Foreword

For farming businesses to remain successful they need to be able to incorporate and embrace change in their business. To flourish, rather than just cope, in this changing environment farmers need to keep abreast of new technology and research.

AgKI aims to facilitate the development and recognition of dynamic and diverse primary industries on Kangaroo Island and one of the ways to support agribusiness is to undertake research, trials and projects relevant to the industry. Many agricultural projects are undertaken annually across Kangaroo Island and this booklet presents the information in a format that allows the reader to quickly gain an overview of each project and the key findings and how they might apply to their own business operations. Contact details are provided at the end of each article so that further information about each project can be sourced if required. This booklet represents another example of how Island and off-Island organisations have worked together for the betterment of agriculture and natural resource management on KI.

Many thanks to local PIRSA staff (especially Lyn Dohle) who manage this project and the South Australian and Australian Governments under National Disaster Recovery Funding Arrangements who have contributed towards the funding of the printing and postage of this booklet. Thank you to the researchers and project staff who contribute papers and the individual sponsors of the many trials and projects included in this booklet.

We look forward to continuing the collaborative approach with our partners for all future projects.

Jamie Heinrich

Chair, Agriculture Kangaroo Island

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Note on the use of QR codes

We are increasingly using QR codes in this publication to direct you to further information online, as lengthy addresses are unwieldy to follow from a print publication. Hover your phone camera over the QR code without taking a photo, and your phone should ask whether you wish to go to the website. If you'd prefer to read on your computer, enough information is given alongside each code for you to find the page via a search engine such as Google.

Contents

An Update from AgKI

AGRICULTURE
KANGAROO ISLAND

Agriculture Kangaroo Island Inc is the peak body for agriculture and primary production on Kangaroo Island. With approximately 150 members, we represent members across the breadth of the island, including both grain and livestock producers, along with other farming and production activities.

In 2022/23, AgKI:

- Lobbied KI Council to re-introduce rate capping for Primary Production
- Supported feral pig and feral cat eradication projects
- Represented agriculture sector at Sea Transport Round Table meetings and Penneshaw Harbor Master Planning meetings
- Represented agricultural issues to State Government at SA Country Cabinet
- Provided sponsorship for two KICE students to attend SA Sheep Expo
- Technology and Tools Day, delivered by NRKI
- Represented agriculture sector at Kangaroo Island Regional Plan workshops
- Collaborated with KI Business and Brand Alliance (KIBBA) and KI Tourism Alliance (KITA) regarding our joint Local Economic Recovery projects
- Developed and release our Strategic Plan for 2023 – 2025
- Implemented new AgKI constitution, policies and procedures.

We have continued to deliver on island projects and research, as a result of grant funding, for the following projects:

- Feral Cats
- Oestrogenic Clover
- Soil probe weather stations
- Roadside weeds
- Down & Dirty (soil tests and results analysis)
- Strengthening Community events (Wellbeing SA)
- Filling the Feed Gaps
- Pinery to KI Reconnect and Recovery Tour
- Producer Technology Group Grant (eID's – quantify economic gains)

Additionally, we gained funding through Livestock SA to engage administrative support to strengthen our governance structure and build membership, so that AgKI can continue to build on the advocacy services and research projects to ensure the Agricultural Sector on the Island retains its reputation for innovation and transformation.

We continue to work with key partners to ensure that our members are well represented, recognising that agriculture/ primary production is the largest industry sector on Kangaroo Island.

We are looking forward to the AgKI Conference 2023 which will be held in August at the Kingscote Town Hall. Amongst the speakers for the biennial event is Warren Davies, Unbreakable Farmer talking about the harsh reality of being a farmer: high interest rates, low commodity prices, flood and drought; all having an impact, but most significantly, was that on his mental health. There will also be presentations on regenerative agriculture, advancements in agriculture technology, market updates and much more.

AgKI Board

Our Board Members have continued to work hard representing the interests of our members. The current board members are:

Jamie Heinrich (Chairperson)

Tim Buck (Co-Deputy Chairperson)

Steph Wurst (Co-Deputy Chairperson)

Peter Cooper

Grant Flanagan

Jenny Stanton

Simon Veitch

Nathan Howard

Cr Sam Mumford (Council representative)

Lyn Dohle (PIRSA representative)

Jo Sullivan (NRKI representative)

Partners

We acknowledge our partners, whose valued assistance allows us to support and advocate for our members:

Platinum Partners

Natural Resources Kangaroo Island (NRKI)

Primary Industries & Regions South Australia (PIRSA)

Gold Partners

ANZ Bank

Nutrien Ag Solutions

Silver Partners

G. & J. East (Strathalbyn)

Elders

LawrieCo

Emmetts

Bronze Partner

Rabobank

Partners

Ella Matta

Precision Ag

To Contact AgKI:

Phone: 0428 716 330

Email: admin@agki.com.au

Website: www.agki.com.au

Join now

If you would like to become a member of AgKI and gain the many member benefits, please fill in the slip on this page and post it along with your payment. For more information or if you would like a membership brochure emailed to you with the BSB details, email to: admin@agki.com.au.

AgKI MEMBERSHIP FORM

Name: .....

Trading Name: .....

Postal Address: .....

.....

Phone number: .....

Email: .....

Enterprises (Please circle those you are involved in)

Wool | Prime lamb | Beef cattle | Cropping

Marron/aquaculture | Viticulture | Beekeeping

Other (please specify): .....

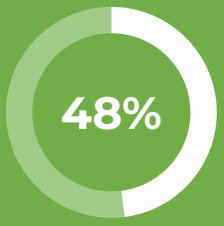
Payment: $99 GST incl.

Cheques or money orders should be made payable to 'Agriculture Kangaroo Island'

Please post this form and your payment to:

Agriculture Kangaroo Island
PO Box 794
KINGSCOTE, SA 5223

PRIMARY PRODUCTION SNAPSHOT



48% OF KI'S GRP

Primary Production generates $99.9 million per year, out of Kangaroo Island's total Gross Regional Product of $209 million.

LARGEST SINGLE EMPLOYER

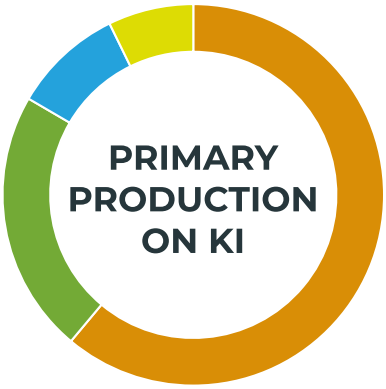
23% of all workers on KI are involved in primary production.

LIVESTOCK & CROPPING

is the single largest industry sector on KI.

BUSINESSES PER INDUSTRY

43.5% of all businesses on KI are involved in primary production.



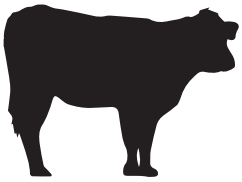
Livestock & Wool %61

Eggs 9%

Cropping & Hay 22%

Potatoes, Wine, Fruit & Veg 7%

680,000 SHEEP



15,000 CATTLE

14,729ha CROPS

LANDCARE

Farmers set aside over 17% of their land for conservation, an area equivalent to 85% of Flinders Chase.

In 2021 AgKI won the South Australian Landcare Farming Award.

All figures cited here are based on the 2021 Census, with bushfire impacted properties still not fully stocked.

A Checklist for Before and After Fire

Background

Over the page is a checklist with ideas to assist farmers in preparing for and recovering from fire.

Its focus is not fire safety or prevention, but how to prepare and recover from fire as an agricultural business.

It is by no means a complete guide, and is intended as additional to the guides distributed by CFS, Red Cross, Government and others. The “Firey Women’s Workshops” hosted by the CFS are another excellent resource.

The checklist was prepared after the 2019/20 bushfires by Lyn Dohle, with input from several fire-affected farmers, KI FABS, and Tom Silcock from Agriculture Victoria. If you have any suggestions of information to add or change, please contact Lyn at PIRSA.

On this page are some QR codes which will take you to useful online resources which will supplement the checklist.

To use these codes, switch your phone to camera mode and hover over the code, without taking a photo. Your phone should ask if you want to go to the website.

Agriculture Victoria: Bushfires.

This site gives more detail on some of the points mentioned in our fire checklist, such as emergency stock containment areas and questions to ask when considering insurance. Note that a lot of information is Vic-specific, but the checklists are excellent.

CFA (Victoria): How to prepare your property.

This page contains more detail, including a video, on ways to prepare your home ahead of and during the fire season. It also has links to other suggestions and resources.

CFS 5 minute bushfire plan.

The CFS has made planning easier by creating this simple, clear checklist which enables you to download a printed plan.

MY BUSHFIRE PLAN

CFS Firey Women workshops.

As well as giving an overview of the course content, this page lists upcoming workshops. Keep an eye out here for KI events!

FIREY Women WORKSHOP

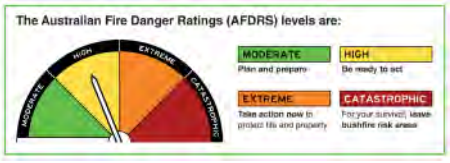
Alert SA App

The Alert SA App is back in an improved form, giving direct access to a real-time CFS incident map.

Alert SA

Australian Fire Danger Rating System

In 2022 some changes were made to the Australian Fire Danger Rating System to make it action-focused and consistent across the country.



Preparing for Fire

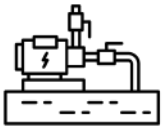
Plan

- ❑ Have a family Bushfire Survival Plan that has been developed by everyone in your household.
- ❑ Include individual plans to stay or go.
- ❑ The CFS 5-minute bushfire plan is an excellent resource for helping with this process.

Vegetation

- ❑ Clear up around house and sheds and ensure buildings have sufficient width & height vegetation clearance for fire fighting vehicles to safely access.
- ❑ Follow native veg clearance guidelines.
- ❑ Creek crossings need to be clear of vegetation and able to support 25Ton truck capacity.

Water Supply

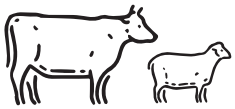


- ❑ Ensure you have sufficient water storage at house & sheds and adequate pumps so you can quickly fill your fire fighting unit. You may not be able to access your dams.
- ❑ Don't rely on electric pressure pumps as you may lose power. Have a generator back up.
- ❑ If you have a pump, ensure it is plumbed into the tank.
- ❑ Attach written durable written instructions to the pump, including fuel type and starting instructions. If possible, keep fuel near the pump, or instructions on where fuel is kept.
- ❑ Have fittings from the outlet that are compatible with CFS fittings or adaptors.
- ❑ Ensure tank manhole is easily accessible and free of vegetation to allow a hose to be dropped in to access water reserves.

Maps

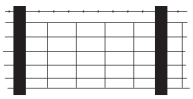
- ❑ Have aerial farm maps to hand to farm fire units, CFS etc. Identify water supplies, gates, property boundaries, easy escape routes, safe harbour locations and where it is safe to cross creeks. Include paddock names (especially for people helping to move stock).
- ❑ Have reflective signs with an arrow to indicate water points.

Livestock



- ❑ Have a plan for where to move stock for all directions of an approaching fire front. Consider options to move off farm.
- ❑ Ensure you have suitable yarding for stock and in an area that is defendable e.g. not surrounded by trees and scrub. Create a buffer zone (plough or burnt break).
- ❑ Try to avoid having all supplementary feed (hay & grain) stored in the one location.
- ❑ Consider splitting up large yards to enable more stock to be held, or consider the use of portable yards.
- ❑ Prepare a list for stock compatibility (i.e. which mobs can be boxed up) and include a map of yards so others can muster and record where stock have been placed.
- ❑ Once stock are mustered leave all paddock gates open for easier access.
- ❑ have a plan for pets and sheepdogs.

Infrastructure/Fences



- ❑ Woolsheds usually burn after the fire front has passed. Stop embers from blowing in under the woolshed by tech screwing or using droppers to hold sheets of iron around the base of the shed.
- ❑ Be prepared to have a generator to supply all electrical needs for several weeks.
- ❑ Spray along fence lines in early spring (aim for bare earth). Check your fences at the same time. If not against scrub, this will protect your fences and many will be salvageable with droppers, ensuring stock proof paddocks to return stock to.

Insurance

- ❑ Understand your policy. What is covered? Have a realistic replacement value.
- ❑ Reassess valuations each year. Sit down with your agent and go through each item in the policy.
- ❑ Ensure your policy provides funds for clean up and business continuance.
- ❑ Take photos of valuable furniture, jewellery and other expensive items you have in your home.

What to take

- ❑ Expect to lose phone and internet reception - UHF radios are useful. Have extra UHF available and the same channel that you all talk over.
- ❑ Be able to charge phone and laptop in the car, and have extra reading glasses on hand if necessary.
- ❑ Have a list of contact numbers, including neighbours and CFS.
- ❑ Ensure protective clothing, mask, goggles and boots are available.
- ❑ Take plenty of drinking water and snacks.

Post Fire Recovery Checklist

The emotional toll of a disaster can't be under-estimated.

A checklist of steps to take towards recovery can help you to focus and move forward.

Immediate Response: Days 1-7

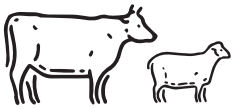
- ❑ Check fire – make sure fire/spot fires are blacked out – monitor regularly.
- ❑ Identify and isolate on-farm hazards such as unstable structures, chemicals or asbestos.
- ❑ Injured livestock – contact PIRSA, your vet & neighbours to assess, treat & euthanise livestock (do not do this by yourself if possible). Ideally put sheep in portable yards to do this. Ask for help. PIRSA can provide a burnt sheep assessment guide.
- ❑ Sort stock into the following categories:
  - immediate destruction
  - salvage by slaughter
  - retain for treatment
  - return to paddocks
- ❑ Assess paddocks – pick & secure good paddocks first to put livestock in, then look at boundary fences.
- ❑ Ensure livestock have access to sufficient feed & water.
- ❑ Prioritise, plan, delegate: What needs to be done now? What can be done later?
- ❑ Start doing a few small, safe jobs from the plan.
- ❑ Protect your drinking water by diverting downpipes until the first rains have provided an initial flush (off roof and pipes).
- ❑ Document everything (a pain, but may be critical).
- ❑ Take plenty of photos and notes for insurance and future reference. Use your camera to document everything, even by taking photos of people, business cards, situations, etc. You will be grateful later.
- ❑ Contact your insurance agent (They are going to be one of your best friends).
- ❑ Be humble enough to accept help that is offered and ask for help when needed (e.g. family, friends, contractors, agencies, army.)
- ❑ Take up offers of accommodation if required.
- ❑ Set up a "telephone tree" for contact with friends and family outside the fire scar. Delegate somebody to be your key contact for letting everyone else know how you're going and what's needed.
- ❑ Stay connected with your community. Where possible, attend community meetings and events and visit relief hubs. This will help you to access the supports you'll need at this time.
- ❑ Remember, you are not alone. It's overwhelming but just take one step at a time.

Long Term Recovery

What to focus on in the days, weeks and months after the fire.

If you're unsure where to go or how to start, contact PIRSA (8553 4949) who can help direct you to appropriate supports.

Livestock

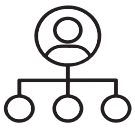


- ❑ Seek advice from PIRSA or vets regarding injured animals.
- ❑ Monitor closely as they can deteriorate weeks after.
- ❑ Assess good paddocks and start with these to secure stock.
- ❑ Consider agistment.
- ❑ Providing adequate food, water and shelter to remaining animals is a priority.
- ❑ Look at all normal livestock management and what areas will need to be adapted, and start looking for solutions.

Biosecurity

- ❑ Reduce weed spread from introduced fodder by feeding stock in one location, such as a containment area.
- ❑ Closely monitor areas disturbed by firefighting or recovery activities.
- ❑ Monitor purchased and agisted stock for worms, lice, footrot etc.
- ❑ Watch out for animals straying because of damaged fencing.
- ❑ Practice good disease hygiene management and ensure good biosecurity practices when buying stock.

Plan, Prioritise, Delegate, Allocate.



- ❑ You don't need to do this process alone - it's important to ask for help if you feel you need it.
- ❑ Write down all tasks to be done now.
- ❑ Prioritise these tasks.
- ❑ Detail what actions are required and who can take responsibility for each action.
- ❑ You need to change your role to facilitate, plan, plan, plan again, rather than just doing!

Mental Health & Wellbeing

- ❑ Ensure the safety and wellbeing of yourself, family and friends.
- ❑ Keep the home front as normal as possible – regular meals, adequate sleep, good communication & responsiveness to children's needs.
- ❑ It's a no brainer to seek professional help to support the entire family as they work through the trauma. Timely support for wellbeing can prevent mental illness.
- ❑ Watch out for each other.
- ❑ Share the challenges and issues facing you. Remain solution focused.
- ❑ Maintain connections with your community via sports clubs, church, social gatherings or community meetings.
- ❑ Prioritise getting enough rest and sleep, and avoid excess alcohol.
- ❑ Everyone will be affected differently and have different priorities. DON'T COMPARE.

Identify and Isolate on-farm hazards

- ❑ Fallen powerlines.
- ❑ Asbestos contaminated sites.
- ❑ Chemical storage areas.
- ❑ Sheep dips and spray areas.
- ❑ Lead and other heavy metal contaminated sites (batteries, treated pine etc.).
- ❑ Falling trees.
- ❑ Report contaminated sites to the local recovery centre.
- ❑ Only start salvaging any contents if safe to do so. Be aware of unstable structures and asbestos.

Insurance & Documentation

- ❑ Replace important documents that have been lost (driver's license, passport, marriage certificate).
- ❑ Keep taking photos and recording everything for future reference.
- ❑ Ring your insurance agent and keep them up to date. Be respectfully assertive; make sure you know what you are entitled to on your insurance policy and be persistent.
- ❑ Be aware that insurance claims can take up to 12 months or more to finalise.
- ❑ Talk to your accountant about tax implications of insurance claim payments.

Finance & Support

- ❑ Budgeting is really important to keep on track (taking into account insurance claims).
- ❑ Accept any relevant donations (fodder, fencing equipment, machinery etc.).
- ❑ Seek government, local council and charity support. Keep a folder with all grant and support information or delegate somebody to manage the process.
- ❑ Seek & accept advice on all matters.
- ❑ Record names and phone numbers of people and organisations who are offering support, as you might need them later.

If you've lost your house or sheds

- ❑ Consider good temporary accommodation close & convenient to property.
- ❑ Organise removal of burnt sheds, housing & contents – cleaning up cost can add up so allow for this in your budgeting.
- ❑ Organise house & shed replacement.
- ❑ Expect rebuild to take longer & cost more than you think. Be mindful of budget (it can easily blow out).
- ❑ You may be able to use the opportunity to make improvements to your farm, for example by relocating buildings, adding raceways, upgrading machinery and even discussing succession.
- ❑ If you are going to build in a new location, be mindful that there may be costs associated with connecting utilities to the new site.

Pastures, feed & soil

- ❑ Do a feed budget and test grain and hay to ensure you meet stock nutritional requirements.
- ❑ If possible, de-stock burnt and partly burnt paddocks.
- ❑ Seek potential for agistment.
- ❑ Consider building a stock containment area or sacrifice paddock to limit grazing to a defined area. This will protect your pastures, soil and vegetation. A paddock with heavier soil is best and with some shelter if possible.
- ❑ Perennial pastures and sub-clover are generally unaffected by fire. However, fire can have a major impact on annual pastures.
- ❑ Consider protecting loose, sandy soils from wind erosion with cover crop of oats. Deep ripping or ridging can also help to retain topsoil.
- ❑ Upgrade track drainage to minimize erosion.

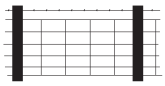
Native vegetation

- ❑ Consider the service of an arborist to identify trees that may fall on buildings and to identify the ones that will survive.
- ❑ Use loaders, dozers and/or an excavator to get this done (note dozers make a bigger mess and are nowhere near as efficient as an excavator). This is usually not covered under insurance.
- ❑ A significant proportion of native vegetation will survive a bushfire; give it time to recover. Fence it off to allow for regeneration.
- ❑ Watch for burning tree roots three to six months after the fire.

Protecting dam water

- ❑ Check all water infrastructure for damage.
- ❑ Trap ash, debris, organic matter and sediment with sediment traps or temporarily cutting gutters.
- ❑ Consolidate water supplies with pumps and pipes.
- ❑ Be aware that dams may require de-silting.
- ❑ Remove stock if water becomes putrid, looks or smells rotten or has signs of blue green algae (paint-like scum on surface).
- ❑ If in doubt, contact PIRSA for assistance with testing.

Fencing



- ❑ Your boundary fence is your priority.
- ❑ Mark boundary fence alignment prior to clean-up.
- ❑ Seek assistance with clearing & grading boundary fence lines. BlazeAid and other help may be available, such as the military and volunteers.
- ❑ Avoid replacing internal fencing immediately; fire offers an opportunity to re-think your farm layout, such as new fence alignment and gate locations.
- ❑ Consider getting an aerial photo of your farm to review your farm layout. Seek advice on whole farm layout.
- ❑ Consider replacing fencing along land class boundaries.
- ❑ Explore alternative fencing options such as vermin proof and fire resistant.
- ❑ Patch up old fences wherever possible, for example using droppers.
- ❑ Consider using portable sheep yards.
- ❑ Be organized in ordering fencing material so it is on hand & ready for fencing crew. Order as soon as possible as there may be delays due to high demand.

Are You Bogged Mate?

A message from Mary O'Brien, as seen on Landline

I spend a lot of time raising awareness about spray drift but recent events have compelled me to talk about something that disturbs me even more than spray drift.

I have spent my whole life working in rural and remote Australia and always around country blokes; working with them, for them, and beside them. My father was one, my brother is one, and most of my dearest friends are country blokes. I have always worked in male dominated occupations and that certainly doesn't make me special but I believe it has given me a good understanding of rural men and it has definitely given me a deep and profound respect for them.

So when I see country blokes facing challenges like never before, I need to say something because I know none of them will. I'm talking about rural men's mental health and more specifically, rural male suicide. Yes, that mongrel black dog that sneaks in when you least expect it, grabs all of your rational thoughts, buries them somewhere you can't find them, and without you or those close to you noticing, it gradually pulls you into a hole, a bog hole.

As I recently watched a massive line of four-wheel drives file slowly in and park reverently outside a small country town church, something in my heart changed forever. They emerged, dressed in their Sunday best; some of these blokes I didn't even know owned a tie. It was a really busy time of year but they stopped all of those important farm jobs to come and say goodbye and pay their respects to a mate who decided to hand in his time sheet way too early.

Photo: Airlie Kelly NSW

As the minister lamented quotes from the bible about 'a time for everything; a time to be born and a time to die, a time to plant and a time to reap', you know the one. All I could think was, these are farmers, no one knows better than this crowd about planting and reaping but I'm stuffed if I could find any reason for this man to die at his own hand in the prime of his life. And judging by the faces on the country men around me, neither could they.

The statistics are everywhere, Australian males between 15 and 45 years of age are one of the highest risk categories for suicide. Men are 3 to 4 times more likely to take their own life than women and the further you move from the coast into regional, rural, and remote Australia, the more that figure climbs. Why? Why are my country heroes cashing in their chips early? The experts will tell you that that it's due to reasons like 'the isolation', 'men don't talk about emotions', 'they don't know how to express their feelings'... Well I call bullshit! I don't have a psychology degree of any kind, I'm not a doctor of any type, I haven't studied mental health at all but I do know country men. And this is what I do know... country men are the toughest, hardest working, funniest, most sincere, totally dependable, thoroughly genuine people you will ever meet. So don't sit in your university office in the city and tell me that you know rural men.

As a rule I don't think rural men are challenged by 'the isolation'. I think most actually thrive on it, they enjoy the peace and tranquillity that surrounds them. They enjoy the time they spend tending the earth and its creatures. They are nourished and challenged by nature and all its hardships. Everyone needs interaction with other people but isolation only really becomes a major problem when coupled with depression.

True: rural men 'don't talk about emotions', that's not how they are wired and they never will be so stop expecting it of them.

True: rural men don't 'express their feelings' in the same way that inner city society expects them to.

Let's face it, rural men are never going to be like their soft pink-handed city counterparts (no disrespect to city blokes intended, purely a comparison!). Country blokes aren't going to join a men's group or catch up with mates to discuss their feelings, relationships, or finances over a double decaf latte at some hipster café that has kale on the menu. That's not how they roll.

Rural men let off steam (release emotions) differently. They play footy, go camping, shooting, fishing, ride horses or dirt bikes,

go water skiing, have a few beers with mates, they might even throw a few harmless punches with a mate after too many beers or on the footy field. These are just some of the release valves for rural men and they need to be supported and encouraged to do whatever it is that gives them release. Don't let the pressure build up inside.

There are multitudes of factors that lead to depression in rural men – droughts, floods, rising input costs, falling commodity prices, pressure from banks, family pressure, feeling compelled to stay on the farm, etcetera. Today rural men and particularly farmers have additional pressures to previous generations. They are expected to be soil scientists, agronomists, hydrologists, accountants, meteorologists, chemical experts, mechanics, engineers, marketers, environmentalists and the list goes on. Add to that a society that tells them they need to share 50% parenting of their children, support their partner in her career, share the housework, and all the other gender equality stuff. Before anyone yells at me for dragging women back to the 1950s, I'm merely comparing the dramatic change in just one generation. Sorry fellas, you aren't getting out of cleaning the dunny that easily!

The suite of skills needed to live and work in the rural sector has never been greater and yet the divide been city and country has never been bigger. Never before has agriculture been so scorned by city dwellers who view farmers as environmental vandals and poisonous food producers. And if all that isn't enough pressure for rural blokes, what about adding a sick child, the loss of a loved one or a marriage breakdown into the equation? I don't think we need another study to find out why rural men are struggling.

Millions of dollars are spent every year on rural men's mental health, there are endless support services available, and yet the suicides keep happening. I certainly don't have the answers but I know that most rural men will not seek help or talk to someone when they are struggling.

I like to use analogies to explain things so here is my spin on it.

We have all been bogged at some point. It might have been just a sticky patch of the road or paddock where the vehicle stopped moving, you panicked, threw it into four-wheel drive and got out. Maybe you needed low range, maybe you had to winch yourself out, but you got out, you got through it. But what happens when you get properly bogged? When it's down to the running boards, sitting on the chassis, you are not getting out of this one easily – that's the kind of bogged I mean. So what do you do? Do you burn the vehicle? Hell no!

When you have finished swearing, praying and walking around in circles scratching your head; you know this is as bad as it gets, you are going to have to ask for help. Oh the shame! The whole district is going to be laughing about it, your mates will bring it up for years (probably ever!). You don't want anyone to know but you have to get help.

It's a bit the same with depression, but it's not funny like when you get bogged in mud. Most of the time we get ourselves through the rough patches in life but when depression strikes, you need proper medical care to get you out of this bog hole. The more bogged you get the harder it is to ask for help. In your head, you will justify to yourself with a million excuses why you can't or won't ask for help. None of those excuses are any comfort as I watch a grieving widow, a young family and a whole community grapple to find answers and repeatedly ask 'why didn't he tell someone'.

You don't want anyone to know that you aren't coping and you don't want to talk to some counsellor that doesn't know you, I get that. But please, for the sake of your family and your precious rural communities, reach out to somebody, anybody, your partner, your mates, or even me. We will support you. You are only bogged, it's ok, we all get bogged but most importantly, you can definitely get out of it. Don't destroy your vehicle just because you are bogged to the ass. Tell someone you are feeling bogged. If your son was struggling, would you want him to ask for help?

I promise you there is always a way out of the bog hole and there are plenty of people ready to help you. Don't choose a permanent solution for a temporary problem. We have already lost too many good men.

Website:

Are You Bogged Mate?

Website:

ifarmwell: Recovering after a farm fire

When you need someone to talk to

Emergency (Fire, Police, or Ambulance) 000

On-Island Support— *to connect with face-to-face*

KI Medical Clinic	8553 2037
Mental Health Team	0457 506 006
CAMHS (Child Adolescent Mental Health Service)	1300 222647
Summit Health	8406 7715
Uniting Communities (Family Mental Health Support Service)	8202 5200
Relationships Australia (Gaming and Gambling)	1800 934 196
Sonder (Drug and Alcohol)	8209 0710
Mission Australia (Youth & Family Alcohol & Other Drug Support)	8187 0707
Island Psychological Strategies (private provider)	0492 917 938
Sound Essence (private provider)	0434 914 463
Cheryl Vigouroux Counselling (private provider)	0432 392 934
Dr Gregory Bull Psychologist (private Provider)	0418 306 132

24/7 Off-Island Support—*telephone/internet*

Lifeline	13 11 14
Lifeline Text www.lifeline.org.au	0477 13 11 14
Suicide Call Back Service www.suicidecallbackservice.org.au	1300 659 467
Mental Health Crisis Service	13 14 65
Regional Access - (counselling for the pressures of everyday life) www.saregionalaccess.org.au	1300 032 186
Mensline www.mensline.org.au	1300 789 978
Beyondblue www.beyondblue.org.au	1300 224 636
Kids Helpline (5-25yrs) www.kidshelpline.com.au	1800 551 800
Standby Support After Suicide www.standbysupport.com.au	1300 727 247
Open Arms (Veterans & Families Counselling) www.openarms.gov.au	1800 011 046

Kangaroo Island AgTech Demonstration Program

What is the KI AgTech Demonstration Program?

The Kangaroo Island AgTech Demonstration Program highlights the potential for technology to improve productivity and profitability for primary producers within the island's agricultural sector. The program is seeking expressions of interest from producers to establish demonstration sites showcasing technology on-farm.

How does the program benefit producers?

The program aims to connect primary producers across KI with compatible technology companies to host a range of AgTech applications. The partnership is zero cost for producers and lasts for 12 months.

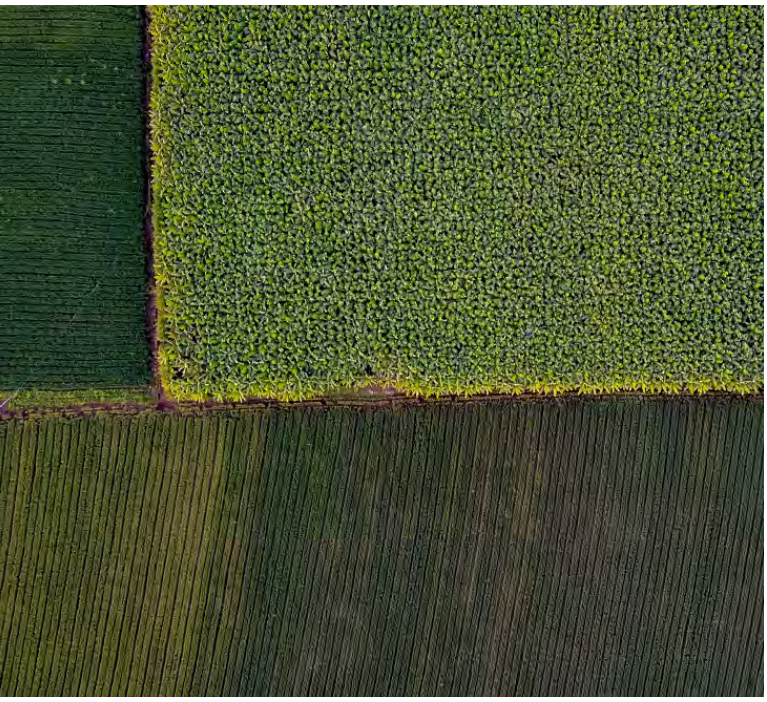
By taking part in the program and establishing a demonstration site farmers will have the opportunity to trial the technology and find out first hand how well it suits their farming system. Participating producers will also play a valuable role in peer-to-peer learning through sharing their first-hand experiences with the technology.

A range of technology is available to be matched with producers through the program.

Technology	Description
AgriWebb	AgriWebb is a digital livestock management software that helps farmers safely and securely record farm data including stock movements, husbandry, tasks, and inventory records in real time.
AirborneLogic	Hyperspectral imagery and precision mapping for assistance with crop analysis. Allowing for early intervention and a rapid response to such problems as heat or moisture stress, canopy growth and cover, nutrient management, lost productivity and pest and disease impacts.
AxisTech	Data management and reporting/analysis platform helping farmers make use of their data, assisting with data digitisation and end to end solutions as they provide multiple steps including installations of hardware, data storage, data handling and more.
Deep Planet	High resolution satellite imagery to monitor current vine health, assess past vine conditions, measure levels of canopies and soils and predict future yield. Some of the benefits of using their data summaries include: • increasing efficiency by removing the need to inspect each vine • optimising irrigation scheduling • reducing variability and disease • finalising optimal harvesting times • informing farm planning.
eBottli	A traceability company with a suite of new tracking and blockchain technologies, geolocating services and unique identifier labels assuring the authenticity of products and allowing producers to follow their products from harvest to consumer.

Farmbot Monitoring Solutions	A water level sensor providing an accurate snapshot into their water levels remotely. Sending text message or email alerts when the water level is low or if the high-water level mark is reached or if the water is falling rapidly. Reducing the amount of water runs for staff which in turn reduces labour and driving costs.
Pairtree	An online service platform connecting all technologies on farm, together in one spot. Making sense and connections between incompatible on-farm data. Bring everything together under one dashboard, data stacking to make better decisions from the big picture.
Sentek	A soil probe technology that collects data for the moisture, salinity, and temperature at multiple depths, for precision irrigation management. Data collected boosts efficiency when analysing a paddock or developing farm management plans. It can be integrated into farm management software, such as weather stations, data loggers and irrigation controllers. It aids in crop scheduling of: • irrigation • seeding • harvesting • fertigation • herbicide application • soil health management.
Swan Systems	SWAN Systems collects data from multiple sensors, enabling efficient crop irrigation and nutrient application. The dashboard simplifies irrigation decisions through data production, recording and deciphering. This helps to develop management plans that: • efficiently use water • increase crop nutrients and yield quality • decrease expenditure and loss of valuable resources. The system can: • schedule irrigation times and amounts • monitor soil moisture levels to maintain ideal conditions for canopy and growth • recommend future irrigation needs in defined zones.
TradeWindow	The TradeWindow Assure+ supply chain provides transparency and traceability capabilities with end-to-end insights into a product's journey from paddock to plate to recycling.
ESpy Earth	Provides an ongoing proofing record for producers of agricultural performance including carbon (CO2 and methane monitoring system) and biodiversity. Helping future CO2 regulations and market changes.
HydroSmart	Electronic water treatment. Affects water via electric fields to: • dissolve scale • improve crops, stock health and biological systems • soften hardwater in a chemical free manner. Benefits may include positive results on rumen bacteria in cows and less algae issues in troughs amongst other results.

Drone Agricultural Remote Technology (DART)	Contract drone experts with countless hours in spraying and seeding for weed control, baiting, fruit fly, snail liquid, granular fertilisers, and ground cover seeding.
Mobishear	Cordless power tools with rechargeable lithium batteries for uses such as shearing, pruning, foot paring to name a few. Safety features to avoid injury to the user and robust to withstand a full day's work with no cord to trip on.



Above: ESpy, one of many technologies available to farmers, provides a weekly satellite monitoring service, documenting the state of carbon as well as biodiversity on your sites.

What happens after the program?

Participating producers will be asked to share their experiences with technology demonstrated on their farms at the end of the program. You will be provided with the opportunity to provide feedback to technology companies and will play a role in informing the way technologies are developed to address real-life producer issues.

Producer learnings will be shared in person at field days and by taking part in developing case studies and return-on-investment assessments to help grow better understanding of the benefits of technology on farm.

Funding/Sponsors

The KI AgTech Demonstration Program is being implemented by the Department of Primary Industries and Regions with funding by the Commonwealth Government Regional Recovery Partnerships Program.

Further Information

Ashley Balsom – AgTech Extension Officer Kangaroo Island

M 044 825 9530
E ashley.balsom@sa.gov.au

PIRSA: Visit an AgTech demonstration farm or site

Sustainable primary production and the island's economy

The Kangaroo Island Landscape Board is here to support KI farmers and is committed to working with the island's farmers to increase the sustainability, resilience and adaptability of our primary production industries. Key roles within the sustainable landscapes program include:

Regional Agriculture Landcare Facilitator: works to connect farmers with information you need to increase sustainable agriculture practices. Your input and feedback can help shape this role.

Soil Extension Officer: supports farmers and farming groups to improve soil and landscape health through the provision of technical advice and information services that promote best practice in soil and land management.

Property Management Planning Coordinator: provides an integral supporting role to farms and land managers participating in the Property Management Planning project. This project is assisting participants to develop property management plans that are designed to provide land managers with the tools and capacity to adapt, reorganise, transition, and transform their properties in preparation for drought and less reliable and more variable seasons.

Water Officer: supporting the sustainable management of the island's water resources, through the provision of advice on Water Affecting Activity permits, erosion control, construction of crossings, water security plans and the management of the Board's water resources monitoring program.

Up-coming opportunities for farmers

Free native plants for fire-affected land owners: Generous donations from the Prince Albert II of Monaco Foundation, Collette Travel and Bitu-mill following the 2019/20 fires have been provided to the Kangaroo Island Landscape Board's Native Plant Nursery to support bushfire recovery efforts on the island. These funds enable the Nursery to provide fire-affected landholders with a diverse range of native KI plants, together with tree guards (where needed) at no cost.

Fire-affected landholders can place orders for free native plants for the re-establishment of shelter belts and other revegetation activities by contacting Jo McPhee, Nursery Manager on 0437 322 692 or by emailing kinativeplantnursery@sa.gov.au

Orders for planting in 2024 must be received by 31 August 2023

Free Water Security Maps: Property scale water security maps are now available for properties across Kangaroo Island. The maps which have been developed as part of the '*Partnering with KI landholders to develop property-scale water security plans to prepare for future droughts*' project provide detailed information on how predicted climate change scenarios are likely to impact on the reliability of farm dams.

For more information or to obtain a map of your property please contact Mark Agnew, Water Officer on 0419 728 837 or email Mark.Agnew@sa.gov.au

These projects are supported by the Kangaroo Island Landscape Board through funding from the Australian Government.

Emergency Animal Disease & Livestock Traceability

Emergency Animal Diseases (EAD) are predominantly exotic animal diseases that can cause devastating impacts to the livestock industry with serious economic and social implications. An outbreak could result in animal deaths, production losses and trade restrictions.

Australia is fortunate to be free of most of the serious diseases that have devastating effects on animals in other parts of the world, but we must not be complacent. The threat to our agricultural industry is increasing, as we live in a highly interconnected world with increasing international trade and a return to international travel.

International trade in livestock and livestock products would be shut down immediately if there was a detection of one of these exotic diseases, such as Foot and Mouth Disease (FMD). Trade would not resume until Australia could prove that the disease had been eradicated.

With very recent cases of EADs such as Lumpy Skin Disease (LSD) and FMD on Australia's doorstep in Indonesia, producers should be on alert for these livestock diseases across Australia and practicing a high standard of farm biosecurity.

Preparedness is key

The Emergency Animal Disease Response Agreement (EADRA) is a unique contractual arrangement signed in 2002 that brings together the Australian, state and territory governments and livestock industry groups to collectively and significantly increase Australia's capacity to prepare for and respond to EAD incursions.

For all diseases listed in the EADRA, there is a pre-planned and documented approach to how an outbreak is managed. These preferred approaches have been developed and agreed upon by governments and relevant industries and are captured in the Australian Veterinary Emergency Plan (AUSVETPLAN) disease strategies and response policy briefs.

AUSVETPLAN is a comprehensive series of manuals that sets out the various roles, responsibilities and policy guidelines for agencies and organisations involved in the response to the disease outbreak.

The AUSVETPLAN documents are available on the Animal Health Australia website.

Early detection of an EAD is paramount to stopping a disease spreading rapidly across regions. **Report any suspicions of disease to the EAD Watch hotline on 1800 675 888 immediately,** so it can be determined if it is a significant or notifiable disease. This number will put you in touch with a PIRSA officer who can discuss the situation. It is always better to err on the side of caution and make the phone call.

Livestock Traceability

The National Livestock Identification System is Australia's nation-wide system for identifying and tracing cattle, sheep and goats. It is primarily designed to assist in the animal tracing process in the event of a disease outbreak or chemical residue detection. The quicker livestock are traced and response completed, the quicker the industry can recover, regain lost markets and return to normal.

Livestock Owner's Responsibilities

As a Livestock owner your property must be registered with PIRSA for a Property Identification Code.

Whenever you move to stock to another property with a different PIC, you must complete a movement document, usually a National Vendor Declaration. For sheep you must also complete a National Sheep Health Declaration.

All stock leaving your property must be identified with an accredited NLIS device.

When you move stock onto your property, you as the receiver of stock are responsible for ensuring the NLIS database is notified of the movement of livestock (sheep, cattle, goats, pigs) onto your property.

Sheep & goat eID update

In September 2022, federal and state agriculture ministers agreed in principle to work with industry towards implementing a national individual electronic identification (eID) system for sheep and farmed goats by 1 January 2025. The technology is well developed and was first implemented for cattle in South Australia in 2004. Victoria implemented mandatory sheep and goat eID in 2017. Sheep and farmed goats in South Australia must currently be identified with a visual National Livestock Identification System (NLIS) tag.

Under the new national system, sheep and farmed goats born on or after 1 January 2025 will need to be identified with a NLIS-accredited eID tag before leaving their property of birth.

eID tags allow individual identification and tracing of animals. These devices contain a radio frequency identifier (RFID) microchip that can be read using a handheld scanning wand or panel reader. eID tags are scanned and recorded on the NLIS database whenever animals are moved to a different property or PIC. All supply chain participants have legal NLIS obligations, including producers. However, for many sheep and goat producers, the only change will be moving from a visual tag to an eID tag.

Many SA sheep and goat producers are already using eID technology to assist with on-farm management and production decisions.

SA's transition to eID for sheep & goats

South Australia will transition to eID in two stages:

Stage 1: Sheep and farmed goats born on or after 1 January 2025 will need to be identified with an eID tag before leaving their property of birth.

Stage 2: From 1 January 2027, all other sheep and farmed goats leaving a property will need to be identified with an eID tag.

To support implementation of eID for sheep and farmed goats, the Government of South Australia announced a support package as part of the 2023-24 State Budget.

This package will assist the supply chain to transition to eID through:

- a 50% per eID tag incentive in 2023–24 and 2024–25 for lambs and kids
- a 75% grant on essential infrastructure required for implementation of eID across the supply chain (agents, saleyards & abattoirs).

The benefits of eID

Moving from the current visual tag approach to eID for sheep and farmed goats will greatly improve the accuracy and efficiency of livestock traceability.

Changing to eID will:

- strengthen our biosecurity efforts
- improve market access
- reduce the time required to manage an exotic disease outbreak.

Example of traceability: *Where's Woolly?*

The *Where's Woolly* video highlights the benefits to livestock traceability in moving to individual eID. See below for a QR code which will link you to this explanatory video.

Adopting a national approach to the individual tracing of sheep and goats will improve our world-leading livestock traceability systems and ensure they remain fit for purpose.

The faster and more accurately animals are traced, the faster we can respond to and recover from a disease outbreak such as foot and mouth disease (FMD).

Access to export markets is critical to the success of Australia's sheep and goat industries, with overseas markets taking:

- over 70% of national sheepmeat production
- 95% of goat production
- 98% of wool production.

Following an exotic disease outbreak, reducing the time that Australia is locked out of export markets will reduce the financial impact across the sheep and goat supply chain.

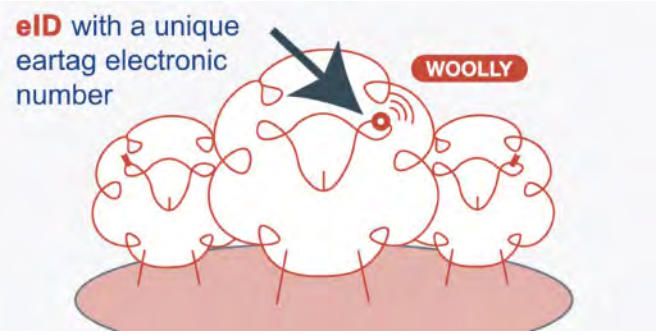
What can you do to be prepared for an EAD:?

- Don't feed meat or food waste that has come in contact with meat to pigs or ruminants. This type of food waste may contain EAD viruses.
- Report unusual animal disease signs to your local livestock veterinarian or Animal Health officer or phone the EAD Watch hotline on 1800 675 888. There are funds available for disease testing if required.
- Restrict the access of visitors to your livestock.
- Keep livestock records up to date, including notifying the NLIS database of ALL movements on and off your property.
- Take advantage of the eID tag incentive for sheep & goats and start using NLIS accredited eID tags this year (only for sheep and goats that will be retained on property as breeding stock)
- Have a Farm Biosecurity Plan. You can develop your own biosecurity plans through the One Biosecurity online portal. Include an EAD outbreak plan with consideration of stock feed supplies. Do you have extra feed if there is a national livestock standstill? Also consider visitor management.
- Be aware of your threats. Know what these diseases look like so you can recognise the signs and report concerns.

Further Information

Kate Buck, Animal Health Officer, PIRSA

M 0419 091 156
E kate.buck@sa.gov.au



Above: Where's Woolly? *An animation created for the Sheep & Goat Traceability Task Force explains the importance of electronic identification in containing disease outbreaks. Scan this QR code (right) to watch.*

Further Information

National Pest & Disease outbreaks in Australia: www.outbreak.gov.au

Farm Biosecurity website, surviving an EAD outbreak: www.farmbiosecurity.com.au

AUSVETPLAN: animalhealthaustralia.com.au/ausvetplan

One Biosecurity: onebiosecurity.pir.sa.gov.au

Sheep & Goat eID information on the Livestock SA website

Sheep & Goat eID information on the PIRSA website

About the National Livestock Identification System (NLIS)

Log in or Register for the NLIS

Take home messages

- EARLY detection of an EAD is paramount to reducing spread and therefore reducing the impact.
- Preparedness is key; implement good biosecurity measures.
- Traceability is so important; the faster the disease can be contained, the less destructive the outbreak can be, and the quicker life can go back to normal.
- SA is transitioning to an eID identification system for sheep and goats just like cattle already have.

eID

Integrity Systems
red meat customer assurance

National Livestock Identification System

NLIS how-to: Move livestock onto / off a PIC – file upload

Introduction

Following a physical movement of livestock, completing a transfer in the NLIS database ensures that the database can trace the location of every animal throughout its life.

This is a legislative requirement in each state and territory. Each jurisdiction is responsible for enforcing the regulatory requirements for NLIS, specifying how and when livestock transfers within the NLIS database must be completed.

This how-to demonstrates the process to transfer electronically tagged livestock onto or off a PIC by uploading a file to the database after a physical movement of stock has occurred.

What is a movement?

Completing a movement on the NLIS database means transferring stock from one PIC to another PIC to reflect the physical location of each animal.

Who updates the NLIS database?

The person responsible for updating the NLIS database varies depending on the situation:

- If livestock are bought, sold or moved through a saleyard, the livestock movement must be recorded by the saleyard.
- For sales or movements that do not take place via a saleyard, the buyer/receiver of the livestock must record the livestock movement.
- The vendor/sender of the livestock is not obligated to record the movement off their property, although they may do so. ISC recommends checking that the movement has occurred to ensure your NLIS records are up-to-date; this includes livestock being sent to abattoirs or saleyards.
- Abattoirs must record movements for all livestock they receive.

When do producers need to update the NLIS database?

A movement needs to be recorded on the NLIS database by a producer when:

- You have purchased animals privately and need to complete the transfer as the receiver of the livestock.
- You own more than one property with different PIC numbers and need to transfer livestock between your own PICs.
- You have livestock returning from an agistment PIC, or you are sending livestock away on agistment and need to complete the transfer because the receiver is unable to do so.
- You have sold livestock privately and you want to complete the transfer because the receiver is unable to do so.
- You have completed a PIC reconciliation and identified livestock that are physically on your property but are not on your NLIS account. You will need to transfer these animals to your PIC.

Before you start:

This 'file upload' method is ideal if you have a few hundred or more livestock to transfer or if you have a Microsoft Excel .csv file prepared.

Alternatively, you may like to use the **How-to: Move onto/ off a PIC – type in details** method if your transfer consists of less than a few hundred NLIS ID or RFID details that can be pasted or typed in.

- **Prepare** the .csv file to contain the NLIS ID or RFID details of the livestock that have been moved, details of the PICs you are transferring between, the NVD number as well as the date the stock movement occurred.

Your .csv file needs five columns of data as shown below.

	NLIS ID / RFID	Source PIC	Destination PIC	NVD / Waybill	Date moved
	A	B	C	D	E
1	999 000025884234	QIZZ0000	QFZZ4444	40473164	13/07/2021
2	999 000025884698	QIZZ0000	QFZZ4444	40473164	13/07/2021
3	999 000031249117	QIZZ0000	QFZZ4444	40473164	13/07/2021
4					

- **Log-in** to the NLIS database at www.nlis.com.au with your username and password.

*QUICK TIP

Collating the NLIS ID or RFID details into a .csv file can be achieved by scanning or recording all devices before they leave your property or as you receive them. Simply enter the data into the remaining columns manually.

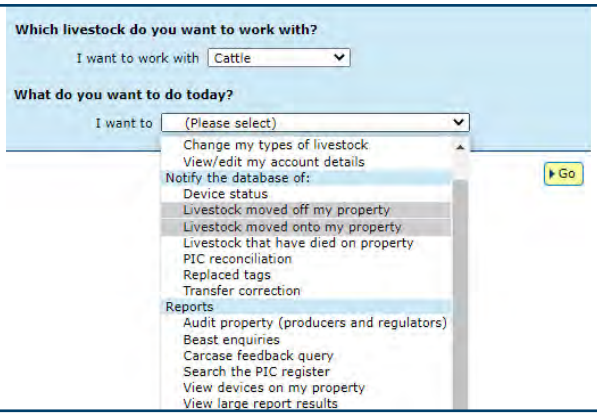
***QUICK TIP**

A myMLA account can provide access to your NLIS and LPA accounts with just one log-in. Link your accounts today.

find out more here

SIGN UP TO mymla

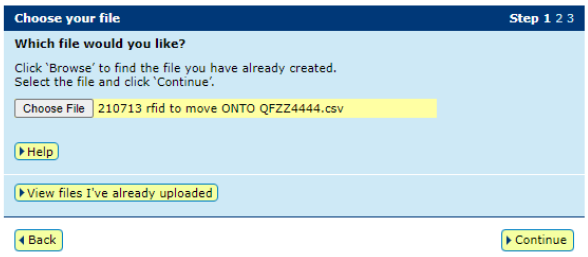
STEP 1: Once logged in, select the species you are working with. Under the 'notify the database of:' section select the action 'Livestock moved off my property" or 'Livestock moved onto my property'. Click 'Go'.



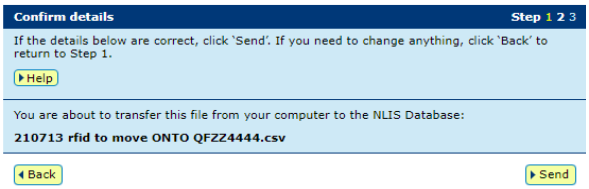
STEP 2: Click on 'Upload a file', then click on 'Choose File'.

A pop-up window will appear for you to browse the files on your computer to locate the .csv file you have prepared with the details to be transferred. Once located, select the file and click 'Open'.

The NLIS database window (pictured right) will have your file name included, so click 'Continue'.



STEP 3: Confirm that you have uploaded the correct file by checking the file name, then submit the information to the database by clicking 'Send'.

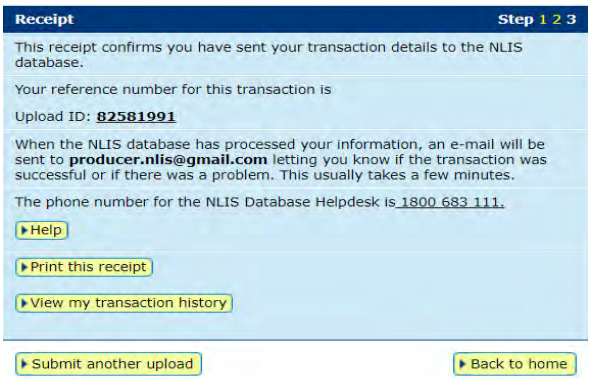


STEP 4: The database will provide a receipt on screen. It's recommended to record the Upload ID or to 'Print this receipt' for reference.

***QUICK TIP**

To ensure the transfer was received by the database, click 'View my transaction history' to check the status of your 'Upload ID' is marked as Complete. If another status is shown, you will need to read the generated email for specific details about the outcome. These other status notes may be:

- Warning: The transfer is complete but a tag or tags were marked with a message that you will need to investigate / review.
- Error: One or more tags were not able to be moved and need your review / investigation.
- Failure: Technical issues occurred with the database and the movement was not completed.
- Bad Format: There were errors in the preparation of the .csv file. Review and contact ISC Customer Service on 1800 683 111.



***QUICK TIP**

Record the Upload ID provided after each transfer. If details are incorrectly submitted, you will need to immediately conduct a **Transfer correction** action. This action only amends details of the previous transfer and will request the Upload ID of that transfer. If you notice an error in earlier transfers and need to correct it, contact ISC Customer Service on 1800 683 111.

For more NLIS how-to guides or further assistance: www.integritysystems.com.au/nlis | 1800 683 111

MEAT & LIVESTOCK AUSTRALIA

Integrity Systems
red meat customer assurance
A subsidiary of Meat & Livestock Australia

LPA NLIS

Update: Sheep Blow Fly Eradication on KI

Background:

South Australia Research and Development Institute (SARDI) researchers are developing the Sterile Insect Technique (SIT) for Sheep Blow Fly on Kangaroo Island. This technique aims to rapidly reduce sheep blowfly populations to the point of eradication by releasing large numbers of sterile flies that mate with wild fertile flies to result in no offspring.

Though we have experienced some delays, the project is advancing, and construction of the rearing facility is now underway at the corner of North Coast and Ten Tree Lagoon Roads. This facility is designed to produce the millions of sterile flies required for the intended eradication of Sheep Blowfly from KI over the coming years. The seasonal release of flies will always begin in late winter to early spring to target the first "wave" of newly emerged wild flies.

What's being done

In order to determine how well the flies disperse and how long they survive, we conducted trial ground releases of sterile, marked adult blowflies at three farming properties in Spring 2022. The sites were Ella Matta at Parndana, Bellevista at Wisanger, and Willson River on Dudley Peninsula. Almost 1 million flies were released between August and November with releases occurring fortnightly using flies reared and irradiated in Adelaide (and yes, our load did get some strange looks on the ferry!). Lure-based traps were established in two rings around the release points at approx. 750m and 1500m distance (Figure 1).

We determined that some flies were able to move 1500m within one week, with peak recapture occurring 2-3 weeks after release for both the 750m and 1500m traps (Figure 2). Forty-six of the 54 traps captured the sterile flies and indicated that flies moved in all directions from the release points. This information will help us plan suitable flight paths for aerial releases that take into account the distance that they can move.

Flies were captured in traps up to 6 weeks after release, indicating that some flies can continue to perform their task (i.e. mating with fertile wild flies) for up to 6 weeks. No captures past this period may indicate mortality or that the flies dispersed beyond the traps.

Along with trapping the sterile marked flies, we also captured wild sheep blowflies which revealed that last season had a later than expected start to blowfly appearance (October) and peak populations occurred in December and January which coincided with farmer reports of flystrike occurrence (Figure 3). This eradication program will target the first flies in the season, so it is essential that we have a precise understanding of when the blowfly maggots overwintering in the soil become active. University of Adelaide Masters student, Casey Gove, is currently conducting trials using field cameras to remotely record when caged maggots first emerge as flies from the soil on 10 properties across the island.

Since Spring 2022, we have gratefully received almost 70 samples of flystrike maggots from farmers across the island. These samples have been reared out to adult flies to allow for identification. So far, approximately 80% of the samples include specimens of *Lucilia cuprina* (our target Australian sheep blowfly). Other species collected are those considered secondary attackers that generally only "join the party" after *L. cuprina* causes the initial damage, or they are considered minor species. Due to the ad hoc sampling of strike maggots, it can be challenging to capture the maggots responsible for the initial strike attack.

We continue to work with farmers regarding strike samples and this will become increasingly important as this eradication campaign proceeds. We will be rolling out improved collection kits and pick-up/drop-off locations for this Spring 2023.

The first aerial releases are planned for Dudley Peninsula in Spring 2024. This will be followed with island-wide releases for several years.

Figure 1:

Willson River site showing layout of release point and traps at 750m and 1500m. Size of blue balls indicates relative number of sterile flies recaptured in that trap across the trial period. Black balls indicate traps with no sterile fly recapture.

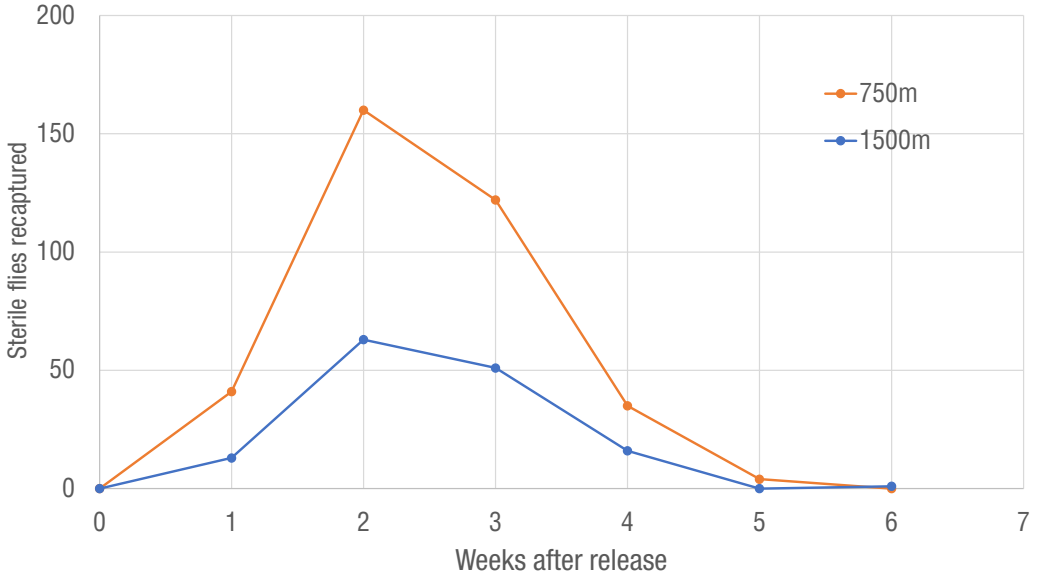


Figure 2:

Sterile fly recaptures across all traps at 3 sites during Spring 2022. Differently marked flies were released at fortnightly intervals. Data is compressed to show recaptures from six release events combined.

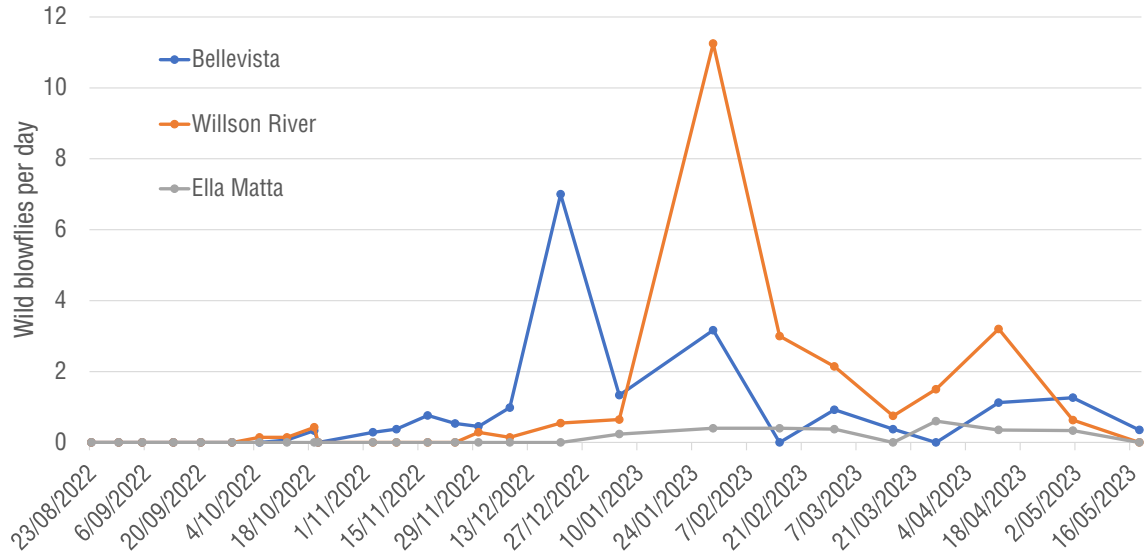


Figure 3: Wild sheep blowfly captures in lure traps (18 per site) at three trial properties between August 2022 – May 2023. Data is configured as per day, however traps were checked every 1-2 weeks. After January, traps were reduced to 3 per site but data is adjusted to allow comparisons with early season values.

Take home messages

- Construction of the sheep blowfly rearing facility is underway with first aerial releases of sterile blowflies planned for Dudley Peninsula in Spring 2024.
- Almost 1 million sterile blowflies were released during trials in Spring 2022 and indicated that the flies can quickly disperse and survive for up to 6 weeks.
- Farmer involvement and maggot sample submissions are greatly appreciated and encouraged, particularly as the program advances.

Funding/Sponsors

This project is part of the Local Economic Recovery Program, a partnership project with the Kangaroo Island community and Primary Industries and Regions (PIRSA). It is jointly funded by the South Australian and Commonwealth Governments under the Disaster Recovery Funding. The roll-out of SIT on KI over the coming years is University of Adelaide/SARDI and industry funded by Meat & Livestock Australia, Australian Wool Innovation, South Australian Sheep Industry Fund and Animal Health Australia.

Thanks to the landholders (Bellevista, Brigalow Partners, Willson River & Ella Matta) who have allowed us to place traps on their properties.

Further Information

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Update: Footrot

The South Australia (S.A.) Footrot Management Program is a Sheep Industry Funded Program.

The program's core focus is to reduce the prevalence of footrot in South Australia and to assist sheep producers in managing footrot on their properties. This will reduce the animal welfare issue as well as the economic impact of this disease.

Where to get help

All forms of Footrot are notifiable in S.A. including clinically benign footrot (sometimes referred to as "scald"). Any lameness associated with the hooves of sheep, where footrot cannot be ruled out as the cause, must be reported to PIRSA Animal Health staff for investigation. Getting the correct diagnosis and management advice is crucial for minimising the impact to your business and reducing the spread of the disease. PIRSA staff can assist with developing an individual property disease management plan and can provide a list of accredited footrot contractors or vets that can assist with treatment and eradication.

Photo: Sheepconnect SA

Further Information

Footrot information on PIRSA website

SheepConnect Footrot Field Guide (a hard copy can also be obtained from Kate Buck at PIRSA)

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Recent footrot seasons

Spring 2022 on Kangaroo Island saw above average rainfall again which provided the ideal conditions for the spread and development of footrot in sheep.

There are currently 38 known footrot infected or suspect flocks on KI. Eight of these flocks are new detections with 10 successfully eradicating the disease over the past 12 months.

Congratulations to the producers that put a massive effort into eradicating the disease from their farms. Eradicating footrot enhances sheep trading options, results in happier sheep, sheep that produce more wool and more & stronger lambs.

Farm biosecurity

Prevention is always better than cure. Please remember to have good farm biosecurity measures in place on your farm to prevent introducing footrot to your property or spreading it to others.

Measures to help minimise the risk of footrot entering your property include:

- doing your research before purchasing stock by asking vendors for the footrot history and if they routinely footbath
- checking National Sheep Health Declarations prior to purchase
- getting an independent hoof inspection on sheep before you purchase them
- breeding your own replacements or purchasing from flocks that have been independently assessed free of footrot
- having sound boundary fencing: double, electric or scrub or road barriers
- not putting lambing ewes or weaned lambs on your boundary paddocks, as lambs are more likely to cross boundaries and therefore pick up or spread footrot
- separating newly purchased stock from other sheep and monitoring for signs of disease.

Filling the Feed Gaps

Background

Knowledge of the nutritional value of your supplementary feeds (be they hay, silage or grains) can save you a lot of money and hassle. Before you simply just feed out the hay or silage and run out a trail of grain, you really should test the feed quality of your fodder so you know exactly how much, and what, you should be feeding.

For example, a barley with metabolisable energy (ME) content of 13.5 mj/kg DM compared to a barley with ME of 13 could save you $3,000 in feed costs for a 4000 ewe flock.

It is also important to know the ME content of your supplements to maintain stock at the right condition score for joining and during pregnancy. Accurate feed quality assessment for protein content is also important for weaner survival over summer.

Feed testing can help you to calculate an accurate feed budget, is quick and easy to do and provides a much clearer picture of the actual value of your feed, along with the moisture content if feeding silage.

What was done

AgKI, in conjunction with Mackillop Farm Management Group and the Future Drought Program, secured funding to run a 'Filling the Feed Gaps' project.

The project which will run over two years (2022 and 2023) will cover a series of workshops on how to manage your supplementary feeding program to maximise stock performance and minimise costs, how to manage your pasture/hay mix to make the best hay/silage and the best time to cut hay or silage.

In addition, a subsidy on the cost of feed tests for hay and silage is being offered. It is a two for one offer, with farmers paying for one test and getting one free. Plus, those who participate in the program are also able to access a free interpretation of their results, through a consult with Tim Prance.

Results

Unfortunately, this year we have already seen some extremely poor test results for hay due to the wet prolonged spring we had last year. Energy and protein levels are extremely poor along with a high NDF% (Neutral Detergent Fibre). Although often the hay visually looks fine, feed quality wise many have been not much better than straw.

Tables 1 and 2 below show the average and range of results from the samples tested in 2022/23 for both hay and sileage. The tables also include the ideal levels required for sheep.

Key results from the testing are:

- Despite the difficult hay making season there was some high-quality hay made. Why? The best quality hay was both cut early and wilted for a short time between cutting and baling. Proper use of a tedder immediately after cutting considerably reduces drying time.
- Use of hay inoculants eg Biostart Hay King will enable safe hay baling at higher moisture content.
- Sowing very late maturing annual ryegrasses will enable later cutting at the correct growth stage (early head emergence).
- Silage feed test results in 2022 were much higher than for hay, due to earlier cutting and a shorter wilt, but wrapped silage is expensive per MJ ME, so good quality hay is the cheapest option in many cases. However, bunker or pit silage is the cheapest overall fodder conservation option if you have sufficient scale and appropriate feed out equipment.
- There is up to 1/3 less wastage at feed out with silage compared to hay, particularly with grassy hay.

Take Home Messages

- Feed testing is essential to know what you are actually feeding out to your stock.
- Take advantage of the free feed test option next season.
- Consider silage for fodder conservation.
- Use a tedder for quick wilting for both hay and silage.
- Consider using hay inoculants if you can't get your hay dry quickly enough to bale.

	Acid Detergent Fibre	Crude Protein	Digestibility (DMD)	Dry Matter	Est. Metab-olisable Energy (Calculated)	Moisture	Neutral Detergent Fibre
Ideal Levels:							
Dry/early to mid pregnant ewes		8-10%	Min 60%		Min 8.7		Max 60%
Merino weaner Lambs		12-14%	Min 68%		Min 10		Max 55%
Field test results for hay:							
Average	36.5	9.3	53.7	87.5	7.6	12.5	65.6
Range	28.6-43.7	4.8-19	43.2-64.3	85.4-90.2	5.8-9.7	9.9-18.5	50-75.5
Field test results for silage:							
Average	31.4	13.6	64.1	42.2	9.8	57.8	53.4
Range	26.4-34.3	8.4-18.3	56.4-70	23.4-48.7	8.7-10.6	34.8-68.4	45.5-56.5

Table 1: Ideal levels, compared to field test results for hay and sileage.

Funding & Sponsorship

Agriculture KI and Mackillop Farm Management Group with funding from Future Drought Fund

Further Information

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Pre-Breeding of Subterranean Clover for Novel Herbicide Tolerance

Background

The project aims to develop a new technology that will improve the resilience and recovery of livestock producer businesses on Kangaroo Island following the devastating impact of bushfires. The dominance of high oestrogen subterranean clovers on Kangaroo Island and difficult to control weeds is now having a long-term effect on the profitability of sheep farming business.

Some old cultivars of subterranean clover are highly oestrogenic and cause infertility in sheep. Continued exposure to high oestrogenic subterranean clover causes permanent infertility and problems with birthing. The cause of the infertility is formononetin and daidzein which is broken down to equol in the sheep gut and passes into the blood stream.

No cultivar has been released since 1982 with unsafe oestrogen levels. However, recent survey work on Kangaroo Island has shown high oestrogenic subterranean clover cultivars are persistent and can form a large proportion of the subterranean clover component of pastures. Farmers on the island are also concerned about low lambing rates.

The old oestrogenic cultivars with high levels of hardseed are very persistent and have proven difficult to run down to very low numbers prior to sowing new safe cultivars.

A potential new way of controlling background high oestrogenic cultivars is to develop cultivars with tolerance to a new herbicide group that will kill old subterranean clover cultivars. A further benefit of the new herbicide tolerance is that it will provide a way of dealing with problem weeds that current herbicides registered for subterranean clover do not control. The process of developing cultivar with novel herbicide tolerance is relatively long and includes a detailed registration process. This pre-breeding project will mutate subterranean clover seed and achieve high seed set in year one, and in year two search for plants with novel herbicide tolerance. Previously this approach has been successful in finding novel herbicide tolerance in other legume species.

Work to date

South Australia Research and Development Institute (SARDI) researchers are developing subterranean clover lines with novel herbicide tolerance.

In 2022 a sample of subterranean clover seed of subspecies subterraneum and yanninicum was treated with ethyl methanesulfonate (EMS). EMS is a widely used chemical mutagenesis that has previously been used to successfully develop pasture and pulse legume genotypes with novel herbicide tolerance. Treated seed was sown on 1 ha on Kangaroo Island. It established well, and weeds were controlled to maximise subterranean clover growth and seed set.

The subterranean clover seeds regenerated in 2023 and plants were sprayed with a herbicide that is registered for control (i.e. to kill) of subterranean clover. The herbicide killed most of the plants, however at 139 locations across the paddock we found plants that did not have any apparent herbicide damage (figure 1). None were found in a strip along one edge of the paddock that was planted with non-mutated seed. This suggests that the plants growing well in the main part of the paddock have a high chance of being herbicide tolerant. Herbicide tolerant plants were dug up and taken to Adelaide (figure 2).

Figure 1: Healthy subterranean clover plant surrounded by subterranean plants killed by the herbicide.

Future work in this project

Selections will be allowed to set seeds and progeny will be screened for herbicide tolerance. At that time we will know if we have been successful in identifying novel herbicide tolerance.

What does it mean

The ability to control high oestrogenic subterranean clover with novel herbicide tolerance is seen as a way of increasing lambing percentages and hence overall livestock productivity. Novel herbicide tolerance will allow control of current problem weeds, which will lead to further productivity increases. If progeny screening shows that we have been successful in developing plants with novel herbicide tolerance, further funding to develop subterranean clover cultivar/s with novel herbicide tolerance will be required. Further work includes agronomic evaluation, and work required to obtain registration with the Australian Pesticides and Veterinary Authority. Cultivars with novel herbicide tolerance will need to be used as part of an integrated package to control background highly oestrogenic clovers and problem weeds.

Take Home Message

- We have found 139 plants with putative novel herbicide tolerance to control background highly oestrogenic cultivars and provide a new way of dealing with problem weeds.
- This is the first step in the development of subterranean clover cultivar/s with novel herbicide tolerance.

Figure 2: Healthy plants were dug up and taken to Adelaide to be screened for herbicide tolerance.

Funding & Sponsorship

This project is managed by Agriculture Kangaroo Island Incorporated, and funding is part of the Kangaroo Island Bushfire Recovery Innovations Projects managed by Livestock SA.

We acknowledge Keith Bolto for providing land, sowing and managing the trial.

Further Information

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Soil Health Report 2022/2023

Background

With the increasing cost of fertilizers it's never been more important to test your soils. Soil testing allows you to more accurately determine what type and how much fertiliser you should be applying or if you need to lime. PIRSA provides a soil testing service for all producers. We provide the soil testing kit and can even assist with the soil sampling. All results come with a detailed interpretation of the test results. Call in to the PIRSA office in Kingscote to find out more. In 2022/23, 32 KI farmers submitted 139 soil samples for testing.

Results

Soil pH

Soil pH is important for optimum production of crops and pastures. If the soil pH falls below $pH_{(CaCl2)}$ 5.5 then nutrients such as phosphorus, magnesium, calcium and molybdenum become less available; microbial activity starts to decline (including *Rhizobia*) and toxic amounts of aluminium can be released into the soil solution (refer to Table 1 for minimum pH targets).

LAND USE	pH ($CaCl_2$)
Extensive grazing	5.0 – 5.5
Broad-acre cropping/grazing	5.5
Most horticultural crops	5.5 – 6.5

Table 1: Target for minimum soil pH.

Almost all the soil samples taken during the 2022/23 seasons were below critical pH levels. Figure 1 shows that the average pH in all Hundreds was below 5.5 $pH_{(CaCl2)}$. Six of the nine Hundreds had an average pH of 5.2 or below. At these levels, pH will be limiting farm productivity and profitability and therefore liming should be a high priority.

Salinity

Saline soils are defined as soils that contain a high enough level of soluble salts in the root zone to adversely affect plant growth. Ideally, soils should have a salinity level of less than 2 dS/m (for salt sensitive plant species). Of the soil samples taken the majority were below 2 dS/m.

Organic Carbon

The organic carbon test is a useful indicator of organic matter status, therefore of overall soil fertility, microbial activity, and the structural stability of the soil. The ideal target level of organic carbon varies with soil type i.e. sandy soils greater than 1% is desired, through to greater than 2% in clay soils. Of the soils tested, all were well above critical values.

Soil Nutrients

Maintaining an adequate nutrient status in the soil is paramount to determining the productivity of the soil. Phosphorus, potassium and sulphur are essential nutrients for plant growth and yield (see Table 2 for target levels).

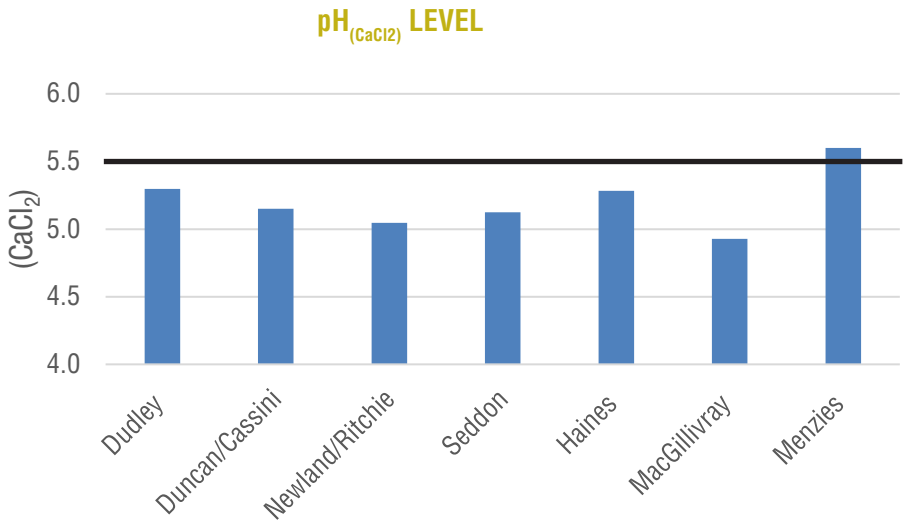

Figure 1: Average soil pH (CaCl2) results for each Hundred during the 2022/23 seasons. The black line shows critical value.

SOIL NUTRIENTS	TARGET LEVELS	
	IRONSTONE SOILS	SANDY SOILS
Phosphorus (Colwell)	35-45 mg/kg	>20 mg/kg
Potassium (Colwell)	>120 mg/kg	>120 mg/kg
Sulphur	6-8 mg/kg	>10 mg/kg

Table 2: Target levels for phosphorous, potassium and sulphur

During 2022, almost all samples collected from the Hundreds with predominantly sandy soils (Haines, MacGillivray and Menzies) had phosphorus levels greater than 20 mg/kg. Of the Hundreds with predominantly ironstone soils (Dudley, Duncan/Cassini, Newland/Ritchie and Seddon), the majority of samples had phosphorus levels lower than the recommended level of 35-45 mg/kg (Figure 2).

All hundreds had average potassium levels at or above the critical values of 120 mg/kg (Figure 3).

Of the Hundreds with predominantly ironstone soils, the majority of samples had sulphur levels greater than 6-8 mg/kg (Figure 4). The majority of sandy soil samples, except the Hundred of MacGillivray, had samples below the critical value of 10 mg/kg.

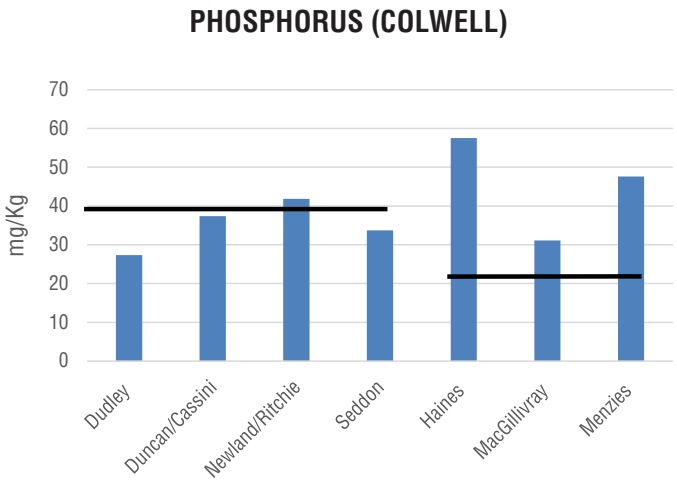

Figure 2: Average soil phosphorus levels for each Hundred during the 2022/23 season. Black lines show critical values.

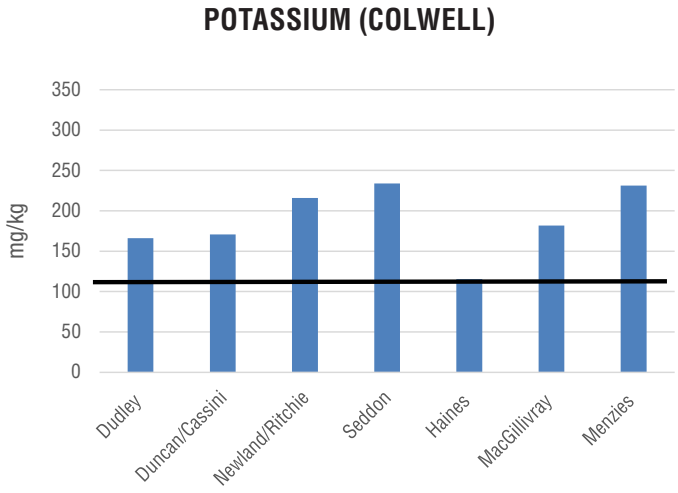

Figure 3: Average soil potassium levels for each Hundred during the 2022/23 season. The black line shows critical value.

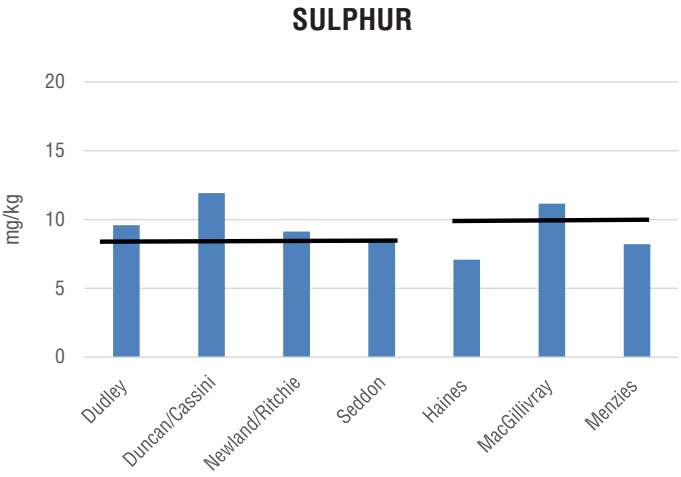

Figure 4: Average soil sulphur levels for each Hundred during the 2022/23 season. The black lines show critical values.

Summary

The 2022/23 soil tests carried out by Kangaroo Island farmers indicate that overall, soils in the area are on target or above for organic carbon.

The average soil phosphorus levels were low in the predominantly ironstone soil Hundreds. Potassium and sulphur were also low in some hundreds. Across the Island, soil pH $_{(CaCl2)}$ levels were below critical values. Areas where low pH is occurring will reduce the availability of essential nutrients such as phosphorus to the plant and will result in limiting overall farm productivity.

The most cost effective and practical way to address low pH is through the application of lime. Low nutrient levels can be addressed through the application of fertilisers. Always seek advice from your local agronomist or consultant to ensure you are applying the right fertiliser or lime at the correct rate.

Soil types vary within each Hundred, so care must be taken in the broader interpretation. In addition, the data only reflects the number of samples taken in each Hundred, which may represent only a few properties. The data and resultant graphs can only be interpreted to the point of identifying trends over time.

Take home messages

- Soil testing is essential for monitoring soil fertility levels.
- PIRSA provides a soil testing service for all farmers – from provision of kits, to taking the soil samples, to interpretation of results.
- Of all the soil samples taken the majority were below critical levels for pH. Lime to maintain PH_{CaCl} above 5.5.
- Phosphorus, potassium and sulphur levels were low on some properties.

Hundred (number of samples)	Organic Carbon %	Conduct-ivity dS/M	$pH_{(CaCl2)}$	Phosph-orous mg/kg	Potassium mg/kg	Sulphur mg/kg
Haines (6)	2 (1.4-2.6)	0.10 (0.07-0.14)	5.3 (5.0-5.6)	58 (48-70)	116 (48-195)	7 (4.2-9.7)
MacGillivray (25)	2.9 (1.2-4.2)	0.16 (0.03-0.93)	4.9 (4.2-6.1)	31 (12-60)	182 (54-471)	11 (1.8-49.2)
Menzies (12)	1.9 (1.4-2.6)	0.20 (0.07-0.35)	5.6 (4.6-7.3)	48 (15-91)	231 (120-402)	8 (4.9-16.5)

Table 3: Summary of results for sandy soils. Note mg/kg is the same as ppm.

Hundred (number of samples)	Organic Carbon %	Conduct-ivity dS/M	$pH_{(CaCl2)}$	Phosph-orous mg/kg	Potassium mg/kg	Sulphur mg/kg
Cassini/Duncan (33)	3.6 (1.6- 5.3)	0.10 (0.05-1.1)	5.2 (4.7-6.1)	37 (7-91)	171 (35-416)	12 (3.1-29.4)
Dudley (37)	2.3 (0.16-4.37)	0.21 (0.03-0.4)	5.3 (4.4-7.5)	27 (3-112)	166 (42-611)	10 (1.8-80)
Newland/Ritchie (19)	3.3 (1.6-4.6)	0.13 (0.04-0.26)	5.0 (4.3-5.8)	42 (6-105)	216 (31-394)	9 (3.9-14.3)
Sedddon (12)	4.1 (3.2-5.1)	0.19 (0.1-0.28)	5.1 (4.6-5.4)	34 (19-55)	234 (125-517)	8 (5-17.5)

Table 3: Summary of results for ironstone soils.

Funding/Sponsors

- AgKI through the Australian Government National Landcare Program Smart Farms Small Grants
- KI Landscape Board through the Australian Government National Landcare Program Smart Farms Small Grants
- PIRSA

Note: The information used was sourced from individual Kangaroo Island farmer soil tests and analysed using CSBP Analytical Laboratory.

Further Information

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Down and Dirty

Background

'Down and Dirty' was the catching name for a project monitoring both soil biological activity and subsoil pH on properties on KI. Biological activity and soil pH are important indicators of soil health and in turn, a productive farm:

- Soil biology drives the decomposition of organic matter which in turn influences soil fertility, plant growth, soil structure and carbon storage. Its activity can be measured simply and easily by burying a strip of cotton or a pair of cotton undies. The rate of decomposition is an indicator of soil biological activity.
- Soil acidity slows down the microbial activity in the soil. This in turn slows down the cycling of nutrients which can result in poor pasture and crop growth. If acidic paddocks are not limed, the topsoil continues to acidify and the acidic layer spreads down the soil profile. Acidic layers at 5 to 15 cm depth are becoming increasingly common, even where topsoils have been limed. Sending soils away to a lab is costly and time consuming but using a soil pH test kits gives you a quick indication on the spot.

What's being done

Free kits were provided to landholders to enable them to monitor their soil biological activity and/or the subsoil pH.

1. The Undie Test

Dig a hole and bury the undies or strips of cotton in the topsoil for two months. After two months dig up the undies and check for the level of decomposition. If there's not much left of the undies there is good biological activity, which indicates healthy soil.

2. Monitoring your sub soil pH

Using a garden pH test kit. Select 4-5 sites across a paddock and with the spade, dig a hole to approximately the depth of the shovel blade. Remove a wedge of soil with the spade and follow the kit instructions.

If the soil is reading pH 5 or lower follow up with a proper lab test (soil test kits are available from the PIRSA office).

Figure 1: Soil testing kits are available FREE from the PIRSA office. This shovel-full of soil is quite acidic, indicating the paddock needs lime.

Results

1. Monitoring soil biological activity

There was wide range in results from undies that looked almost the same as they day they were placed in the soil (Figure 2 - over the page) to those that had been almost totally broken down by the soil biota (Figure 3).

Table 1 provides a breakdown in the level of microbial activity across all sites. Whilst the table shows a high percent of sites with very high levels of microbial activity, a large number of those undies were buried in the worm farm or veggie patch (I'm not saying those participants cheated... but it was a way of getting an impressive result!)

LEVEL OF MICROBIAL ACTIVITY	% OF SITES
Very high	19
High	37
Medium	22
Low	22

Table 1: Level of microbial activity.

Table 2 provides an indication of conditions that influenced the rate of breakdown of the undies. Sites with strongly acidic soils, or where the soil was either too wet or dry had low levels of breakdown. What was growing in the soil also had a major impact – pine trees and weedy pastures resulted in less decomposition compared to well fertilised pastures with a mix of perennial and annual grasses and legumes.

KEY ISSUES	% OF SITES
pH (acidity)	65
Species mix	17
Soil condition	8
Seasonal conditions	5
Other – not buried properly or dug up too soon	5

Table 2: key issues influencing breakdown of the Undies

2. Monitoring your sub soil pH

The subsoil pH samples highlighted several paddocks that had been recently limed, but had a 5-15 cm layer with a pH well below 5. The 'acid throttle', when soil pH falls below 5, can severely limit root growth and the plants' access to water and nutrients. It's an indicator that although you may have limed, the lime is not moving down the soil profile.

The solution is to lime. Lime should be applied at rates to keep the surface $pH_{(Cacl2)}$ at 5.5 or more in the top 10cm of soil. If sub soil acidity is an issue, consider

- Apply high rates of surface applied lime to drive the leaching of lime down the soil profile.
- Incorporate lime into sub-surface or sub-soil using specialised machinery.
- Delving or spading to help move lime or help mix less acidic soil horizons.
- Use of strategic tillage to more thoroughly incorporate the lime.
- More frequent applications of lime.

Take home messages

- Burying undies provides a simple (and fun) means of determining how biologically active your soil is.
- Sub soil acidity is a key constraint to crop and pasture growth. Monitor your subsoils and then lime to ensure the top soil remains above 5.5.

Figure 2: Undies buried under a pine tree plantation.

Figure 3: Undies buried in a vegetable garden.

Funding/Sponsors

- **AgKI through the Australian Government National Landcare Program**
- **Ingrams Home Hardware**

Further Information

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Soil Health Monitoring Results at Demonstration Farms

Background

The Kangaroo Island Landscape Board (KILB) has delivered the Building Resilient Agriculture Systems on Kangaroo Island project for the last 4 years from 2019 to 2023. Through this project, and in line with the Kangaroo Island Landscape Plan 2021-2026, there has been a focus on improving the health of the soil, water and biodiversity that supports KI's economy and strengthening the viability of primary production through sustainable practices.

Following a call for participants through an EOI process, four farms were selected to undertake regular monitoring and sampling of nominated paddocks where a range of practices to improve soil health were to be implemented. The farms are located in the Hundreds of Duncan, MacGillivray and Seddon, and included ironstone soils, sands, loams and clay-loams. At the beginning of the project the farmers attended an initial workshop with Nicole Masters from Integrity Soils to learn the principles of soil health. They were then mentored by agriculture coach Kim Deans who worked with the farms to help improve their soil management; and by Grazing Naturally advisor Dick Richardson who worked with the farms to help manage animal nutrition and pasture levels. Each farmer chose their own types of inputs and methods of management.

What was done

Transects and photo points were established in each paddock and monitoring along the transects was undertaken in spring and autumn each year. This monitoring included Visual Soil Assessments (VSA) and the measurement of other parameters including pasture species and abundance, leaf sap measurements, water infiltration rates, temperature and weather. In addition to this, micro-biological soil testing occurring in spring 2020 and spring 2022 and soil mineral testing was taken in autumn 2021 and autumn 2023.

At each site, measurements and samples were taken from the permanent transect, to minimise spatial variability within each site over time. The VSA was made by digging out a 20cm^3 cube of soil, assessing the colour, porosity and mottling of the profile, then shattering the soil naturally by dropping the cube from a height of 1m three times to determine the soil structure (size of lumps or aggregations) and to find the number of earthworms in the cube. The surface profile was also noted. Other measurements recorded in the process include the soil type, smell, root depth, rhizosheath, nodulation and any other invertebrates present. These are supplementary details which contribute to the soil health assessment but do not contribute to the VSA score.

During this project, each farm altered their animal management to subject the pasture to shorter more intensive grazes with a longer rest period in between. To increase the soil biological processes by having more living plant roots in the soil for more of the year, all farms established a diverse range of perennial pasture species. Farm chemical inputs were substantially reduced and artificial fertilisers were not applied to the demonstration sites.

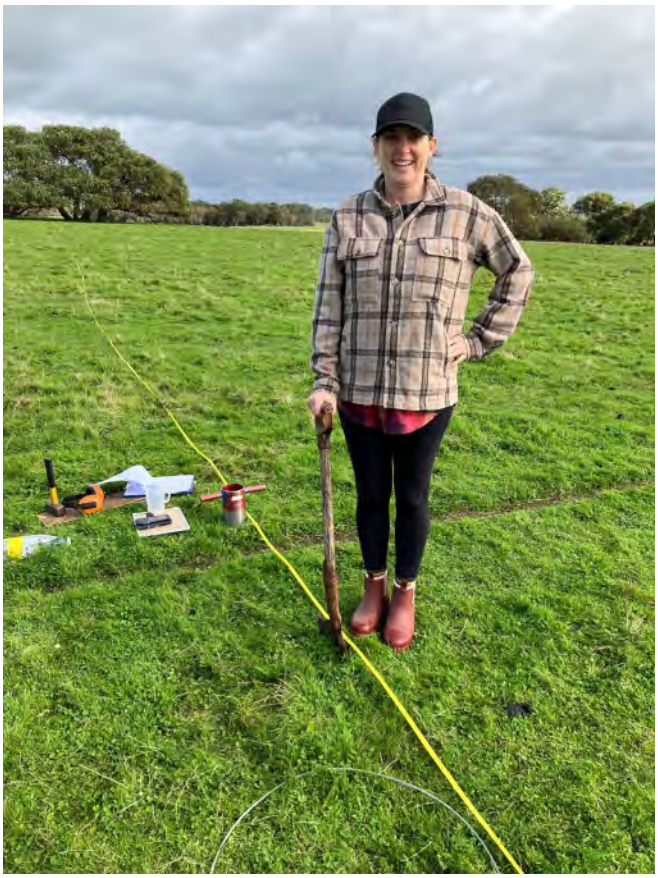

Figure 1: Farmer Carly Bussenschutt taking measurements along her transect in 2023.

Results

The VSA scores at all sites improved between 2020 and 2023 (see Table 1 below).

Micro-biological soil testing results indicate that the total mass of microorganisms increased at almost all sites between 2020 and 2022 (see Figure 1 below).

Likewise, almost all sites improved in the key biological factors for important soil processes (see Table 2 and Table 3 below).

Micro-biological soil testing was analysed using laboratory testing from Microbe Labs:

"*Microbe Wise for Soil measures the living biomass of key microbial groups important for soil health and productivity directly from the sample. It uses molecular ('DNA type') technology to analyse the unique cell membrane 'fingerprint' of each microbe group to identify and quantify well-known microbial groups essential to important soil processes. The Microbe Wise method allows for some unique features, such as a measure of microbial diversity, a valuable indicator of soil system resilience.*" (Microbe Labs website)

Take home messages

- Soil is the foundation of our farm businesses.
- Visual soil assessments are easy to conduct and can provide an indication of whether your farm practices are improving your soil or leading to declining soil health. Take photos of your soil profile annually, to track changes over time.
- It takes time to build soil health. The changes are incremental, hence the benefit of having a timeline of photos to reference.
- Having more living plants growing for more of the year improves soil structure and health.
- Diverse pasture species maximise the soil area utilised by the plant roots and the increase in the associated soil biology improves soil health.
- Time controlled grazing management assists in building soil health and plant diversity.

Figure 2: Soil cube from an ironstone soil site in 2020 (left) and from the same site in 2022, showing good soil structure and colour change at the top of the profiile.

Figure 3: Soil cube from a grey sandy soil site in 2020 (left) and from the same site in 2022.

VSA	ASSESSMENT
<10	Poor
10-20	Moderate
>20	Good

Table 1: Visual soil assessment (VSA) score by site from 2020-2023

	DW01	DW02	DW03	JS01	JS02	JS03	JS04	CB01	VB01	VB02	VB03	VB04
2020	14	18	14	17	17	18	16	17	15	15	12	12
2021	16	12	18.5	19	19	17	16	17	16.5	18	13	17
2022	19	23.5	20.5	17	22	22	20.5	-----	20.5	22	20.5	22
2023	20.5	24	21	18.5	22	20	18.5	28	16.5	22	17.5	20

Table 2: Key microorganism aspects from soil biological laboratory testing

Low		Fair		Good	High

Site	Total Micro-organisms		Bacteria		Fungi		AMF		Protozoa		Anaerobes		Diversity	
	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022
CB1														
DW1														
DW2														
DW3														
JS1														
JS2														
JS3														
JS4														
VB1														
VB2														
VB3														
VB4														

ASSESSMENT
Decrease from fair to poor
Decrease from good to fair
Decrease from good to good or from fair to fair
Improvement

Table 3: Change in key soil processes between 2020 to 2022 indicated by soil biology and arranged by soil type

Site	Soil Type	Nutrient Solubilisation	Nutrient Cycling	Disease Resistance	Drought Resistance	Nutrient Access-ibility	Residue Breakdown
DW02	brown loam						
CB01	ironstone soil						
JS02	ironstone soil						
JS03	ironstone soil						
DW01	brown sand						
VB03	brown sand						
VB04	brown sand						
DW03	grey sand						
JS01	grey sand						
JS04	grey sand						
VB01	grey sand						
VB02	grey sand						

Funding/Sponsors

- The KILB would like to sincerely thank the farms that participated in this project.
- This project was supported by the Kangaroo Island Landscape Board through funding from the Australian Government's National Landcare Program.

Further Information

Kangaroo Island Landscape Board

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Lime Trials

Background

Soil acidity is the most significant land degradation issue on Kangaroo Island impacting 3 out of 4 farms with a production loss of more than $7 million per annum. Most farmers are aware that liming is the best method to treat acid soils, and many have a liming program in place. However, broadcasting the lime, with no follow up incorporation confines the lime to the topsoil, resulting in highly acidic subsurface soil layers. This hostile 'acid throttle' can prevent plant roots from accessing moisture and nutrients from the sub soil.

What was done

A trial was set up in 2019 to monitor the long term effectiveness of high rates of lime and incorporation to manage subsurface acidity.

Four treatments and a control were applied in four replicates with the aim to improve the starting pH_{CaCl2} from 4.4 (topsoil 0-10cm), 4.6 (subsurface 10-20cm) and 4.9 (20-30cm) to 5.8 (0-10cm), 5.3 (10-20cm) and 5.0 (20-30cm). A set of offset discs were used to incorporate the lime in applicable plots. The treatments are as follows:

- Control: no lime + no cultivation
- Farmer rate surface lime applied at 2.5t/ha lime sand
- High rate surface lime applied at 5.4t/ha lime sand
- High rate surface lime + incorporation applied at 5.4t/ha lime sand
- Incorporation only (no lime)

Results

Soil pH changes down the profile were measured in the novel treatments trial. pH was measured in increments of 0-5, 5-10 and 10-15 cm down the profile and compared to the control (no lime applied) in December 2021 (refer to Graph 1).

As expected, the high rate of lime (5.4t/ha lime sand) treatments had the greatest impact on soil pH, increasing the soil pH by almost 1.5 units in the topsoil. The incorporated lime increased pH by more than 1 unit in the 5-10cm & 10-15 cm layer. Whilst incorporation of the lime provided the highest increase to depth, surface application of the high rate still had some impact at depth.

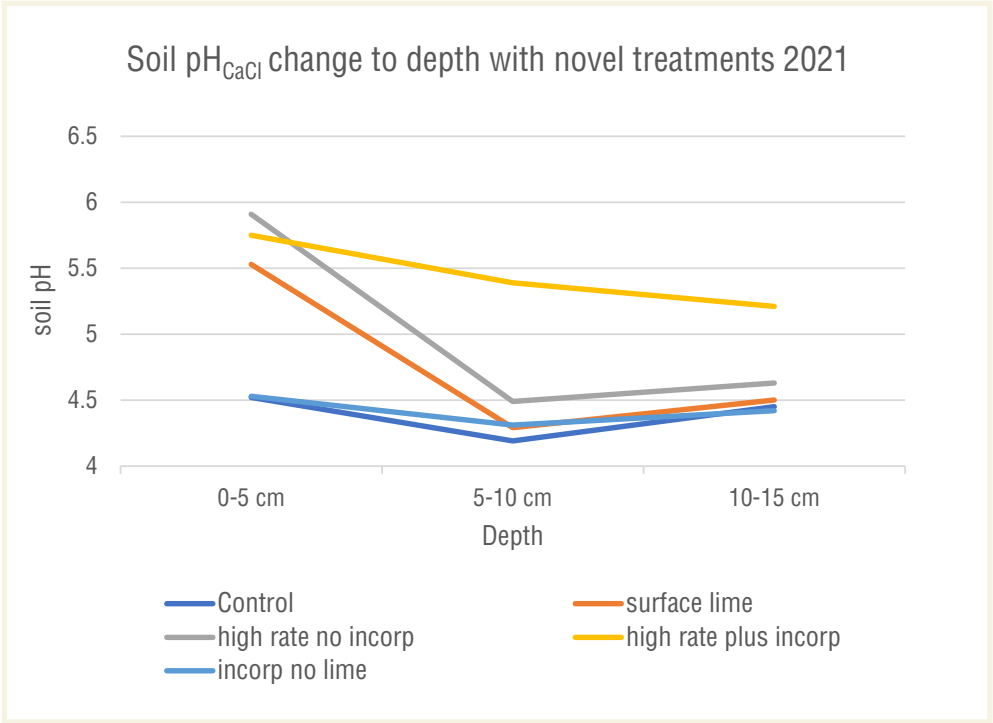
Surface application at 2.5t/ha improved the topsoil pH by almost 1 unit in the top 5 cm but had less of an impact at depth.

These initial results indicate that to change soil pH at depth ideally requires some form of incorporation and/or higher application rates. Graph 2 is further evidence that it will take higher rates of lime application to drive pH change at depth. This is of particular importance to KI, as we have significant issues with sub soil acidity. Once pH falls below pH_{cacl} 4.8, aluminium toxicity can occur. High Al levels burn the root hairs, inhibiting the plant's uptake of nutrients and water.

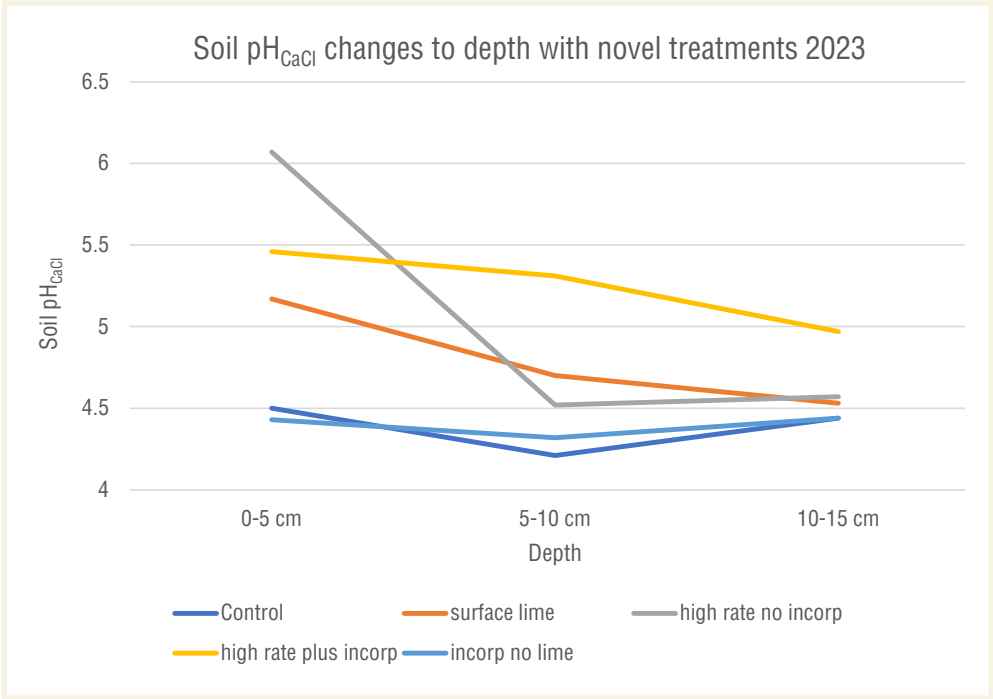
Take home messages

- Subsurface soil acidification impacts on crop and pasture growth
- The most effective way to increase pH at depth is through incorporation with higher application rates.
- The high rate of lime and no incorporation achieved the soil pH target level at the 0-5 cm. The high rate of lime and incorporation achieved the pH target levels at the 5-10 and 10-15 cm depth.

Right: Graph 1: Novel trial – 2021 soil pH changes to 15cm.



Right: Graph 2: Rate response trial – 2023 pH changes at depth.



Funding/Sponsors

- PIRSA in conjunction with GRDC
- Simon and Marissa Veitch

Further Information

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Sub-Surface Soil pH - KI Soil Test Results

Background

Soil sampling has highlighted that sub-surface soil acidity (acid soil at greater than 10 cm depth) is becoming a major issue in many areas on KI. Sub-surface soil acidity often goes undetected because most pH tests are only done in the 0-10 cm. However, if left unchecked, sub-surface soil acidity will reduce the productive potential of our soils. The most cost effective and practical way to address low pH is through the application of lime.

KI Landscape Board contracted PIRSA to run a project (from 2020 to 2023) to increase the adoption of sub-surface soil sampling to help detect and monitor sub-surface acidity. During that time 32 farmers submitted 88 samples.

What was done

PIRSA provided free kits to those who undertook the 'normal' 0-10 cm soil testing. Samples at depth i.e. 10-20 cm, were collected from about 5 locations across a paddock, mixed together and a sub sample was sent to the laboratory for soil pH testing. The farmers were then provided with a free interpretation of the results, including liming advice where required.

Hundred	No. of samples	Average pH ($CaCl_2$)	Range pH ($CaCl_2$)
Dudley	24	5.5	4.5 – 5.9
Haines/ MacGillivray	23	5.1	4.5 -5.6
Menzies	17	4.9	4.2 -5.4
Seddon	9	5.1	4.9 – 5.3
Duncan	6	4.9	4.6 – 5.1
Newland/ Ritchie	9	4.9	4.5 – 5.5

Table 1: Soil pH results (10-20cm) by Hundreds.

Note that soil types vary within each Hundred, so care must be taken in the broader interpretation. In addition, the data only reflects the number of samples taken in each Hundred, which may represent only a few properties.

Results

Soil pH

Soil pH is important for optimum production of crops and pastures. As pH decreases, nutrients such as phosphorus, magnesium, calcium and molybdenum become less available; microbial activity starts to decline (including Rhizobia). If clay is present in the sub-surface , toxic amounts of aluminium can be released into the soil solution. High aluminium levels restrict root growth affecting overall pasture or crop yields.

If the topsoil pH_{CaCl2} is below 5.5, liming is recommended. Keeping the topsoil above 5.5 will treat the on-going acidification due to farming and ensure sufficient alkalinity can move down and treat sub-surface acidity. Liming is necessary if the sub-surface pH_{CaCl2} is below 4.8, whether or not the topsoil is acidic. If the 10-20 cm layer is below 4.8 but the 20-30 cm layer above 4.8, liming is still required. In this case the band of acidic soil will restrict root access to the more suitable soil below.

The data shows that all the sites sampled were acidic. Whilst the averages were within 'acceptable levels' (i.e. the sub-surface soil should be above pH_{CaCl2} 4.8), when looking at the ranges many sites (approx. 20%) had levels below the 4.8. At this level, the production of pasture and crop yields would have been affected.

The widespread adoption of minimum tillage / no-tillage has had an impact on how we manage soil acidity. The current standard industry practice of spreading lime, with no incorporation under minimum till systems, confines the lime benefits to the surface layers. There is a range of options to get lime to depth that farmers may need to now consider:

- Apply high rates of surface applied lime to drive the leaching of lime down the soil profile.
- Incorporate lime into sub-surface or sub-soil using specialised machinery.
- Delving or spading to help move lime or help mix less acidic soil horizons.
- Use of strategic tillage to more thoroughly incorporate the lime.
- More frequent applications of lime.

The results show the ongoing need to monitor sub-surface soil as well as the topsoil for pH, and to then modify the liming treatment accordingly if the sub-surface is below $pH_{(CaCl2)}$ 4.8.

Take home messages

- Monitoring sub-surface soil pH is essential for the management of soil acidity.
- PIRSA provides a soil testing service for all farmers – from provision of kits, to taking the soil samples and interpretation of results.
- 1 in 5 samples collected were highly acidic to the point of causing loss in productivity.

Funding/Sponsors

- **KI Landscape Board through the Australian Government National Landcare Program Smart Farms Small Grants**
- **PIRSA**

Note: The information used was sourced from individual Kangaroo Island farmer soil tests and analysed using CSBP Analytical Laboratory.

Further Information

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P.L.A.N.

PRODUCTIVE LIVESTOCK THROUGH ANIMAL NUTRITION

ANIMAL PRODUCTION SERVICES

BEEF & SHEEP SERVICES

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Dedicated contact with your specialist is on-farm and face to face – we believe this is critical to have a thorough understanding of your business. Your specialist will work with you to identify potential opportunities to improve the profitability of you business by applying technical concepts through a measurable and practical approach. The customised advice and plans are specifically targeted to your enterprise, whether it's a short-term tactical response or longer term strategic solutions.

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Soil Probes and Weather Station Data

Background

Soil probes and associated weather stations are becoming increasingly important in assisting farmers to make better informed farm management decisions.

Three soil probes had previously been established on Kangaroo Island but given the extensive variation in weather across the island, the data had limited applicability to the district in which they are situated. This project has established an additional seven soil probes and weather stations across Kangaroo Island and has made the data readily available to local farmers (and the good news is another station will soon be added at Ritchie). This expanded network will enable farmers to make more informed decisions in an increasingly variable climate, enabling them to maintain production and efficiently.

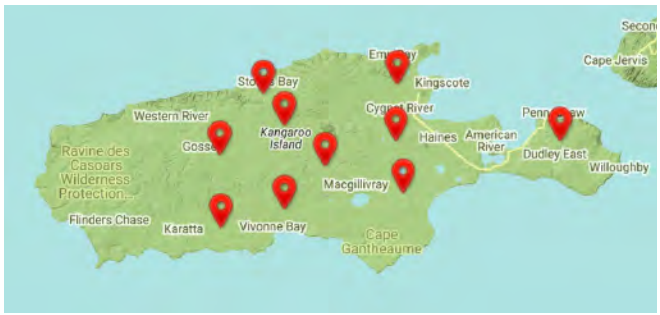


Figure 1: Location of weather stations.

Results

The weather station data can be accessed via the AGKI website. Use the "Projects" tab to access live data from each individual site, or access summary data on soil moisture, wind speed, rainfall, Delta T and temperature across all sites.

Figure 2 shows average weekly soil temperature at the top sensor (10cm below the surface). This data can give an interesting comparison of the variation in soil temperature not only over the course of a season, but also variation from season to season. The current year is the bottom panel, with the year prior above.

Ground cover (dry feed or stubble load) as well and air temperature conditions are the main drivers of soil temperature variation which has an impact on soil biota levels and nitrogen mineralisation.

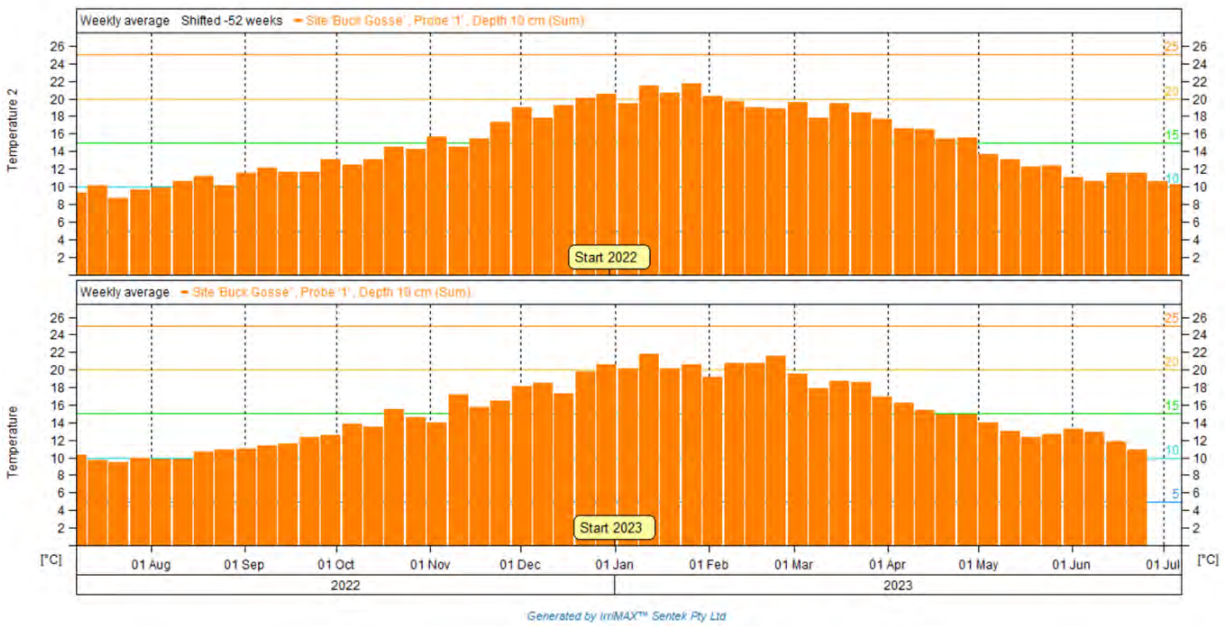
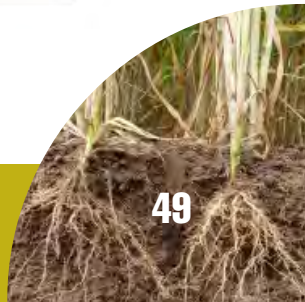


Figure 2: Buck - Weekly soil temperature, 365 day view.



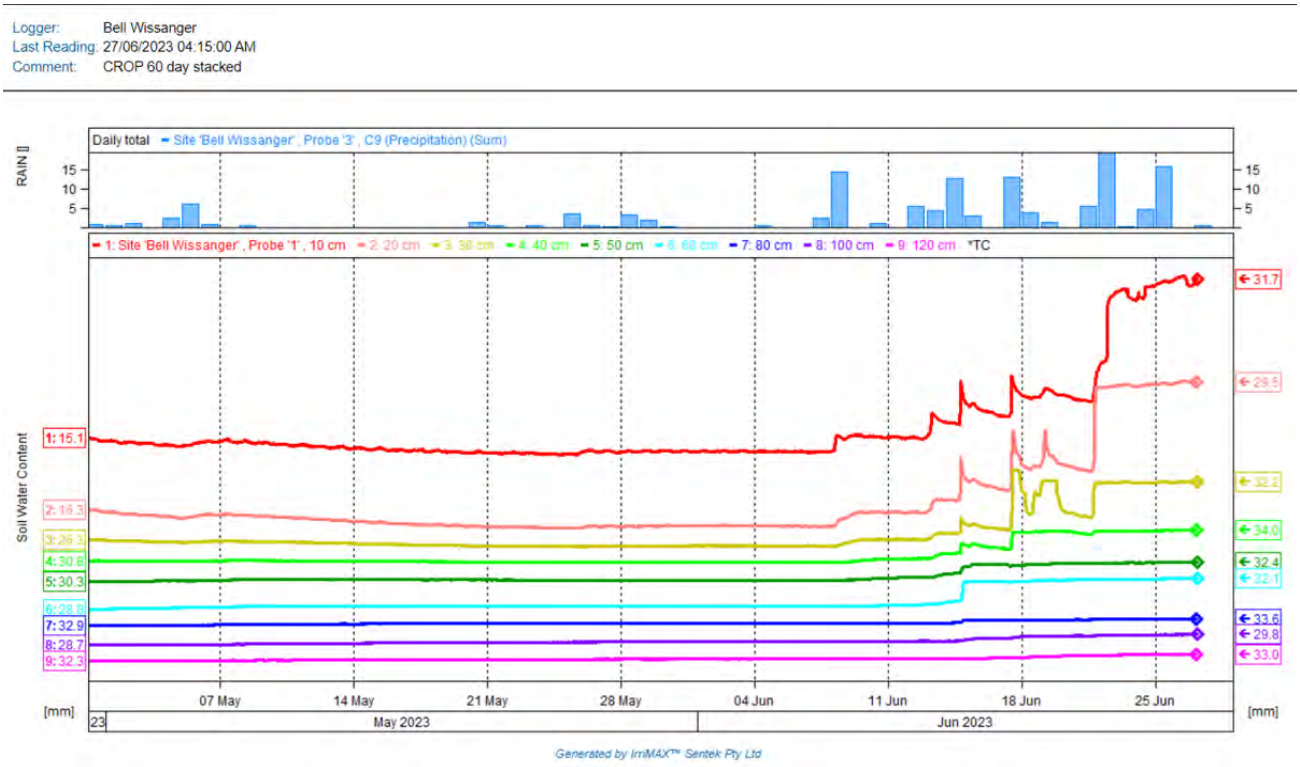


Figure 3: Bells - Soil moisture 60 day stacked.

Figure 3 shows a 60 day stacked sensor graph for soil moisture in mm. Each coloured line is the reading from a different depth sensor from 10cm to 120 cm. The figures on the left-hand side of the graph show the soil moisture level 60 days ago and the figures on the right show the current readings. The bar chart at the top shows the actual rainfall events.

The graph shows the impact of the June rain, with a significant increase in soil moisture with heavy rain in late June in the top 20cm.

Figure 4 is a year on year summed graph comparison which shows the 'fuel gauge' view, with the current year in the bottom panel. The mid panel is essentially shifted back a year and the top panel is shifted back two years. This enables you to draw a line vertically to intersect the graph and see how much moisture there was at the same time last year. Once a number of seasons have passed, Full Point (drained upper limit) and Driest Ever (crop lower limit) can be calculated and then the 50% horizontal line gives a clearer indication of moisture left in the profile. This data can be used to give a close approximation to plant available water in mm for the depth of the soil probe (keep in mind that roots may go deeper than the bottom of the soil probe).

The steepness of the graph during the critical September/ October grain fill period is the most interesting observation on this graph.

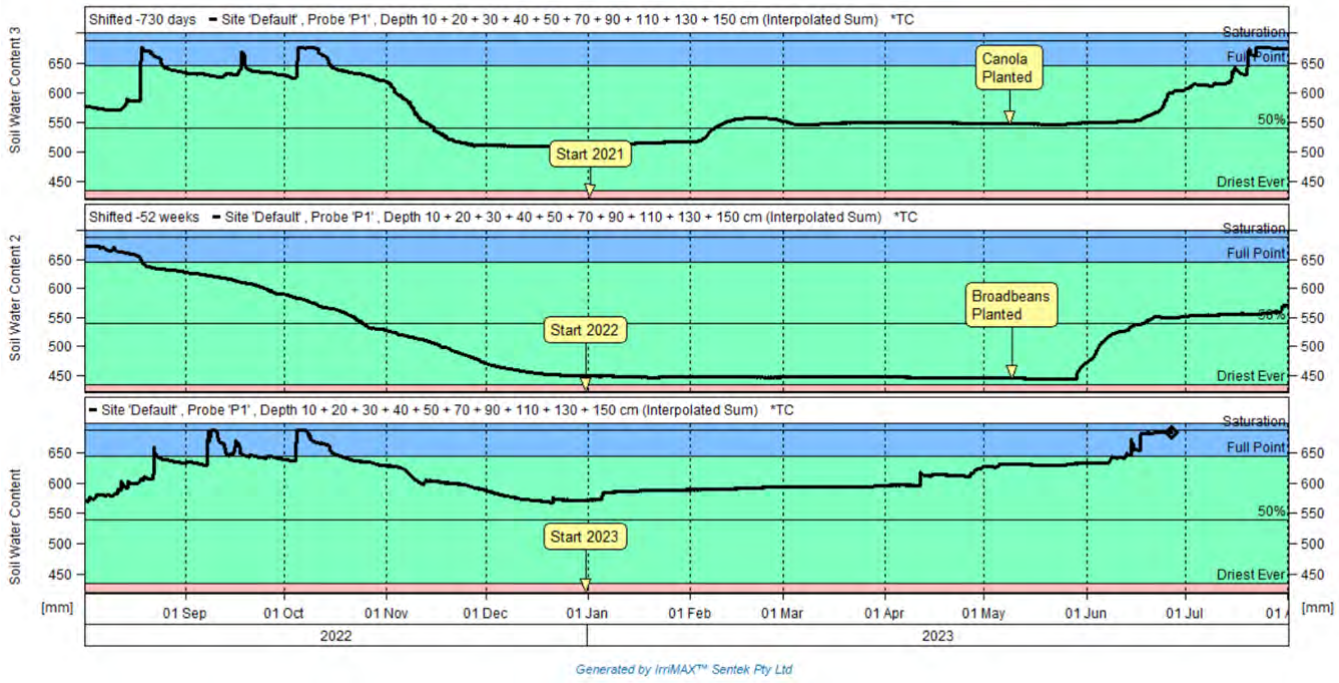


Figure 4: Bells - Summed comparison graph, 365 days.

Take home messages

Weathers stations can provide useful information to base farm management decisions on.

- Delta T – a measure of evaporative potential to determine if weather conditions are safe for spraying pesticides
- Weather conditions for high mortality risk of sheep (a Sheep Chill Index).
- Fire danger risk which can be used at crop harvest to determine if weather conditions are safe for harvesting.

Funding/Sponsors

This project is being delivered in partnership with Livestock SA, Agriculture Kangaroo Island and Department of Primary Industries and Regions. It is jointly funded by the South Australia and Australian Government's under the National Disaster Recovery Funding Arrangements.

Further Information

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Biosecurity

Protecting KI Agricultural Industries through raising awareness

Background

The Kangaroo Island Biosecurity Rebuild Project is jointly funded by the South Australian and Australian Governments under National Disaster Recovery Funding Arrangements. These funding arrangements finish as of 30 June 2023 but Primary Industries and Regions (PIRSA) will continue to fund biosecurity arrangements for Kangaroo Island for 2023/24.

What was done

The significant increase presence of biosecurity officers at Cape Jervis, particularly over the higher visitation periods over the summer months, has resulted in an increased engagement with travellers, freight companies and the KI community. Key activities for the biosecurity officers are:

- Stopping restricted items such as honey, beekeeping equipment, unwashed potatoes and potatoes for planting.
- During the Foot and Mouth outbreak in Indonesia and Bali, travellers from those destinations were additionally checked to confirm footwear and clothing were clean and that they would not have contact with livestock for a minimum of two weeks.
- Fruit fly risk products were seized regularly from interstate travellers, particularly over the summer months.
- Checking of compliance with livestock documentation requirements including National Vendor Declarations and Sheep Health Declarations.
- Inspection of consignments of plants to ensure declared weeds were not present and remind gardeners of risks of weeds and plant disease being transported in soil.
- Inspection of machinery including construction, earthmoving, agricultural and vegetation clearing machines to stress the importance of arriving clean on KI.
- Ensuring recreational boats arriving are free of marine pests and aware of the sanctuary zones.
- Biosecurity checks of cruise vessel passengers visiting Kangaroo Island.

Since July 2020 the casual and part time staff have checked over 98,000 vehicles and engaged with over 260,000 passengers. They have taken 2,154 consignments of honey.

In 2023 there have been 752 lots of honey taken weighing 225 kg, 1086 lots of potatoes checked and 226 consignments of fruit fly host material from interstate intercepted. Unopened honey has been donated to the charity Foodbank, with 153 kg donated since December 2021. There has been a noticeable increase in biosecurity awareness of companies bringing machinery to Kangaroo Island, with a general acceptance of the role they play in reducing the potential risk by taking steps to clean machinery prior to entry. Our engagement with companies undertaking pipeline installation, vegetation clearance and large construction work as part of the rebuild has greatly assisted with high levels of clean machinery arriving on Kangaroo Island.

New signage at Cape Jervis.

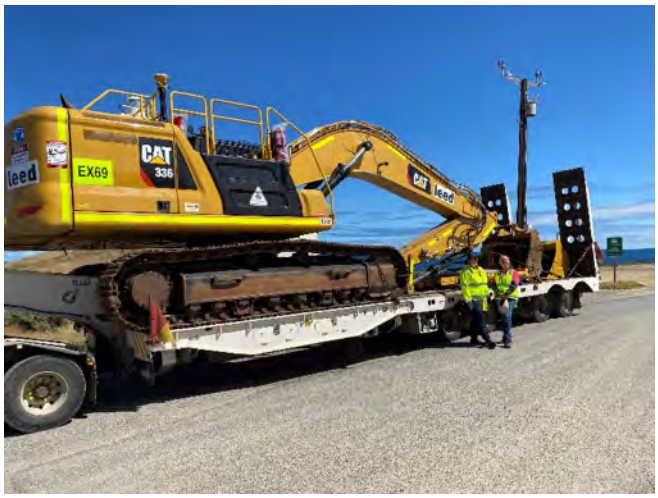
The most significant finds at Cape Jervis included a beehive of live bees left in the freight carpark (we can only assume the intention was for it to be brought to Kangaroo Island but the owner either saw biosecurity staff or the signs and abandoned it), one consignment of 35 kg of honey and bee products, a live ferret without a permit from KI Landscapes Board (now the policy has changed and no permits are issued), a number of declared weeds including blackberry, common lantana, arum lily and willows.

There has only been one significant compliance activity during the life of the project with a live pet rabbit on Kangaroo Island reported by a member of the public. This resulted in the owners undergoing a record of interview and compliance actions initiated. The prosecution process is still being finalized by Department of Environment and Water.

The level of biosecurity awareness by the community and travellers has resulted in an increased level of reporting. This includes reports of sightings of live rabbits, foxes and goats on Kangaroo Island. These are always investigated and usually resolved by an initial conversion and assessment using a tool to determine the reliability of the report.

A Biosecurity Awareness video was filmed in April and included local primary producers and environmental industry personnel. The two-minute video is targeted primarily at tourists but also has an emphasis on companies bringing equipment to Kangaroo Island. The importance of protecting niche agricultural industries such as the honey and seed potato producers is emphasized along with the general protection of agricultural production and the natural terrestrial and marine environments. The video will be a legacy of the project and will hopefully be played on SeaLink ferries and shared by tourism bodies with future travellers.

New biosecurity road signs have been installed on the road prior to Cape Jervis. This along with additional biosecurity bins at Cape Jervis, Penneshaw and Kingscote Airport will assist with raising awareness of travellers.



Above: Staff inspecting vehicles and comminicating with passengers at the Cape Jervis ferry terminal.

Above: Signage has been installed on the approach to the Cape Jervis ferry terminal alerting drivers to biosecurity rules and procedures.

Funding/Sponsors

- This information is supported by the Kangaroo Island Biosecurity Rebuild Project. The project is jointly funded by the South Australian and Australian Governments under National Disaster Recovery Funding Arrangements.

Further Information

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Biosecurity - Weeds After Fire

Background

The Weeds After Fire project aims to assist landholders effected by the 2019/2020 bushfires by assisting in weed incursions, fire responsive weeds as well as building producers' weed control capacity.

The disturbance created by the 2019/2020 bushfires produced ideal conditions for new weed incursions and the spread of established weeds.

Project aims

- Establishing a local advisory group comprised of relevant local stakeholders to provide direction for the program
- Weed surveillance, mapping, and the establishment of a control program over fire effected properties on Kangaroo Island
- Monitoring landholder properties that received donated fodder, checking for weed incursions resulting from accidental seed transfer from the mainland
- Providing landholders with free site inspections and workshops to identify weeds and provide control advice
- Contracting weed controllers to perform large scale weed control activities.

Above: Cape Tulip

What was done

The Cape Tulip Campaign was conducted over 2021 and 2022. The campaign has provided 48 landholders with over 2,680 hours of Cape tulip control assistance. In 2021 a Cape Tulip Blitz was conducted with 26 staff from across PIRSA, SA Landscape Boards and Department of Environment and Water coming to KI to assist in controlling Cape Tulip, providing over 500 hours of targeted Cape Tulip control.

In 2021 a Cape tulip equipment subsidy was made available for fire affected landholders to access subsidised weed control equipment. 19 landholders applied and $55,840 of subsidised equipment was purchased. Following positive feedback received from the 2021 equipment subsidy, PIRSA partnered with Agriculture Kangaroo Island to open a second weed control equipment subsidy in 2023. 21 landholders applied and purchased over $89,370 of subsidised equipment.

16 weed control contracts have been executed from 2021-2023, controlling weeds including Cape tulip, arum lily, bluebell creeper, bulbil watsonia, mirror bush, radiata pine, tree lucerne, Montpellier broom and albizia.

A Business Establishment Grant was created to establish local weed control contractors for KI producers. The grant provided subsided training, licensing and equipment.

PIRSA officers have performed over 1,500 hours of weed control across the Kangaroo Island fire scar. Weeds controlled include tree lucerne, Montpellier broom, albizia, bluebell creeper, Cape tulip, arum lily, radiata pine and sweet pittosporum.

SA State Herbarium botanist Chris Brodie was funded by PIRSA to visit Kangaroo Island to identify and record weeds. Over 40 weeds previously unrecorded on Kangaroo Island were identified.

Over 240 Kangaroo Island landholders have been provided assistance with weed control through the project.

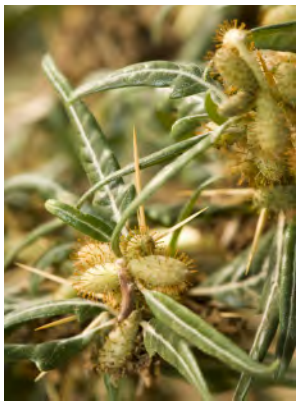
The project is working on the dectection and control of 2 high-risk agricultural weeds that are new to Kangaroo Island (Bathurst burr and African lovegrass).

Plans for 2023/24

State Government has provided $185,000 to extend the project for 12 months to 30 June 2024. The project will continue to assist landholders in their recovery from new and existing weed incursions, building resilience for the future. The focus of the extension is to conduct a third Cape Tulip Campaign, providing control assistance to fire affected landholders. 510 hours of contractor control assistance will be delivered across 12 properties.

In addition, the program will continue to provide the following to KI landholders:

- Surveillance and mapping for new, high-risk weeds
- The identification of suspected weeds on properties and the provision of control advice.
- PIRSA officers to perform onsite weed control.
- Providing information on best practice and management for weed issues effecting KI landholders.



Above and left: Bathurst burr, a multi-branched, annual shrub to 1m tall, forms spiny burrs in summer which attach to livestock.

Right: African lovegrass, a perennial with stems to 1m, competes with pasture.

Both are high-risk agricultural weeds new to KI.

Funding/Sponsors

Kangaroo Island Biosecurity Rebuild Project is jointly funded by the South Australian and Australian Governments under the National Disaster Recovery Funding Arrangements.

Further Information

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Further resources for controlling declared weeds, in particular Cape tulip, can be found on the PIRSA website:

Update: KI Feral Pig Eradication

Background

The 2019-20 summer fires devastated Kangaroo Island. A silver lining to emerge from this devastation was a once in a lifetime opportunity to eradicate feral pigs from the island while their numbers were low, and the vegetation was recovering.

It is estimated that feral pigs used to cost Kangaroo Island $1 million annually. Feral pigs used to severely impact Kangaroo Island producers through the destruction of pastures, farm infrastructure and preying on lambs. They were also a biosecurity risk because they spread livestock and human diseases.

What's being done

The project team is using the latest technology in control tools to achieve eradication, including:

- Remotely triggered traps
- HOGGONE® sodium nitrite-based poison baits
- Thermal ground shooting
- Thermally Assisted Aerial Culling (TAAC)
- Artificial Intelligent (AI) 4G camera network

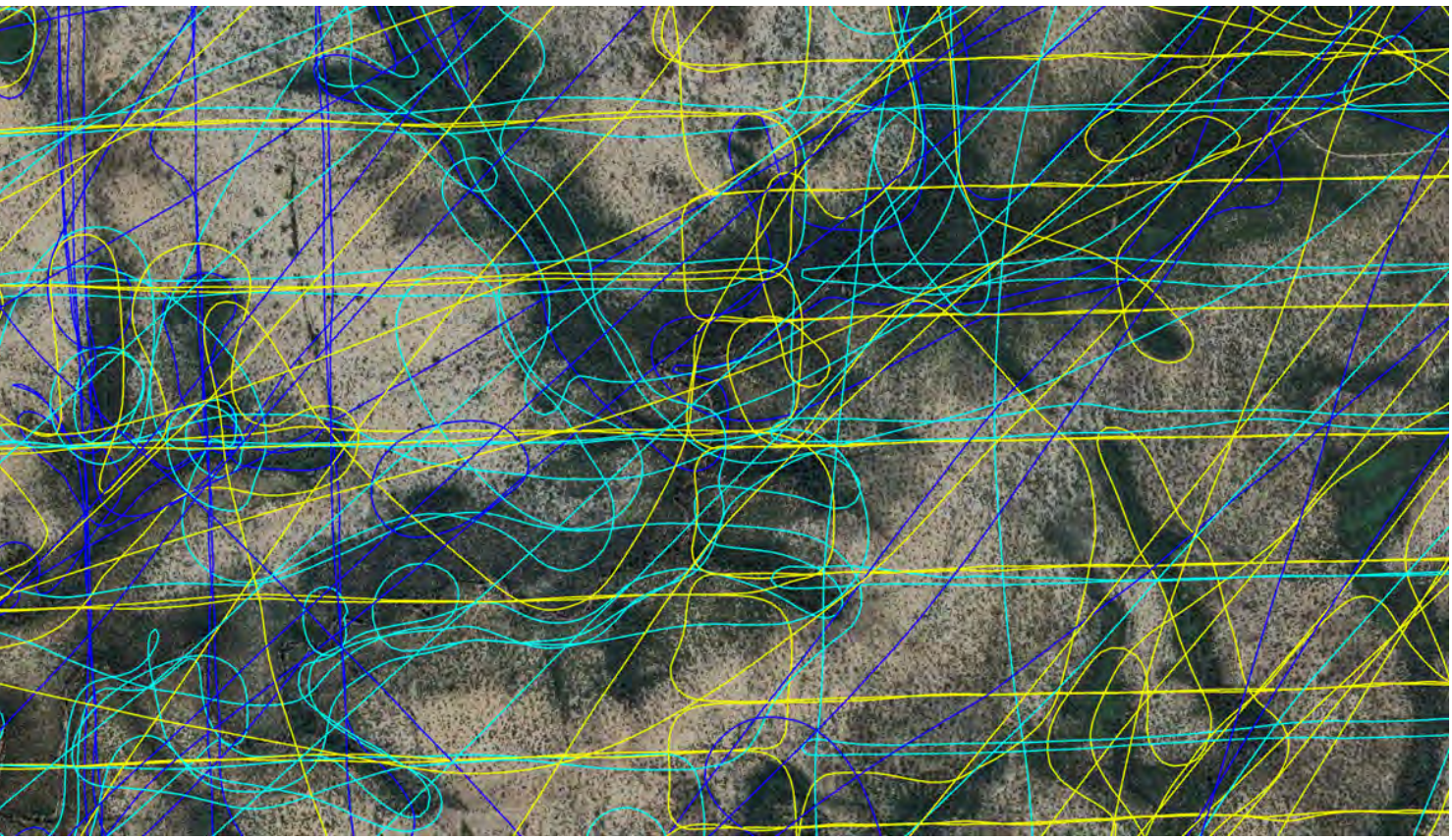
The eradication project began in September 2020 and has achieved the following:

- Culled 875 feral pigs to date
- Only two known feral pigs remaining on Kangaroo Island, both are boars
- Implemented the largest artificial intelligent mobile camera network in Australia with over 300 cameras
- First in Australia to implement thermally assisted aerial cull
- Has completed five thermally assisted aerial culling operations across Western Kangaroo Island
- The thermally assisted aerial culling operations have flown a total area of over 700,000 hectares, the equivalent of 1.6 times the entire area of Kangaroo Island.

After the 30 of June 2023, the eradication will transition from large-scale control activities to a proof-of-freedom stage. Proof-of-freedom is the final stage of the eradication, where intensive monitoring is undertaken to ensure the eradication has been successful. To ensure proof-of-freedom, multiple different tools will be used:

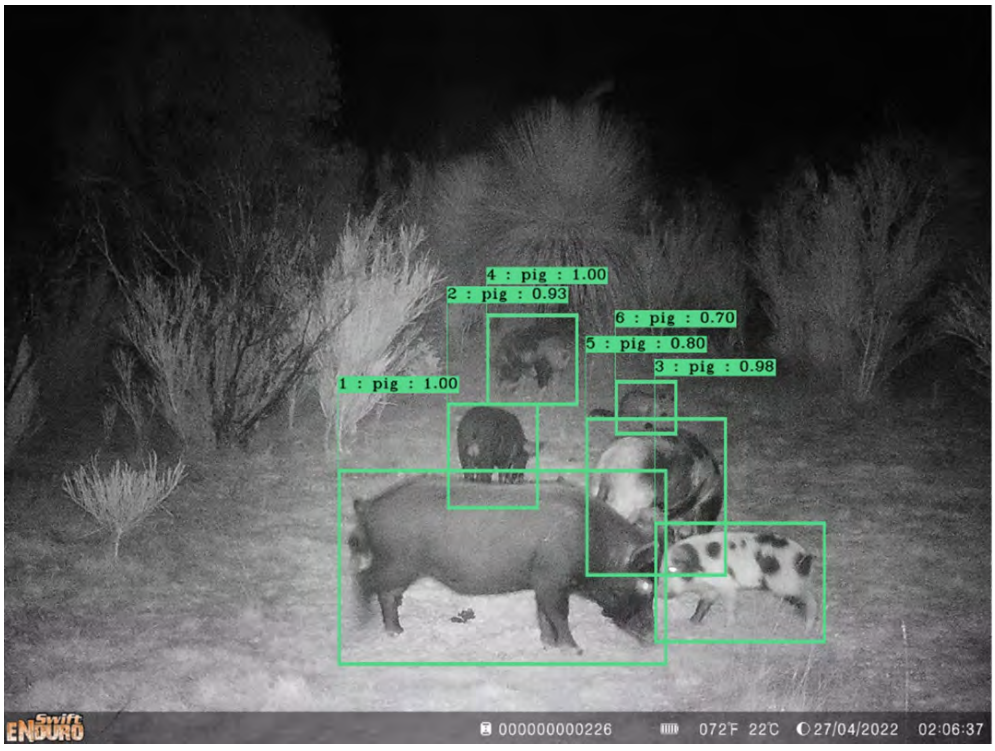
- eDNA water sampling
    - 50 sites are sampled each month to check for the presence of feral pig DNA
- Thermal aerial transects
    - 5 aerial culling operations have occurred across the feral pig infested area, showing the decline of the population
- Community reporting
    - The eradication project has a strong relationship with the Kangaroo Island Community, ensuring any sightings are reported
- 4G artificial intelligence camera network
    - A network of 300 cameras across the eradication area will continue to be monitored for feral pigs
- Watercourse surveys
    - Ground staff will continue to walk along watercourses in the feral pig infested area during the drier months of the year to search for signs of feral pigs.

With all the tools in the toolbox working together and the support of the KI community the program is on track to achieve eradication of feral pigs from the island by June 2024.



Above: Map of tracklogs from the recent Winter 2023 aerial cull over Breakneck River in Flinders Chase National Park. Each line is a different helicopter track showing the crew checking over and over for feral pigs.

Right: This mob of pigs was detected on camera by the eVorta Artificial Intelligence software, and quickly destroyed by project staff.



Left: The feral pig eradication team. From left to right: David Jirman (KILB), Nick Heath (KI NPWS), Brenton Florance (KILB), Mark Trower (PIRSA), Alison Buck (KI NPWS), Bianca Jones (PIRSA), Matt Korcz (PIRSA), Minister for Primary Industries and Regions SA - Clare Scriven, Executive Director Biosecurity - Nathan Rhodes (PIRSA).

Left: The two helicopters used for the Winter 2023 thermally assisted aerial cull.

Funding/Sponsors

The Kangaroo Island Feral Pig Eradication, is being delivered by PIRSA in partnership with the KI Landscape Board and KI National Parks and Wildlife Service. It is jointly funded by the South Australian and Australian Governments under the National Disaster Recovery Funding Arrangements including Local Economic Recovery Funding until 30 June 2023.

On 8 February 2023, the Minister for Primary Industries and Regional Development announced a further investment of $191,250 for 2023/24 to continue monitoring for a further 12 months to ensure the eradication is successful.

Further Information

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Visit the PIRSA website to find out more: