WE’RE GOING 100% DIGITAL.

This is our final hard copy edition of Small Talk.

We’ve mailed out the Small Talk newsletter for more than 20 years but the time has come for that to end. This winter edition of Small Talk will be the last distributed in a hard copy format.

From the spring edition onwards, Small Talk will be published in an online format only. Thank you to all our readers who have received the hard copy newsletter over the years and for the positive feedback we have received.

We apologise for any inconvenience caused. If you would like to continue receiving a hard copy, please contact us and we will be happy to print and mail the online version to you.

If you wish to continue receiving Small Talk electronically, please subscribe to our email list by contacting Lucy Hyde at lucy.hyde@sa.gov.au. Each edition will continue to be accessible on our website under the Land/Landholder services tab of www.naturalresources.sa.gov.au/adelaidemtloftyranges.

Natural resources management is: caring for our land, water, plants and animals – balancing people’s needs with those of nature.
Three-year olive control trial

Tom Brookman, David Hughes and Jamie Pook (Natural Resources Adelaide and Mount Lofty Ranges), Damian Stam (SA Water), Greg Donovan (Donovan’s Earthcare) and Josh Noble (Restore Environmental Services)

A trial of two control methods for wild olives has shown that more olives can be treated, more efficiently and economically, by the basal bark spray method than the drill and fill method. But, basal bark spraying might not always be the best solution.

Since olives (Olea europaea) were first planted in and around Adelaide in 1836, they have invaded and established in new environments as the dominant species. They are a declared plant under the Natural Resources Management Act 2004 and must be controlled unless they are planted and maintained for domestic or commercial use.

Olives are such successful invaders they have taken hold in large areas and often in difficult terrain.

The consequent time-consuming nature of olive control was a prompt to examine the cost and management effectiveness of treating mature wild olive plants in a trial of two different techniques: basal bark, and drill and fill.

Trial quick facts

| Location: Little Para Reservoir; 2 adjacent plots with moderate to steep slopes |
| Period: February 2016–March 2019 |
| Treatments: Basal bark: Triclopyr 35 mL/L bio-oil applied from 5 L handsprayer Drill and fill: Glyphosate 360 gm/L at 20% with water poured into 12 mm drill holes in lignotuber spaced up to 25 mm apart |

Treatment comparison

<table>
<thead>
<tr>
<th>Basal bark treatment</th>
<th>Drill and fill treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Area treated:</strong> 0.3 ha of dense, mixed-age olives</td>
<td><strong>Area treated:</strong> 0.2 ha of moderately dense, mixed-age olives</td>
</tr>
<tr>
<td><strong>Terrain:</strong> moderate-to-steep slope</td>
<td><strong>Terrain:</strong> moderate slope</td>
</tr>
<tr>
<td><strong>Labour:</strong> 2 operators, total 12 hours at $50/hr = $600.00</td>
<td><strong>Labour:</strong> 5 operators, total 38.5 hours at $50/hr = $1925.00</td>
</tr>
<tr>
<td><strong>Herbicide:</strong> Bio safe and Garlon (triclopyr) mix 240 L ($5.30/L) = $1272.00</td>
<td><strong>Herbicide:</strong> water and glyphosate mix 60 litres ($1.50/L) = $89.40</td>
</tr>
<tr>
<td><strong>TOTAL COST:</strong> $1872.00</td>
<td><strong>TOTAL COST:</strong> $2014.40</td>
</tr>
</tbody>
</table>

Using drill and fill, 81 wild olives were treated for $2014; with basal bark 382 olives were treated for $1872
The four to five times effectiveness of the basal bark method, for slightly less cost, over the drill and fill method, cannot be extrapolated to other sites, as each site is different. For instance, on another trial site using roadside olives with easy access, nearly eight times more olives were successfully treated using basal bark than drill and fill.

A workshop associated with the trial examined cut lignotubers from three treated olives to establish whether defoliation was matched by lignotuber life:
- The completely defoliated basal bark-treated tree showed very little green wood, moisture or ‘olivey’ odour in the lignotuber.
- The thick barked, multi stemmed olive that had the basal bark treatment had a single regrowth stem from the lignotuber where active cambium remained. The evidence suggested that insufficient herbicide had been applied around the entire circumference of the trunk.
- The drilled and filled olive showed no evidence of regrowth but the lignotuber retained a larger quantity of moisture and a stronger ‘olivey’ scent than the basal bark-treated olives.

**Which treatment is best?**

The basal bark technique appears to be quicker and cheaper. However, the technique needs time to gain expertise. Inexperienced operators will encounter some failures, particularly with multi-stemmed and thick barked olives.

In high-value remnant vegetation basal bark spraying could be inappropriate. Spray drift and runoff could damage sensitive vegetation (both the herbicide and the carrier can be toxic to native vegetation).

Both techniques require follow up. In this trial the drill and fill method appears to be more absolute but basal bark spraying can treat many times more olives for the same budget.

Since the trial began, SA Water has substantially increased woody weed control on all its sites using basal treatments in suitable areas, and drill and fill in high value remnant areas.

More than 100 contractors, government staff, public and private land managers, and volunteers have now visited this trial site, through workshops. The sites will continue to be monitored.

For more information contact David Hughes, Natural Resources Adelaide and Mt Lofty Ranges District Officer at (08) 8115 4608 or David.Hughes@sa.gov.au

### Effectiveness of treatments

<table>
<thead>
<tr>
<th>Olive size</th>
<th>Approx # trees (Feb 2016)</th>
<th># trees retaining green leaves (Aug 2016)</th>
<th># trees retaining green leaves (Feb 2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basal bark treatment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small (&lt;8 cm lignotuber diameter)</td>
<td>60</td>
<td>7 (12%)</td>
<td>5 (8%)</td>
</tr>
<tr>
<td>Medium (8–25 cm lignotuber diameter)</td>
<td>241</td>
<td>79 (33%)</td>
<td>15 (6%)</td>
</tr>
<tr>
<td>Large (&gt;25 cm lignotuber diameter)</td>
<td>81</td>
<td>30 (37%)</td>
<td>7 (9%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>382</td>
<td>116 (30%)</td>
<td>27 (7%)</td>
</tr>
<tr>
<td><strong>Drill and fill treatment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small (&lt;8 cm lignotuber diameter)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Medium (8–25 cm lignotuber diameter)</td>
<td>43</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Large (&gt;25 cm lignotuber diameter)</td>
<td>38</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>81</td>
<td>1 (1%)</td>
<td>0</td>
</tr>
</tbody>
</table>
Clay improves soil recovery after Pinery bushfire

After the devastation of the Pinery fire in November 2015 some good news emerged. A clay spreading project demonstrated immediate and long-term benefits for crops, and showed that good soil health is a protection factor against fire damage.

The immediate effect
The 85,000 hectares of cropping land burnt in the Lower North region of South Australia was stripped of soil surface protection, and exposed to catastrophic wind, dust and soil erosion.

To prevent topsoil loss many growers tilled soon after the fire to roughen the soil surface by bringing up soil 'clods', and thus reduce wind speed and soil movement.

This practice was relatively successful on heavier soils such as loam and clay, but sands and sandy loam soils continued to drift. Sandhills, a common feature of cropping land in the Lower North, were especially at risk.

The project
Clay spreading is a technique used to improve the structure and water-holding capacity of deep sandy soils.

A project to demonstrate the benefits of clay spreading to protect sandy soils, including technical advice and coordinating claying contractors to treat badly eroding areas, was set up in quick time.

The anticipated benefits of spreading were two-fold in this project – initially to provide immediate protection from soil erosion during the summer and autumn following the fire, and in the long-term, to improve soil productivity.

Monitoring and spreading sites were chosen based on the relative risk of soil erosion, with spreading performed at five locations across the fireground, including at Pinery, Barabba and Stockport.

Clay was found (ideally within the same paddock to reduce costs), excavated and spread over the paddock before being incorporated into the soil. Clay spreading has not been a common practice in this area, but has been used with success in other locations such as Eyre Peninsula.

Monitoring sites were also set up at 50 locations, for nutritional and biological testing, and to compare burnt and unburnt areas.

Over the course of the project, field days demonstrated the methods and benefits of clay spreading. Growers were invited to watch the spreading process and local agricultural bureaus visited the sites during the growing season.

The outcomes
The benefits of clay spreading were seen immediately.

Before the treatment, dust blew with any light breeze but after the clay was spread, it stopped blowing straight away.

Then when the rains arrived in autumn, there were visible improvements in sand wetting qualities as well as crop emergence. Crop establishment was much more consistent.
The effect of clay spreading could not be quantified, because it was not considered appropriate to leave areas untreated for comparison. However, growers reported that crop establishment and yield was higher than expected.

One Barabba landholder commented that he had ‘never seen a crop like that on that area before’ indicating an improvement in crop establishment.

Some growers had expected a big hole in the paddock from the clay pit, but that wasn’t the case. In fact, the surface was left smoother, with old imperfections in the paddock ironed out.

In a stroke of luck, the 2016 season featured exceptional growing conditions, leading to record yields in many areas including many fire-affected properties.

These favourable conditions resulted in high stubble loads to protect the soils the following year, promoting nitrogen and carbon cycling to restore soil biological health.

**Soil monitoring results**

Monitoring showed that the loss of nutrients caused by the fire was lower than initially feared. Where growers had maintained good soil health before the fire, losses were minimal.

At a Mallala site, side-by-side burnt and unburnt samples were taken in a loamy soil. Minimal differences were found in organic carbon or cation exchange capacity (CEC), a measure of soil fertility.

Similar findings were seen at Long Plains, where samples were taken on a sandhill and flats comparing burnt and unburnt soils. At this site, the sandhill had been spread with feedlot manure after the fire to hold the soil in place.

The burnt sands had 30% higher CEC, 67% more organic carbon and double the potassium of the unburnt sand.

On the Long Plains flats, fertility was similar on burnt and unburnt soils.

A site at Linwood tested the long-term effects of clay spreading, with the sandhill having been spread five years before it was burnt by the fire. There was minimal erosion after the fire, and the clayed area showed 80% higher CEC and improved availability of phosphorus, potassium and nitrogen.

These results demonstrate the benefits of well-maintained soil health in improving resilience and the long-term benefits of clay spreading.

This project was supported by Primary Industries and Regions South Australia (PIRSA) and the Adelaide and Mount Lofty Ranges Natural Resources Management Board through funding from the Australian Government’s National Landcare Program and the NRM levy.

**For more information contact**

David Woodard, Soil and Land Management Consultant, PIRSA at david.woodard@sa.gov.au or (08) 8568 6412

Nicole Bennett, Sustainable Agriculture and Training Coordinator, Department for Environment and Water at nicole.bennett@sa.gov.au or (08) 8130 9062

Introducing James Hall

James Hall, Sustainable Agriculture Officer, Adelaide and Central Hills

James Hall describing the features, limitations and potential of a soil profile

James Hall is the latest addition to the Sustainable Agriculture team of Natural Resources Adelaide and Mount Lofty Ranges. Based at Black Hill Natural Resources Centre, James has a role that covers three main projects. The first is supporting landholders and staff in the Central Hills district with rural land management issues. The next is to partner with primary producer groups – through a grants program and involvement with rural industry steering/advisory groups – to foster sustainable land use and management. The third is to increase the capacity of landholders to improve the condition of their land and soil resources.

‘I have been managing the Sustainable Pastures Course, where new landholders are introduced to best-practice ideas about property planning, pasture composition, as well as grazing and landscape management to optimise farm and environmental outcomes,’ James said by way of an example of his work.

James has a degree in Agricultural Science – with majors in soil science and economics – and has worked in government and private consultancy. He was part of the team that mapped the land and soil resources of non-arid SA (see Nature Maps online), co-authored and guided the publication of the landmark book The soils of southern SA (see Enviro Data SA), and worked with a team in the SA Murray-Darling Basin NRM region unravelling the mysteries of ‘mallee dune seepage’ and the appearance of permanently saturated land in low-to-moderate rainfall farming areas (see Natural Resources SAMDB).

‘I am passionate about integrated NRM – or whole-of-landscape management,’

James has worked in most aspects of NRM, including communication and education, planning and evidence-based policy development, improving NRM knowledge and understanding, salinity management, soil acidification, soil and plant nutrition, and landscape management to maintain and improve soil and environmental condition.

‘I am passionate about integrated NRM – or whole-of-landscape management,’ James said.

‘That means considering all available evidence and the interactions between water, landscapes, soil, geology, plants, animals and people when planning, developing policy, making decisions or prioritising actions, to achieve the best possible outcomes.

‘I have been seriously impressed with the dedication, enthusiasm and knowledge of both the Black Hill and Sustainable Agriculture teams. They have been a tremendous support to me while I come to grips with all aspects of the fantastic opportunity I have been given to influence land management in the AMLR region.’
Events

Landholder events are supported by funding from your NRM levy and the Australian Government’s National Landcare Program.

Sign up for our monthly landholder events calendar for a list of upcoming field days, workshops and courses run by Natural Resources, community groups and industry groups by emailing james.hall2@sa.gov.au.


To view summaries and images of past landholder events, go to ‘Landholder education’ as above and click on ‘Past landholder events’.

You can also follow our Facebook page for webinars, events, and printed advice on land management, grazing and sheep management advice in dry times for the coming months.

Contact your local natural resources centre for one-on-one or group support.

Project

Free soil acidity testing on properties in the AMLR region.
Contact Rebecca Tonkin, Rebecca.tonkin@sa.gov.au to participate.

Conference

2019 SA Community Landcare Conference
27–30 October, Bordertown
Tickets & abstracts: www.landcaresa.asn.au

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A farm walk in Mt Torrens at a rural land management course, 2019. Photo: Lucy Hyde
Things to do – winter

- Develop or revise your bushfire survival plan. Use the off-season for tasks such as installing gutter-guards and sprinklers.
- Observe and monitor waterlogged and erosion-prone areas. Use temporary fencing where necessary to keep livestock out of waterlogged areas. They damage the soil and soil cover, and can develop health problems such as botulism, footrot, foot abscesses or greasy heel.
- Watch for insect attack in newly sown pastures, particularly from Red-legged Earth Mite and Lucerne Flea.
- Check your dam spillway is operating effectively.
- Complete broadleaf spraying as early as possible. Cape Tulip, in particular, can quickly dominate pastures and is toxic to livestock.
- Plan paddock management in advance. Determine which areas to cut for hay, and graze, slash or spray to set back annual weeds in early spring.
- Control weeds in areas of native vegetation.
- Ensure livestock vaccinations are up to date, and worm test sheep and calves.

Handy hint

Good farm biosecurity prevents and manages threats to your livestock enterprise. Diseases and pests most commonly transfer to your property through the movement of live animals. They are high-risk carriers of disease.

Before purchasing animals or receiving animals as a gift, check their disease status carefully. Apply quarantine measures when introducing livestock to your property. Guard against straying animals and be alert to the risks if agisting livestock or sending livestock to shows and events.

Managing threats that are already on your property is just as important. Use preventative treatments (e.g. vaccinations) and good management practices. Provide good nutrition to build the immune system. Practise good hygiene with the animals, yourself, visitors, vehicles and machinery. Always make considered decisions that take risk into account.