

Climate and Weather and its effects on Agriculture

- A session with Dr Ian Foster, DPIRD

Dr Ian Foster, senior researcher with the Department of Primary Industries and Regional Development, visited the FBG on Wednesday 12th June to talk about how climate change will affect farming in the future on the South Coast. Dr Foster discussed the distinction between seasonal weather variability and long-term climate change, and the processes that are driving the warming climate. He described the many ways scientists have measured changes from long term geological records. These include carbon concentrations in Antarctic ice cores that give 800,000 years of data, carbon isotope ratios in stalagmites dating back hundreds of thousands of years and different growth rates of trees during drier and wetter periods in the last few thousand years. Even radiation experiments using aeroplane contrails have added to the accumulated data. He showed the models used to predict future changes, the first of which, in Western Australia, were developed in the late 1980s. The first models predicted the South West would experience a bit more summer rain and less winter rain. Rainfall records between 1988 and 2018 show this prediction came to pass, though the decline in winter rain was greater than predicted. Dr Foster said climate change modelling happens on a broad scale but there are variations within the South West with different locations having different outlooks. He said in areas where farmers are experiencing a marked decline in early season rainfall, they are adapting to later starts, with considerations being a focus on emergence dates rather than sowing dates and using varieties that emerge later.

Information was given on ways and means for land holders to look into seasonal predictions for climate and weather so more informed decisions can be made on the timing of farm practices and future plans for climate mitigation.

The presentation ended with a 2019 seasonal outlook and many questions from the participants.



Above: Dr Ian Foster. Source: Department of Primary Industries and Regional Development. Below: Participants at Dr Foster's climate and weather presentation.



1080 Baiting Workshop

On Friday 7th of June, the FBG held a workshop on feral animal control where the Department of Primary Industries and Regional Development's biosecurity officer Peter Hennig delivered a presentation on 1080 baiting. Nine landholders participated in the workshop and worked through the relevant requirements and paperwork to obtain accreditation to handle and use 1080 baits. Four of the attendees also completed permits to allow them to purchase bait material. Topics covered during the session included:

- Types of 1080 bait options available to accredited landholders with permits.
- Life cycles of foxes and what they consume.
- When it is best to bait in regards to farming practices.
- Property requirements including a risk assessment, which is required before using 1080 baits.
- Where baits are able to be used on a property and best practice bait placement.
- Personal safety requirements when using 1080 baits.
- Requirements for notifying neighbours and landholders requirements for using baits on their own property.
- Risk to non-target animals and how to protect them.

Packs full of information and the required paperwork were given to all participants with the nine landholders completing accreditation.

Reaghan Shalders



Native fodder revegetation demonstration workshop

On Thursday 13th June, the FBG held an informative demonstration workshop on native fodder revegetation with native plant agronomist Dr Geoff Woodall. The group visited Brad Shelton's property where fencing and revegetation works for the Climate and Markets project is being completed with funding from the Regional Land Partnerships program. Topics covered on the day included the use of native forage and fodder shrubs in a revegetation system, the process of planting native

forage and fodder shrubs for a revegetation system, how native fodder systems can help improve animal productivity and health, how sustainable livestock systems have the potential to meet emerging consumer and market demands and how native fodder revegetation can help protect and prevent soils from erosion and salt encroachment while value adding to marginal land. Participants were able to look at seeds and plant species close up, discuss in depth with Geoff Woodall all aspects of native fodder revegetation and see the revegetation take place.

Reaghan Shalders



Wrap up – Managing Difficult Soils Forum

On 25th July, FBG hosted a forum looking at different solutions to manage difficult soils. This was part of a series of workshops held throughout the Albany and Esperance port zones.

The GRDC's RCSN process had identified a need for growers to have access to information and tools to identify soils that will respond predictably to various soil amelioration techniques and then be able to match the inputs on these areas to optimise profits.

The forums spent some time out in the paddock at soil pits as well as providing plenty of time for discussion in the shed and over lunch.

The forums were aimed at ensuring that farmers have the information and tools to identify soils that will respond predictably to various soil amelioration techniques and then be able to match the inputs on these areas to optimise profits. The forums allowed plenty of time for sharing grower experiences and peer discussion between growers as well as specialist soil scientists.

The well-attended workshop held by FBG was in the Jacup area where many farmers have been conducting their own on-farm trials to investigate various soil constraints.

We thank our hosts for the day, Mark and Mick Lester, as well as Lawson Grains, Gunnadoo. Your support is invaluable.

We also thank GIWA for facilitating the day, the speakers and consultants who travelled out to see us, as well as GRDC and DPIRD.

Speakers on the day were:

- Peter Nash (coordinator)
- Jeremy Lemon, Senior Development Officer, DPIRD Albany
- Wayne Pluske, Equii, Independent soil and nutrition specialist consultant
- Professor Richard Bell, Murdoch University, Sustainable Land Management
- James Fisher, Desiree Futures, Extension specialist - iLime and acidity

Maddy Wylie



Wrap up – Dry Season Coordination

Between March and June 2019, the Department of Primary Industries and Regional Development (DPIRD) provided some resources to allow us to support our members through the dry seasonal conditions experienced through 2018 and into 2019.

This could be linking farmers with the appropriate experts, liaising with various government departments, running workshops and generally being open to a range of member enquiries.

Overwhelmingly, the main area of concern was for on-farm water storages. To this end, our role in liaising with the Department of Water and Environmental Regulation (DWER) proved to be the most important in assisting farmers to apply for the Emergency On-Farm Water Storage Rebate.

Some areas were continually highlighted as omitting areas relevant to the local area, and we were able to pass on some feedback and concerns as the Commonwealth Joint Agency Drought Taskforce came through the region in late May, led by the very considered Major-General Stephen Day.

Feedback from this taskforce went directly to the Prime Minister's Office to assist with formulating emerging drought policy.

We acknowledge that the area continues to miss out on

significant rainfall and that on-farm storages remain in the at-risk category. We urge you to continue giving feedback on these concerns so that this can be passed on to the relevant government departments to assist with further planning and future-proofing.

Maddy Wylie



Above: Bill and Jill Bailey with members of the Commonwealth Joint Agency Drought Taskforce.

Long term liming by incorporation trial

Key findings

- Liming decreases surface soil acidity.
- The incorporation of lime increased the movement of the lime to the 10-20cm layer neutralising subsoil acidity.
- Subsoil aluminium levels at this site fit WA relationships that toxic Al above 2 mg/kg occur when pH (CaCl₂) is below 4.5

Introduction

This trial shows that lime incorporation to depth is required to rapidly change subsoil pH. This long term lime trial was established in 2013 on John Iffla's property 23km WNW of Bremer Bay. The annual rainfall for this site is 550mm and the soil is sand and gravelly sand over gravel with clay at a depth of 30-40cm.

Paddock History

The paddock had received 3t/ha of lime in the 5-6 years prior to 2013 however there was no apparent change in pH. Prior to establishing the trial in 2013 there was a further 1t/ha spread over the whole paddock. The rotation of the paddock is as follows; 2013 wheat, 2014 canola, 2015 barley, 2016 canola, 2017 barley, 2018 oats, 2019 canola. The paddock was performing below its potential and is also non-wetting.

Soil depth (cm)	site A	site B	site C	site D
0-10	4.9	4.7	5	4.7
10-20	5.5	4.8	4.5	4.6
20-30	5.7	6.8	4.9	4.7
30-40	6.4	6.8	5.5	
40-50	6.7			
50-60	6.3			
60-70	6.5			

Table 1. 2013 pH (CaCl₂) profiles before trial establishment. Shaded pH values are at or below target levels for the layer.

From the pH results taken from sites A (outside of trial), B, C and D (locations shown in figure 1) in 2013 the 0-10cm topsoil was acidic as all locations were under the target pH of 5.5. The subsurface pH was sitting around the target pH which is 4.8.

Trial Establishment

The trial is split plot design with lime application rates of 1t/ha, 11t/ha and 17t/ha replicated twice. A separate area just north of the replicated experiment as spread with 6t/ha making 7t/ha in total for 2013. A coarse local lime was used with an effective neutralising value of approximately 45 per cent, which is the reason for the high rates. There are still undissolved particles of lime visible confirming the high lime rates used in the experiment. Half of each plot was cultivated in autumn 2016 with Grizzly offset tandem discs to an approximate depth of 200mm.

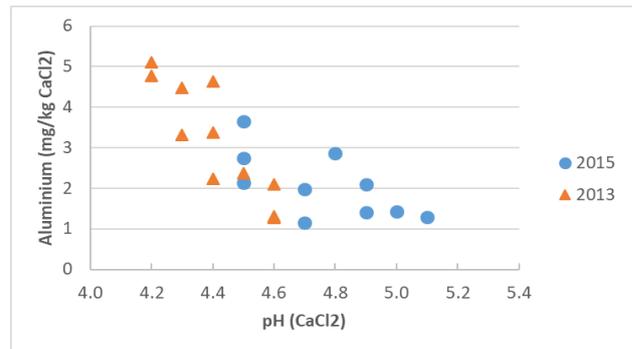


Figure 1. Relationship of Al (CaCl₂) to soil pH in 10-20 layer of samples from this Bremer Bay site.

Discussion

Sandy gravel soils in the high rainfall zone are prone to subsoil acidity as they have a low buffering capacity and are prone to nitrate leaching due to low water holding capacity of surface layers. Aluminium testing in 2013 and 2015 confirms the general WA relationship of Al levels and soil pH. Topsoil aluminium levels are not presented as they not meaningful. Higher organic matter levels in topsoil mean that extracted Al is not likely to be in toxic concentrations. By increasing subsoil pH to target levels, aluminium is not likely to affect crop production. This long term trial has demonstrated that the higher the lime rate the higher the pH will be and ploughing mixes lime to depth neutralising subsoil acidity.

At 0-10cm the pH increased for the 11t/ha and 17t/ha lime not ploughed when compared with 1t/ha lime. Offset disc ploughing to 200mm incorporated lime and increased 10-20cm pH at both 11 and 17 t/ha applied. Interestingly in the absence of cultivation at the 17t/ha lime rate the soil pH at 10-20cm appears to have increased however this was not the case for the 11t/ha lime not ploughed. This may be due to contamination from surface soil into subsurface samples because of the dry conditions in May when samples were taken.

Sarah Belli, Development officer, DPIRD Albany.

If you are seeking further assistance in comparing lime strategies and returns, the recently launched iLime app can be downloaded from the App Store and Google Play. It is a free resource for farmers, consultants, researchers and students developed under GRDC and DPIRD project DAW00236.

Contact

- Sarah Belli, Grains Development Officer
 - Jeremy Lemon, Grains Senior Development Officer
- 2019 sampling of this site was conducted under the Building crop protection and crop production agronomy research and development capacity in regional Western Australia project (DAW00256)

Important disclaimer

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Ian Walsh NRM medal winner

Cranbrook farmer Ian Walsh was recently recognised for his work pioneering saltland management techniques. Ian, who farms 2,800 ha in the North Stirlings near Cranbrook with his wife Joan, son Michael and daughter-in-law Mindy, was awarded the 2018-19 NRM Medal in June this year.

Ian has lived on the family farm since the late 1950s. After seeing areas become unproductive because of rising groundwater and salt, he made the decision to rehabilitate rather than abandon this land.

Ian has worked closely with researchers from DPIRD and CSIRO over the years to increase knowledge of saltland agronomy. In the 1980s he started with planting saltbush on its own, then introduced perennials and annuals under the saltbush canopy. He did this to improve feed value as well as to increase the rate of water draw down. Introducing the perennials had the added advantage of filling the autumn feed gap in February and March. His approach has completely turned around about 400 ha, some of which could be neither cropped or grazed, but now is highly productive land.

More details about Ian's approach can be found at www.farmweekly.com.au/story/4858335/turning-unproductive-land-into-profit

Ian was one of four finalists for the NRM Medal, which is sponsored by the Great Southern Development Commission. Other finalists included Bill and Jane Thompson, nominated for the landscape restoration work they have done on their 1500-hectare property in the middle of the connectivity pathway between the Stirling Range and Fitzgerald River National Parks; Dr

Harriet Paterson who works on plastics in the marine environment, and forester Darryl Outhwaite who initiated the formation of WA Biofuels in Albany with the aim of developing new markets for locally grown plantation forest biomass.



Above: Peter Watson, MLA, Member for Albany on the left and Ian Walsh on the right.

SAVE THE DATE

**FBG SPRING
FIELD DAY**

**17 SEPTEMBER, 2019
NEEDILUP AREA**

Land Valuations
NVT's
Grazing & Chemical Trials
Farmer Trials
Farmer Presentation
CBH Update



MORE DETAILS TO COME
FREE FOR MEMBERS,
\$30 FOR NON-MEMBERS

FITZGERALD BIOSPHERE GROUP PRESENTS

Dancing in the Dirt

PRE-HARVEST GALA BALL

**SATURDAY
12TH
OCTOBER
2019** **4.30PM** **NEEDILUP
OVAL**

LIVE ENTERTAINMENT



Australian Comedian
PETER ROWSTHORN



WA Musicians
BIG HORN TRIO

EVENT EXCLUSIVE



Biosphere Brew
BAY TO BUSH

Limited tickets available for
purchase online at trybooking.com
from 1st September 2019

FBG Members \$60.00

Non-Members \$70.00

*Advertised ticket price excludes booking fee

**Ticket includes locally sourced
produce catered by Wellstead Museum**

Dress: Strictly Black Tie

**Bus transfers available - more
information to come**

Dancing in the Dirt is a GLASS FREE LICENSED event.
Ticket holders MUST be aged 18 years or over.
NO BYO.

Proudly sponsored by:



Coastal Weeding Bee

Wrap up

Our Sunday morning weeding bee at John Cove in Bremer Bay started with some plant identification. Thanks to expert input from local volunteers Anne Gadsby and Barb Millar Hornsey, we learned to identify the bad weeds, the useful weeds and the native plants we would encounter in the patch we weeded. Weeds of greatest concern are boxthorn and bridal creeper, both of which are Weeds of National Significance. At the end of the weeding session, the group decided that Euphorbia was a coastal foredune weed they wanted to target in future weeding bees.

THANK YOU TO OUR SPONSORS AND SUPPORTERS. The day happened thanks to generous funding from Coastwest. Hats off to local ladies Anne Gadsby, and Barb Miller-Hornsey who are so generous with their time and expertise. Of course, it doesn't happen without our

Some of the weeds we learnt about;

- Sea Spurge (*Euphorbia paralias*) IMPORTANT TO WEAR GLOVES— **Milky sap can cause skin irritation.**
- Geranium (*Rose pelagoniam*)
- Boxthorn (*Lycium ferocissimum*)
- Bridal Creeper (*Asparagus asparagoides*) - Control using rust.
- Sea Rocket (*Cakile maritimer*) Important parrot food.

brilliant volunteers. Have a look on the right hand side of the fenced off dune area as you walk from the car park in to John Cove. Twenty five minutes was all it took to make a difference.

Therese Bell Bremer Project Officer 14th July 2019



Below: This special lot are some of the participants, that were enthralled in what they learnt about coastal weeds, bird food and dune stabilization. It was impressive to see how our small effort made such a difference to the planned site, hence the chuffed smiles above.



FBG STAFF

- Leonie McMahon**– Executive Officer
eo@fbg.org.au
- Natasha Brown**– Finance Officer
natasha@fbg.org.au
- Jessica Bailey**– Administration Officer
admin@fbg.org.au
- Jessica Brown**– Communications Officer
communications@fbg.org.au
- Maddy Wylie**– Soil Projects Officer
soilprojects@fbg.org.au
- Therese Bell**– Bremer Bay Projects Officer
bremerprojects@fbg.org.au
- Reaghan Shalders**– NRM Officer
nrmprojects@fbg.org.au

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SAVE THE DATE

FBG ANNUAL GENERAL MEETING

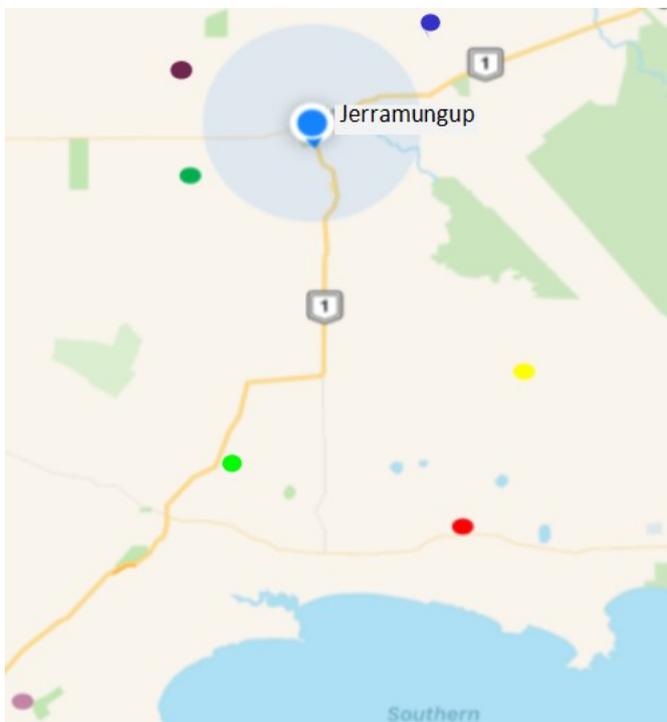
17TH OCTOBER, 2019

If you are interested in being a part of an enthusiastic agricultural and land management group then think about joining the FBG committee. We want your ideas about trials, research projects and events to ensure we are meeting the needs of our local growers.



EVERYONE WELCOME!

Jerramungup district rainfall



Location		Jan-Apr	May	June	July	Total
Jerramungup		69.6	29.3	58.8	37.2	194.9
Needilup Nth		74.5	19.5	51.5	33.5	179
Needilup Sth		50.5	21	49.5	28	149
Jacup		44.5	19	49.5	31.5	144.5
Bremer Rd		85.5	31.5	26.5	42	185.5
Gairdner		69.5	35.5	23	24	152
Boxwood		72	32	37	31	172
Mettler		140.9	38.9	27	50.7	257.5

MARK THESE DATES IN YOUR CALENDAR

UPCOMING EVENTS

The following events are on the horizon and we will be shortly sending you detailed information about them.

- Grain Brokers– Grower Tour– 21st August, Jerramungup
 - FBG Spring Field Day – 17th September, Needilup
 - Dancing in the Dirt (Pre-harvest Ball) – 12th October
- Biological Scan of Jacup Bush Block– 12th & 13th October, West Fitzgerald
 - FBG AGM– 17th October

REGIONAL EVENTS

- GGA Forum– 22nd-23rd August, East Fremantle
- Regenerative Agriculture Conference—11th September Perth
- State NRM and Coastal Conference– 1st-4th October Joondalup



Contact FBG for more details ph. 9835 1127

Email: admin@fbg.org.au

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