendments in practice

A recent trial conducted on a highly compacted sandy soil with poor nutrient supply assessed the impact of ripping-based approaches (ripping, ripping + inclusion plates, spading, unmodified control) and amendments (chicken litter, clay, fertiliser, and hay) on the yield of various grain crops.

Yield responses ranged from nil to 1.1 t/ha compared to the unmodified control. Deep ripping and chicken litter observed the most consistent yield improvements, with an average gain of 0.6 t/ha. Responses were variable and were highly dependent on the soil constraints, management practice and annual rainfall. This underscores the fact that there is no 'one size fits all' approach to the use of organic amendments.

Useful links

Bio Gro: http://www.biogro.com.au/

Mulbarton Compost: https://www.mulbartoncompost.com/

References

[1]Hermann T & Schapel A (2020) A Health Check for our Agricultural Soils, Department for Environment and Water.

[2]Hoyle, F (2013) Managing soil organic matter: a practical guide. KDI00023, Grains Research & Development Corporation, Canberra.

[3]Hermann T & Schapel A (2020) A Health Check for our Agricultural Soils, Department for Environment and Water.

[4]Broos K & Baldock, J (2008) Building soil carbon for productivity and implications for carbon accounting. 2008 South Australian GRDC Grains Research Update.

[5]Wiedemann SG (2015) Land application of chicken litter: a guide for users. RIRDC Publication.

[6]Macdonald LM, McBeath, T, Fraser M, Wilhelm N, Davenport D, Trengove S, Moodie M, Whitworth R, Haskins B, Desbiolles J, Saunders C, Usgul M & Llewellyn R (2019) Mind the Gap: targeting profile amelioration in Southern region sandy soils. Proceedings of the 2019 Agronomy Australia Conference, 25-29 August 2019, Wagga Wagga, Australia 2019.

[7]https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/

This project is supported by the Limestone Coast Landscape Board through funding from the Grassroots Grants Program.

Improved knowledge and health of non wetting soils delivering sustainable and productive soil management decisions based on evidence.

The project aims to optimise soil health and water use on perennial pasture based sandy grazing country across the Coorong and Tatiara District Council regions. This will be done by demonstrating new and emerging technologies to build producer confidence to try new techniques, improve soil health, lift production and reduce ground water recharge across the region.

It will improve the knowledge and skills of farmers in dealing with non wetting sands and provide them with an increased understanding of these soils, how to best manage them in their environment and what options are available to address water repellence issues in their system when establishing crops and pastures.

Novel and conventional management techniques will be demonstrated in annual and perennial pasture based systems on sandy soils with the aim of optimising production, maximising water use and increasing soil health. Alternative mixed species crops will be assessed for their potential and the role they might play in the system.

This will be done by establishing four demonstration sites addressing water repellence and four demonstration sites focussing on increasing production in pasture based systems.

The sites will be monitored over a two year period to assess the impact of treatments on production, soil improvement and soil health, the results captured and utilised in a decision support tool to maximise production on non wetting sands.

Additional piezometers will be monitored across the district and automated monitoring of the water table will continue at existing sites, with an additional three sites to be established with the aim to try and capture changes in the water table and reverse the recent trend of dryland salinity across the region.

Establishment in non wetting sand at Meningie

The project demonstration sites will be supported by crop walks, workshops and updates to improve knowledge around the physical, chemical and biological constraints of non wetting sands and management options to optimise production and improve soil health in the Coorong and Tatiara regions.

Improved knowledge and health of non wetting soils delivering sustainable and productive soil management decisions based on evidence.

Site Location: Menalpyn

Site Aim: To further explore the use of Giberellic acid in combination with other products to quantify the effectiveness on increasing early winter and overall feed production in a veldt pasture.

Site Treatment:

27/4/2022 – Cows removed from paddock
19/5/2022 – Soil Tests taken
24/5/2022 – 80Kg/ha SOA spread (South Side only – ½ paddock)
23/6/2022 – Treatment applied to South side of paddock with a boom spray width not treated (Giberellic acid, UAN, Manganese, Copper, Zinc sulphates, Fulvic acid)
26/7/2022 – Pasture assessments conducted

Results to Date:

Table 1: Soil Test results (19/5/2022)

SampleName	Sample Depth	pH 1:5 water	pH CaCl2	Organic Carbon (W&B)	Colwell Phosphorus	Colwell Potassium	KCl Sulfur
		pH units	pH units	% (40°C)	mg/kg	mg/kg	mg/kg
Menalpyn_1	0-10	7.25	6.78	1.86	8	87	6
Menalpyn_1	10-30	7.34	6.64	0.43	<5	37	3.1
Menalpyn_2	0-10	6.75	5.99	1.76	6	96	3.9
Menalpyn_2	10-30	6.75	5.81	0.54	<5	39	<2.5
Menalpyn_3	0-10	6.78	6.16	1.86	9	70	4.2
Menalpyn_3	10-30	6.86	6.05	0.75	<5	49	3.1
Menalpyn_4	0-10	6.99	6.34	0.56	13	50	<2.5
Menalpyn_4	10-30	6.96	6.13	0.31	7	44	<2.5

Figure 1. Soil test locations taken from areas of historical high growth (Menalpyn 1) through to areas of historical low growth (Menalpyn 4) as established from historical NDVI Imagery

Table 2: Feed Test data (26/7/2022)

	CONTROL	SOA+GA	SOA
Dry Matter (%)	29.5	24	27.4
Crude Protein (%)	12.8	14.2	13.1
NDF (%)	51.7	52.2	54.9
DMD (%)	66.2	68.7	63.2
Est.ME (MJ/kg DM)	9.8	10.2	9.3

Figure 3. Dry Matter increases (% of control) by treatment

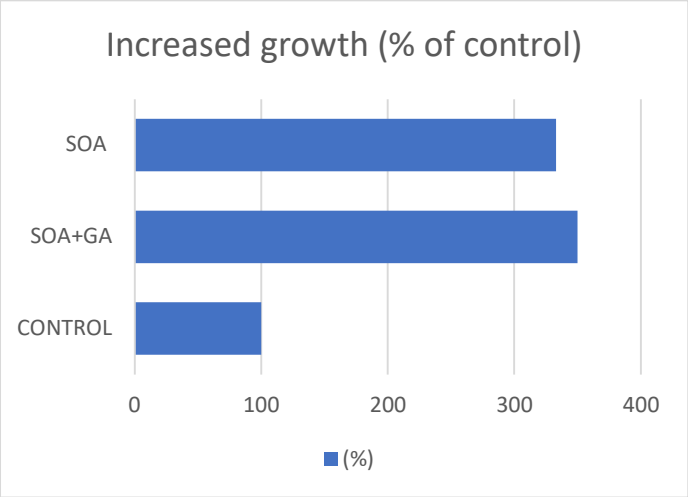


Figure 4. Response to SOA + GA mix. LHS = nil treatment, RHS = treated

Figure 5 (a-c). Pasture cuts of each treatment (26/7/2022)

5a. Nil treatment

5b. SOA + GA

5c. SOA

This site will continue to be monitored until Spring 2023.

For further information contact Felicity Turner

NOTES

POST EVENT EVALUATION

FIELD FARM WALK - Thursday 18th August 2022

Improving Production on Non Wetting Sands

Please complete this QUICK evaluation either by;

Scanning in the logo top right with your smartphone and completing on line, OR

Please complete this paper version, tear out of your booklet and give to Farm Walk Facilitator Felicity Turner

POST-EVENT EVALUATION

How would you rate todays session (1- poor, 10-excellent)

1	2	3	4	5	6	7	8	9	10

Has today's event increased your knowledge in the following areas (Y or N) - *Please circle*

Identifying Sandy Soils Limitations	Y	N
Strategies to improve production on Sandy Soils	Y	N

As a result of today's events are you likely to follow up on any of the matters covered or make any business / on-ground changes on your farm?

Identifying Sandy Soils Limitations

No	Unlikely	Maybe	Likely	Definitely

Improving Production on Sandy Soils

No	Unlikely	Maybe	Likely	Definitely

https://www.surveymonkey.com/r/A_FIELD