VOLUME 02 March 2013

QUARTERLY COMMUNICATION FOR AGRICULTURE IN THE SA MALLEE

Mallee Matters

this issue:

Mallee Challenge 2013 /14 -

Are you interested in doing a small research trial on your property?

Mallee Sustainable Farming Systems and Natural Resources SA Murray-Darling Basin are looking for farmers who are willing to be involved in on-farm trials as part of the 2013/14 Mallee Challenge Project.

An application will be made to Caring for Our Country for a Community Landcare Grant to fund the project. The Mallee Challenge Project will be managed through Mallee Sustainable Farming Systems , supported by Natural Resources SA Murray-Darling Basin.

We are seeking farmers who would like to be involved in on-farm research in topics that interest them.

Trials may include treatment comparisons on paired paddocks or sowing/harvest strips. Topics could include:

- Pasture establishment
- Summer weed control
- Soil nutrition

There will be funds available for soil and tissue testing and relevant technical support from various agencies if the grant application is successful.

If you'd like to be involved or have good ideas for the Mallee Challenge project, please contact Rachel May, Regional Landcare Facilitator on 0408 416 684.

mallee sustainable farming

Natural Resources SA Murray-Darling Basin

RURAL SOLUTIONS SA

Government of South Australia

Key Messages

- Early grass removal from pasture phase better than just spray topping.
- If using sown cereal pastures, choose resistant varieties that won't build up disease.
- Use summer chemical weed control to kill weeds and optimises moisture conservation, rather than grazing.
- Maintain Autumn weed free zone, not allowing for disease build up on volunteer growth.
- Use proven No-Till seeding systems with good breakout pressure, deep working narrow points, good seed and fertiliser placement and press wheels creating a water harvesting furrow.
- Sow early before soil temperatures decline, with adequate N, P and Zn.
- Don't despair if No-Till looks poor early, nutrients mineralise later in the season as crops require it

No-Till Into Pastures — Summer weed control still key

The no-till into pasture demonstration at Parilla has had pasture treatments applied in 2011 and crop treatments in 2012. The aim was to investigate the effects of different pasture spray treatments on the no-till in the cropping phase.

The project also investigated the impact and timing of grass control in the pasture phase and how this impacts on *Rhizoctonia inoculum* levels and ultimately the success of the following no-tilled cereal crop.

The project has been focusing strongly on promoting early control of grasses in the pasture phase for benefits in the cropping year but has also been a timely reminder that good summer weed control is just as important for success.

What was done?

The Parilla farmer applied a number of different paddock scale pasture herbicide treatments to his demonstration paddock in 2011. All strips ran across the length of the paddock. The strips included the following treatments:

Grass selective (Select) applied mid July; Spray top (glyphosate) early September; Early spraytop in September plus a second spray top (Gramoxone) in October but no summer weed spray and a no pasture herbicide treatment. All treatments received two summer weed sprays except for the strip that was spray-topped twice.

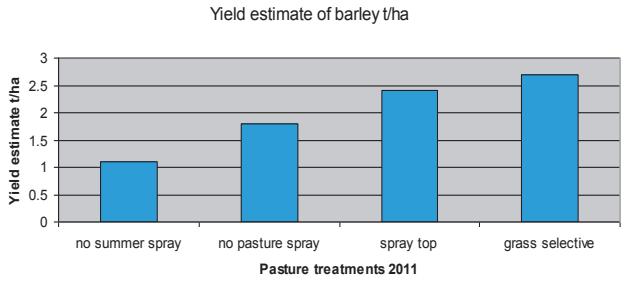
In 2012 the paddock was no-tilled with a barley crop. Crop yield was measured as well as crown root damage late in the season. This is a good indicator of *rhizoctonia* build up as *rhizo* levels tend to peak at the end of the season when it gets dry and warm. Crown roots can suffer significant damage if *rhizo inoculum* levels are high significantly reducing yield as crown roots support the plants tillers.

Results

The first table shows barley yield estimate results following the different pasture spray treatments. The grass selective treatment led to increased yield in the following year, followed closely by spray topping. These results are consistent with other sites. *Rhizo* levels and disease symptoms are also where grasses have been controlled early.

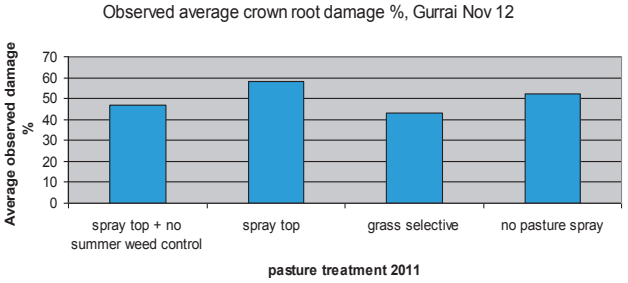
Grass selective control of grasses is preferred in the pasture phase as better grass controlled is achieved, however a well timed spray top (even better an early spray top application followed up with a second application) is still an important tool in preparing pastures for the cropping phase.

It is interesting to compare the spray top treatment to the no summer spray as the only difference between these two treatments was the summer spray. Nitrogen and moisture levels where not measured but it is likely that where summer weeds were not controlled there was less nutritients and moisture for the crop.



Generally observed crown root damage was fairly similar for all treatments around the 50-60% damage mark. It is difficult to draw accurate conclusions on observed damage and yield, therefore moisture and nitrogen seem to be the likely drivers in terms of yield increase with summer weed control.

However, where grasses have been controlled early using a grass selective, lower levels of *rhizoctonia* tend to be present early the following season and slower build up during the season and less crown root damage seen at the end of the season.



Note green tinge of the 'no summer spray' strip. The strip in front was the no pasture spray strip and this was full of brome grass but still yielded higher than the no summer spray strip that had better grass control in the pasture phase

Success with No-Till into Pasture Chris Mc Donough, Rural Solutions SA

Background to Trial

This trial aims to better understand why many farmers with livestock find it difficult to No-till into psture and to give them practical management options for both pasture and cropping phases to maximise outcomes, while reducing the risk of wind erosion. Part A of this 3 year G&G2 project compared 2011 wheat crops that followed 2010 grass free and spray topped pastures. Part B compared 2012 wheat crops following sown cereal pastures and volunteer pastures.

The Wynarka paddock using cereal rye as the cereal pasture was very clean of other grassy or broadleaf weeds. The Wunkar site had oats trashed in and brome and barley grass, wild turnip and capeweed. The volunteer pasture sections in both sites of capeweed, wild turnip and grass were poor with increased erosion risk. Observations were that paddock feed in that dry season was obtained from the sown cereal sections. In 2011 and 2012, 4 crop establishment treatments were used across the original pasture treatments: Early worked (EW), late worked (LW), No-Till (NT) and No-Till with higher inputs (NTH).

What happened?

Previously Part A of the project had clearly shown low *rhizoctonia* build up after grass free pasture, medium levels following spray topping and very high levels where Autumn growth was not controlled. In last years' trial, the low/medium level in December at Wynarka, and the medium/high levels at Wunkar had over 80% reduction in *rhizoctonia inoculum* (Table 1). This was thought to be due to significant summer rainfall events in both December and February. While seeding into these low levels, crop monitoring still showed an average of 30-35% root loss at both sites.

Table 1. Effects of 2011 pasture type on disease inoculum and 2012 wheat yield following.

Wynarka						Wunkar					
2011	Rhizoctonia pgDNA/g		Bipolaris pgDNA/g		2012	2011	Rhizoctonia pgDNA/g		Bipolaris pgDNA/g		2012
Past.	Dec11	May12	Dec11	May12	Yld (t/ha)	Past.	Dec11	May12	Dec11	May12	Yld (t/ha)
VP	60 (M)	3 (L)	18	35	1.5	VP	120 (M/H)	23 (L)	19	23	0.8
BR	43 (M)	12 (L)	88	163	1	MO	186 (H)	15 (L)	24	17	0.8

(L) Low; (M) Med; (H) High. VP (Volunteer Pasture), BR (Bevy Rye), MO (Marion Oats).

Bipolaris innoculum levels at the Wynarka site after Bevy rye averaged 88 pgDNA/g in December compared to 18 pgDNA/g following the volunteer pasture. By seeding time these levels had grown to an average 163 pgDNA/g after the Bevy rye, and only 35 pgDNA/g after volunteer pasture across 32 soil tests (see Table 1). As the wheat crop ripened in mid October white heads marked the cereal rye strips, resulting in a 33% yield loss compared to the volunteer pasture. Generally cereal rye is an important break crop in the mallee to improve soil health, and bipolaris is generally not a strong consideration when planning rotations. This problem was unexpected and suggests further work is needed in this area.

Table 2. Available nitrogen (kg/ha) at seeding time after different cultivation treatments.

Wynarka	0-10cm	10-30cm	Total	Wunkar	0-10cm	10-30cm	Total
EW	21	34	55	**EW**	21	68	89
LW	21	26	47	**LW**	13	45	58
NT	18	24	42	**NT**	12	42	54

Yields results from the Wynarka site last season were inconsistent between tillage treatments across replications, and no clear advantage to cultivation was apparent. However, in 2011 the Wynarka results consistently showed a yield benefit from No-Till over early working across the site. In both years these sites were well set up for No-Till with Summer and Autumn chemical weed control as required.

Results from Wunkar in 2012 (130mm GSR) showed a consistent yield advantage for the early worked plots. Why? This paddock did not have any chemical summer weed control, just grazing of summer weeds. Last year many Mallee farmers commented on the large difference in crops between those paddocks having excellent summer weed control that conserved moisture and those that didn't. Any No-Till farmer knows that one of the keys to success is good summer weed control. Also while keen to promote No-Till seeding over cultivation where it may lead to erosion (both sites, particularly Wynarka, suffered wind erosion from worked areas), there are some seasons and situations where cultivation may be advantageous, particularly in relation to the availability and timing of N mineralisation. Farmers starting No-Till from a more traditional base with pastures may benefit from extra N, unless coming off a good legume pasture.

Acknowledgements Grain&Graze2, GRDC and Caring for our Country, co-operating farmers Daniel Evans and Peter Blackett, SA MDB NRM., MSF, Ag Excellence Alliance and Viterra Loxton

Key Messages

- Gutless erosion prone sandhills can be turned into stable productive pastures!
- When establishing lucerne on deep non wetting sands, cover crop management is vital for controlling wind erosion and competition
- The use of cover-crops or standing stubbles on deep, non-wetting sands is essential. Cover crops should be sown at 40 to 70% normal sowing rates. Spraying a cover crop out in Aug-Sept should allow for adequate protection from sand blasting and reduce any potential moisture competition between the cover crop and lucerne.
- Only start grazing when the lucerne has a good root system and monitor cover. Grazing too early or for too long can damage the lucerne stand and expose soil to wind erosion.

Mallee Challenge 2012—*Lucerne on deep non wetting sands 2011/2012*

Rachel May -Natural Resources SA Murray-Darling Basin and Chris McDonough -Rural Solutions SA

Why do the trial?
Heath and Amanda Nickolls run an Angus stud south of Pinnaroo in deep undulating non-wetting sands. Prior to purchasing the property in 2009 it was a mixed cropping/cattle grazing system with limited fertiliser application and based on volunteer pasture. Since then Heath has been making improvements and part of the program is to improve the quality of his pastures, particularly over summer. Heath considered lucerne a good option, especially in 2011 which was a particularly high rainfall year.

How was it done?
The lucerne paddocks are deep undulating non wetting sands with heavier clay flats. The paddocks are prone to wind erosion and have a history of brome grass, barley grass and skeleton weed. Two paddocks (total area 120ha) were sown to lucerne in 2011. In 2012 another 45ha was sown in a nearby paddock. Establishment techniques in each paddock were similar but management of cover crops varied slightly.

Paddock 1 - 2011 sowing (annual rainfall – 490mm)
In 2010 this paddock was sown to Triticale after regular applications of broad leaf and knockdown herbicides to assist the eradication of skeleton weed. SARDI 7 lucerne variety was used because of its high yielding potential and excellent persistence and tolerance to grazing. It is estimated that SARDI 7 will have a life of 10 years under well managed rotational grazing.

The seed, purchased from Tatiara seeds was treated with an inoculant to enhance germination and nitrogen fixation. It was sown at 6kg/ha on July 27th 2011 with a cover crop of Mundah barley at 25kg/ha, with 60kg/ha fertiliser (60% SoA and 40% single super) using a disc seeder to minimise soil disturbance. The emerging pasture was protected with 2 sprays of insecticide in August and October, although insect pressure wasn't high at this stage. Skeleton weed was controlled in October using 25g/ha Broadstrike. The barley crop was harvested in December. In hindsight Heath believes he should have sprayed out the cover crop much earlier to retain more soil moisture.

Light grazing with bulls commenced in late January 2012. From August 2012 to January 2013, the lucerne was grazed with 45 cows and calves. In September 2012, 60kg/ha MAP, potash and sulphate of ammonia was applied with no additional insect sprays.

Good rainfall in 2011 and minimal insect pressure enabled good lucerne establishment. The lucerne provided good coverage and as at January 2013 no wind erosion had occurred, even though the 2012 spring/summer rainfall has been minimal.

Paddock 2 - 2012 sowing (annual rainfall - 210mm)
On 30th of June 2012, another 45ha was sown using the same methods as 2011. The SARDI 7 variety was sown with the same fertiliser and chemical regimes but with a cover crop of triticale. It was a drier spring with approximately 20mm of rain falling from August to December. Lucerne establishment was poor and the cover crop was retained to reduce wind erosion. The lucerne pasture faced increasing competition from the cover crop. In a particularly dry season, such as the last half of 2012, it would have been beneficial to spray out the cover crop in late August.

Grazing commenced in this paddock with 45 cows and heifer calves on January 8th 2013. However, stock were removed after two weeks. Grazing proved to be too risky in such a dry season.

Some Tips for Lucerne Establishment in the Mallee. Based on Heath's experiences, the following is worth considering for lucerne in low rainfall sandy soils.

Paddock preparation. Good weed control before sowing is vital, particularly on sandhills with skeleton weed and brome grass. Be aware that lucerne is sensitive to Group B sulphonylurea herbicides, so knowing the paddock history is important.

Don't skimp on inputs. For lucerne to reach its full potential, it needs the right amount of inputs. Monitor soil nutrition levels prior to sowing to assist planning future nutritional requirements.

Inoculation. Inoculate the seed to establish a strong plant and kick start nitrogen fixation. Lime coating will protect the rhizobia. Without this, the rhizobia has a short lifespan of approximately 24hours.

Sowing. Establishing lucerne in non wetting sands will be more successful if sown into a furrow using press wheels. The furrows increase the water catchment area and direct rainfall into the seedbed, assisting soil wetting.

Insect management. Monitor and control insects. The insects of most concern are red-legged earth mite, lucerne flea and cutworm.

"Managing Farms in a Changing Climate" Conference

Mildura will host farmers from the local area and beyond at the "Managing farms in a changing climate" conference on the 13 and 14 March 2013 in the Grand Ballroom, Quality Hotel Mildura Grand. This event will showcase a range of speakers from across the country, as well as local achievements from MSF over the past season.

The conference is aimed at all farmers and advisors wanting to get the best out of farming systems in low rainfall environments. Speakers in the line-up include:

- Mick Keogh, Australian Farm Institute
- San Jolly, Productive Nutrition
- Dr. Peter Hayman, Climate Applications SARDI
- Dr. Michael Walsh, University of Western Australia and Australian Herbicide Resistance Initiative
- Dr. Haydn Kuchel, Australian Grain Technologies
- Danny Conlan, Dodgshun Medlin
- Peter Kuhlmann, 2012 Farmer of the Year

Tickets are selling fast so get in quick to secure your place at this unique Mallee-specific event. Registration commences at 8am both days at the entry of the Grand Hotel on Seventh Street.

Limited Conference scholarships courtesy of Mallee CMA, Murray CMA and SA Murray Darling Basin NRM Board are available for farmers. For further information please contact Steph Haw at MSF on (03) 5021 9100, email steph@msfp.org.au or visit www.msfp.org.au

Stubble Retention

A Stubble Assessment Guide for low rainfall cropping areas in the Mallee area of NSW, Victoria and South Australia is being developed as part of a project aiming to improve soil health and reduce wind erosion through stubble management. The self assessment tool will enable farmers to accurately assess stubble ground cover, the probability and severity of wind erosion occurring in a range of management actions. This project is supported by MSF, through funding from the Australian Government's Caring for our Country.

Any ideas for content to make the guide relevant and useful are welcome. Please contact Simone Cramer at MSF on (03) 5021 9100 or email simone@msfp.org.au.

Karoonda Field Day – What are your ideas for 2013?

More than 175 people participated in MSF's 2012 Karoonda Field Day at Peter and Hannah Loller's property, Lowaldie, South Australia. The day showcased trial work covering topics on barley agronomy, medic pastures, nutrient turnover and availability, variety choice and pre-emergent herbicides to name a few. Do you have ideas for topics and speakers for 2013 event?
Please contact Gemma Walker at MSF on (03) 5021 9100 or gemma@msfp.org.au.

Key Messages

- Legume break crops result in more mineral nitrogen being available
- Field peas should not be grown back on field pea stubbles — promotes *blackspot*
- High levels of *Rhizoctonia* with cereal break crops (barley/oats)
- Chickpeas, canola-pea and chemical fallow are effective in minimising *Rhizoctonia*
- Timely hay cutting and post harvest weed control is critical to minimise viable brome grass seeds being carried over to following crop

One year of break crops influence soil water, nitrogen, disease, weeds

Aim of crop sequencing project:
To identify effects of different break crops and rotations on Mallee farming systems.

Background
A long term trial, established in 2011 near Mildura on a sandy soil, has over 10 cereal crops growing continuously. In 2011, nine different break options were established with a continuous wheat treatment. In 2012, two options include:

- A second break phase (2 year break)
- Rotation was returned to wheat (1 year break)

In 2013, all rotations will return to cereals.

Table 1: List of treatments (rotations) implemented in the Mallee Crop Sequencing Trial

First year phase (2011)	Second year phase (2012)
Canola, TT	Chickpea
Canola, TT	Peas
Canola, TT	Vetch
Chickpea	Canola, TT
Fallow	Canola, CL
Fallow	Fallow
Fallow	Peas
Pasture, High seed bank	Pasture, volunteer
Pasture, Low seed bank	Pasture, volunteer
Peas	Canola, TT
Peas	Vetch
Vetch	Canola, TT
Vetch	Peas
Barley	Wheat
Canola CL	Wheat
Canola/Pea Mix	Wheat
Oats	Wheat
Peas	Wheat
Fallow	Wheat
Wheat	Wheat

Parameters commonly influenced by rotations were measured to quantify impact of different break crops in low rainfall environments – soil water, nitrogen, soil disease and grass weeds.

Soil Water
Soil water was measured post harvest in 2011. The highest soil water levels occurred under fallow and then canola TT and field pea treatments. The significant differences between treatments occurred in the 30-60 and 60-90cm layers. However by sowing in 2012, there were no significant differences between any treatments. On average, all treatments accumulated approximately 30 mm of soil water between harvest and sowing while to fallow treatment did not accumulate any additional water. This is presumably due to the soil profile being full prior to the fallow treatment being implemented (a result of the 2010-2011 summer).

Nitrogen
Legume break crops had a significant effect on the amount of mineral nitrogen available prior to sowing in 2012 (Figure 2). Field pea and chickpea plots contained approximately 20 kg/ha more mineral nitrogen than the plots where wheat, barley, oats and the Clearfield canola were grow in 2011. More nitrogen was also found under field pea and chickpea than under a canola-pea mix and low seed-bank medic pasture.

Disease

Rhizoctonia was the most prevalent root disease at the site and high levels of the disease were promoted by growing cereal break crops (barley and oats) (Figure 1). However, the Clearfield and TT canola and the canola-pea mix treatments had significantly lower *Rhizoctonia* disease levels than what was measured under the cereal crops. Chickpea's and the chemical fallow were also effective at minimising *Rhizoctonia*. Other soil disease were not prevalent at the site with the exception of *blackspot*, which built up under field pea's. Therefore, field pea's should never be grown back on field pea stubbles.

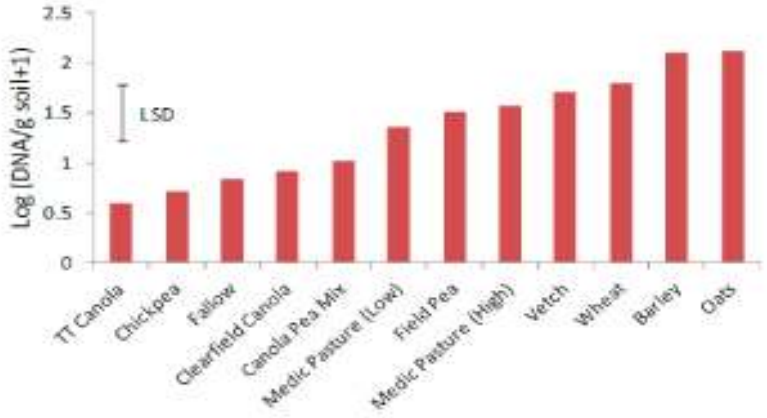


Figure 1: *Rhizoctonia* levels prior to sowing in 2012.

Weeds

Weed seed banks were measured prior to sowing by taking soil cores from each plot and growing the weeds out in trays during winter. Brome grass was the most prevalent grass weed at the site, and the treatments had a significant effect on the brome grass seed bank prior to sowing. The continuous wheat and the oaten hay treatments had higher seed banks than the Clearfield canola and the canola-pea mix. Brome grass tended to build up in the oaten hay due to a lack of pre-emergent and in-crop chemical options for control. Therefore, timely cutting of hay (the hay cut may have been slightly later than desired) and post harvest control of surviving plants is critical to ensure viable brome grass seeds are not carried over to the following crop.

Grain Yield

The grain yield of wheat in 2012 following different break phases in 2011 is compared in Figure 2. While wheat yield following field pea and fallow were higher than wheat following other crops, these differences were not significant (p=0.097). The field pea and the fallow treatments had the highest nitrogen levels among the treatments that were replanted to wheat in 2012, so the trend may be for nitrogen to influence the break effect .

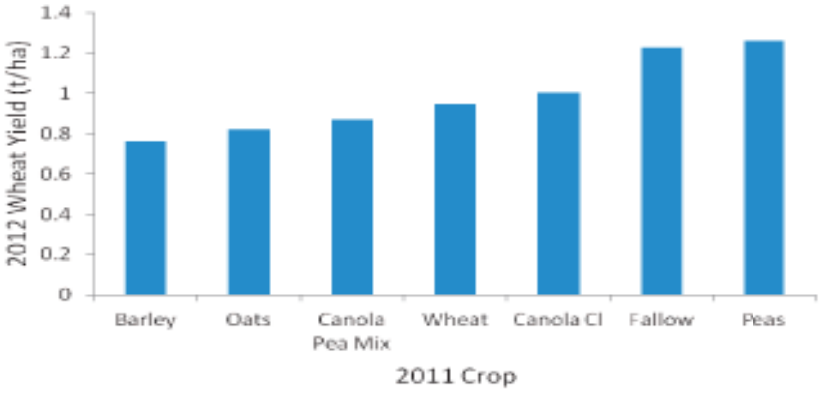


Figure 2: Grain yield of wheat in 2012.

Future work

This trial will continue for a further two years, with all treatments returning to a continuous cereal phase in 2013 and 2013. This will allow us to determine the effects of two year break phases and monitor how long the break effects last for. More detailed information about the project and results can be found in the MSF compendium (www.msfp.org.au/compendium) or contact Michael Moodie at Michael@msfp.org.au

Key Messages

- Branched Broomrape Transition Program will be completely wound down by June 2014
- Maintaining market confidence is a major objective of the transition program
- The transition program provides time to implement arrangements for managing broomrape in the long term
- Farmers and horticulturalists should develop and implement their own branched broomrape management plans, (farm biosecurity plan)
- Branched broomrape will be regulated like other declared weeds with oversight from the regional NRM Board.

Branched Broomrape Management to June 2013

All properties will be released from quarantine as soon as possible after June 2013 and the Branched Broomrape Transition Program will be completely wound down by the following June.

The aim for the quarantine area is to: -

- Minimize risks that branched broomrape will spread
- Provide market assurance

This will be achieved by applying a revised Code that requires: -

- Approvals for produce movement
- Washdown of all ground engaging equipment as it leaves the quarantine area.

The transition program provides time to implement arrangements for managing broomrape in the long term.

Marketers

Maintaining market confidence is a major objective of the transition program. There have been no adverse market reactions from changes to the way branched broomrape is managed to date.

Biosecurity SA is working with the Australian Government to ensure international trade is not affected while the international standards that describe how branched broomrape is managed in Australia are revised.

New grain receival standards are in place. No major disruption to marketing is anticipated and the current level of control provides insurance should a response become necessary.

Growers

Biosecurity SA recommends that farmers develop and implement their own branched broomrape management plans. This is a decision for all farmers and particularly important for horticulturalists in the longer term.

Simple strategies will minimize the risk of introducing broomrape into new areas. Biosecurity SA is developing a series of best practice guides to assist farmers.

Natural Resource Management Boards

Branched broomrape will be regulated like other declared weeds with oversight from the regional NRM Board.

The SA Murray Darling Basin Natural Resources Management Board is using branched broomrape to develop improved ways to communicate and engage with landowners.

Current requirements and the Code that apply under the *Plant Health Act 2009* will be lifted. It will continue to be a declared weed regulated under the *Natural Resources Management Act 2004*

Philip Warren
Manager, Broomrape Transition Program
Biosecurity SA

Open capsule with viable seeds ready to be dispersed when the capsule is disturbed

New Guidelines for the Control of Emerged Broomrape

Is controlling branched broomrape part of your farm plan?
Vegetable growers thinking about expanding into other crops need to decide about controlling their broomrape, especially if the new crop is a broomrape host.

Destruction of emerged plants has a role in preventing addition to the seed bank.
The good news is we have discovered there is a little more time to spray emerged plants than first thought. You now have a **ten day window to spray** and a **month to pick the plant** you find out in the paddock.

To determine this window of opportunity we studied the time taken from emergence of buds to the maturity and release of viable seed. We grew broomrape on cretan weed hosts. During flowering, plants were kept in a glass-house so in a field situation maturity is likely to be 1-2 days earlier.

The first flower on a stem opens 8 days after emergence (range of 4-20 days). Flowers open from the base of the stem to the top, with one or two new flowers opening every day and two over the following 20 days. Expect flowers over one to five weeks, depending on the number of flowers on the spike. Branched plants can flower over a longer period. The flower does not need to be cross-pollinated to produce viable seed. Flowers can be pollinated before the flower opens. A single isolated plant can produce viable seed.

The flower remains open for 6 days and then the turns brown and dies. The seeds mature over the next 12 days and viable seeds are found in the capsules after this time. The capsules take another 10 days to dry out and mature. The capsules split at the top so that the loose, dry seeds are released if the spikes are disturbed. Movement from wind is enough to spill the seeds. So, from the time of the first appearance of a flower, it takes 28 days before the first viable seeds are released.

Spraying emerged plants
A spray with glyphosate as soon as plants emerge and before any flowers on the spike mature and brown off (that is within 10 days from emerging) prevents the release of viable broomrape seed.

In trials with glyphosate in 2011, we found that if emerged broomrape on cretan weed hosts were sprayed before any flowers on the spike had died then no viable seed was produced. Rates of 300 or 500 ml ha^{-1} of Credit + Bonus were effective. Plants sprayed after this stage could produce viable seed even if the host plant was killed by the herbicide.

Picking plants
Picking and disposing of plants up to four weeks after the first flower opens will prevent shedding of viable seed. These plants will have some dead flowers but unopened capsules are key to preventing addition to the seed bank.

Jane Prider
Branched Broomrape Transition Program
Biosecurity SA

A plant at this stage has viable seeds but the capsules remain closed

A broomrape plant and its host sprayed at this stage or earlier is not likely to complete the production of viable seeds

The flowers on this plant have started to die. Plants sprayed at this stage could complete the production of viable seed before being killed by herbicide

Managing grazing in large paddocks

Michael Moodie (MSF) and Daniel Schuppan (Landmark Animal Production Specialist Northern SA)

Mallee Sustainable Farming (MSF) have been focusing on improving grazing management in large paddocks. Funded by Grain and Graze 2, the aim is increasing feed utilisation in large paddocks while keeping cover on erosion prone soils. To improve grazing and increase livestock production, four factors need be considered; **water, feed quality, feed quantity and grazing management.**

Water

Location of the water point in a paddock is critical for good feed utilisation. Water points located in the centre of the paddock are ideal but if this is not practical then half way along a fence line will allow the natural grazing arc of stock. Water should be stored in tanks and not in the trough to ensure plenty of cool, clean water is available. If stock learn there is always water available and they can get a drink without waiting this will change their grazing behaviour. They will come in for a drink in smaller mobs and reduce the amount of camping around the trough. A trough size of 2.4-3.6m is adequate with good flow rates. Depending on pressure a pipe diameter into a trough should be 40-50mm (including the float valve). Guidelines for the flow rate needed for different mob sizes are provided in Table 1.

Table 1. Suggested water flow rates into drinking troughs required for different livestock mob sizes

Mob Size (DSE)	Suggested Flow Rate (Litres/Second)
1000-2000	1-1.5
2000-3000	1.5-2
3000-5000	2-3
Greater than 5000	3

Feed Quality

Highly digestible feed is essential. Digestibility is highest in young, green plants and lowest in older dry pastures or stubbles. The higher the digestibility, the higher the energy content of the feed. Growing animals need feed with a digestibility of greater than 75% to meet their energy requirements. Digestibility also influences the time feed is in the animal's rumen. Therefore feed intake and production is greater on high quality, high digestible pastures. FEEDTESTS can be used to determine the quality of pastures, feed crops and hay.

Feed Quantity

When the height of the feed is low, feed intake is affected as the animal needs to spend more time harvesting feed. Generally they spend 11-13 hours a day grazing. When pasture availability is too high, feed is under utilised. Animals will reach maximum gut fill quickly, therefore they will begin to selectively graze. Feed quality will also decline quickly.

The feed availability (or Food On Offer) required for high animal production are:

- Tall pasture (e.g. cereal): 400-1000 kilograms of dry matter per hectare
- Short dense pasture: 800 – 1500 kilograms of dry matter per hectare

Grazing management

To maximise feed utilisation stocking pressure should match crop growth and pasture/crops should be rotationally grazed. For example, if a pasture is growing at 10 kg dry matter/ha per day, the stocking rate should be 10 dse/ha. Rotational grazing provides plants with a rest after grazing, allowing them to recover faster. Large paddocks can be fenced into smaller paddocks using electric fencing, reducing selective grazing, trampling, tracking and camping and providing for more even grazing. Rotational grazing smaller paddocks allow feed surpluses to be identified and where cereals are being grazed, excess feed can be set aside for hay or grain. The graze period, rest period, stocking pressure and rotation length will depend on mob size, paddock size and pasture growth rate.

Demonstrating the *Rappa* electric fence system

The *Rappa* fencing system is a practical and affordable way of improving grazing management in large paddocks. Mounted on an ATV, the *Rappa* has the ability to simultaneously roll out up to four strands of temporary electric fence 600 metres long that can be pegged within an hour. Once finished, the fence can be wound up using the *Rappa*.

Temporary electric fencing can divide paddocks into smaller grazing parcels or fence off particular soil types. For example sheep can be confined to soils where the feed emerged early and excluded from the heavier soils with low feed and poor groundcover. Hay can be cut from portion of the paddock that remained un-grazed.

How do you graze your large paddocks?

MSF are keen to hear from Mallee farmers about how manage grazing in large paddocks to get the best feed utilisation while preventing issues such as erosion. Please contact Michael Moodie at Michael@msfp.org.au or phone 0448612892

South Eastern BushBids – Murray Bridge to Naracoorte.

Following on from successful *BushBids* in other regions, Natural Resources SA is delivering *South Eastern BushBids* in March 2013. The South East and Murray Darling Basin NRM regions are working together with private landholders to maintain and enhance biodiversity values through this conservation stewardship program funded by the Federal Government's Biodiversity Fund.

Through agreements with private landholders the *South Eastern BushBids* will establish long-term protection and management. Landholders within the *South Eastern BushBids* project boundary (see map), with areas of native vegetation on their property, are invited to apply for funding for native vegetation management. Successful landholders will receive stewardship payments over 5 years to deliver agreed management services.

BushBids is unique as landholders set their own price for the management services they undertake to protect and improve their native vegetation. Examples include fencing, grazing pressure reduction, pest animal and plant control and buffering. The bid price forms the basis of a tender, to be compared against tenders from all other participating landholders. Successful tenders are those offering best value for money.

In the *Eastern Mount Lofty Ranges BushBids* program, landholders collectively undertake services, protecting and enhancing approximately 2,256 Ha of remnant vegetation, representing 15% of remnant vegetation in the area. This valuable work contributes to protecting over 25 threatened flora and fauna species. Landholders have been doing great work, continuing to learn and find innovative ways of improving remnant vegetation management.

We encourage private landholders to express interest in the *South Eastern BushBids* program by calling 1300847 450 after 9am on 4 March 2013. For more information please call Sheree Edwards, Project Officer Land Stewardship on 8532 9103 or visit the SA Murray Darling Basin Natural Resources Management Board's website on www.samdbnrm.sa.gov.au.

Matt Humphrey and Sheree Edwards monitoring vegetation health

Government of South Australia

Natural Resources SA Murray-Darling Basin

CARING FOR OUR COUNTRY

Improving Land Management through Soil Modification

Background

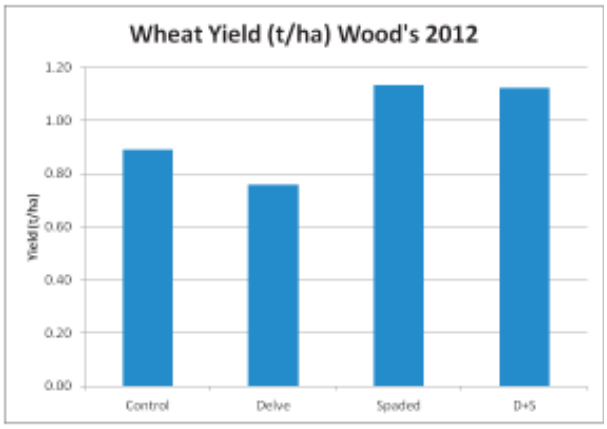
The sandy soils of the Mallee often have problems with water repellence and low nutrient holding capacity. Adding a small amount of clay to the topsoil can overcome the water repellence and increase the nutrients held in the topsoil. Getting this right is important as clay cannot be removed once it has been added to sand.

The trials being conducted by the Karoonda & Districts Agricultural Bureau aim to test the usefulness of clay spreading and/or delving on farms around the district. They will also be trialling the spader, a machine capable of mixing and incorporating clay and organic matter down to 30-40 cm, which may be useful for mixing in over-clayed areas.

Results - 2012

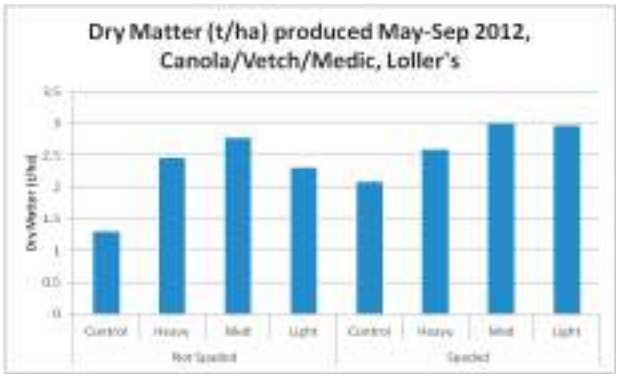
Wood - Delve Trial

This trial was sown to wheat in 2012. The spaded and D+S treatments had the highest yields in 2012, at 1.1 t/ha. The delved treatment and control were similar. This was different to previous years, where the delved treatment was more similar to the spaded.



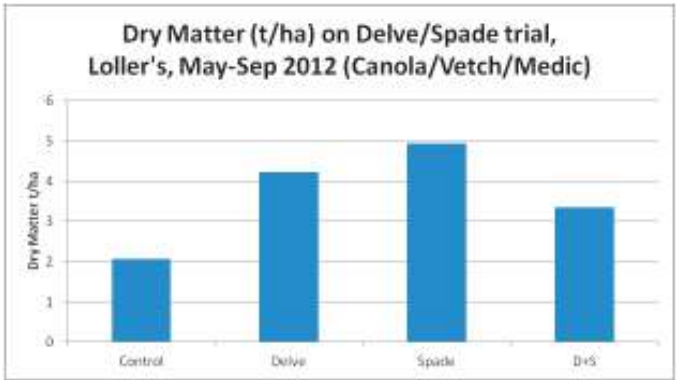
Loller - Clay Spread Trial

All Loller sites were sown to a canola-vetch pasture mix in 2012 with regenerated medic present. Dry matter cuts were taken in September before the pasture was grazed. Claying improved pasture production well over the un-spaded control, with further improvements seen where spaded.



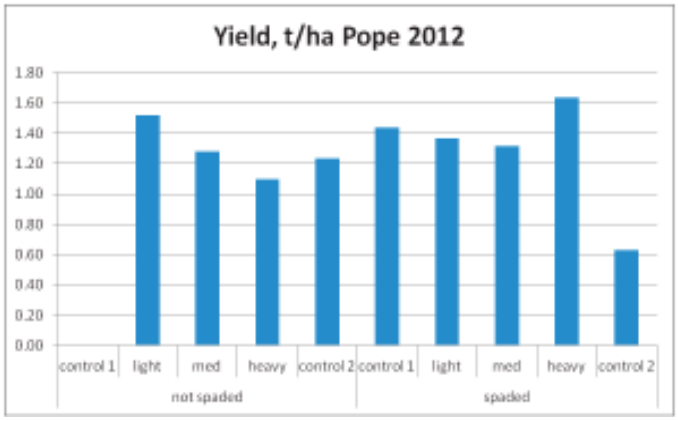
Loller Delve Trial – Flat

The modified soils have yielded considerably higher than the control. This result was impressive and we hope to see it continue. Spading and delving together did not yield as highly as either spading or delving separately in this year.



Pope Clay Spread Trial

The yields on this site showed where the trial was not spaded. The light clay rate yielded highest, however in the spaded area the heavy clay rate was the best. This was probably because spading mixed the clay down to a deeper level, diluting it more than the farmer incorporation. Where clay could not be mixed deeply, a lighter rate was better.



Conclusions

Delving or spading has had very positive effects on all sites where clay was reached by the machine and brought to the surface. Delving and spading together showed extra benefits on one site (Wood's) but no extra benefits on another (Loller's).

Clay spreading is showing promise for yield increases but there are other factors affecting the success rate. Nutrient management on clayed and spaded soils is very important. We plan to continue monitoring these sites and looking at these issues in the future.

Acknowledgements

This project was funded by the State NRM Community Grants though the Agricultural Bureau of South Australia. Thanks to Pete Loller, Nick Wood, and Stuart Pope for hosting trials and members of the Karoonda and Districts Agricultural Bureau for their support.

More Information contact Rebecca Tonkin, Rural Solutions SA, 08 8539 2125 or 0427 273 891, rebecca.tonkin@sa.gov.au

PIRSA Animal Health

Report any unusual symptoms

PIRSA is always interested in reports of unusual diseases, sicknesses or deaths in livestock, including poultry and wildlife. One day this could be the early signs of a new or emerging disease. PIRSA Animal Health staff Dr Jeremy Rogers (**0427 608 133**) or Amelia Bartlett **(0408 897 583**) can be contacted or ring the emergency hotline **1800 675 888.** PIRSA will respond or may be able to subsidise the investigation by your private veterinarian, *but we need to hear from you.*

Mallee farmers should be on the lookout for blowfly problems in the next month or so and the emergence of poisonous plants like *Potato weed* (photo) in autumn can severely damage sheep.

"*Talk to us, don't just let them die, and if they have died, lets get some answers as to why"*

Student vet

Recently a final year veterinary student *Veiss Harvey* has been working with us at the Murray Bridge, preparing reports on some interesting investigations that have occurred over summer. Some of these are an outbreak of a severe *respiratory disease* that killed 7 young cattle, a case of possible *Calcium or copper deficiency* from which up to 200 sheep may have died, and rare case of a *genetic disorde*r in a Murray Grey calf. *Veiss* who grew up on a Narrung dairy farm has enjoyed learning more about serious endemic diseases like *Johne's Disease, footrot and lice* and how SA is protected from many of these diseases through industry funded programs.

Veiss at the Dublin market

Assisting with feral goat management

PIRSA staff veterinarians and animal health officers assisted NRM and DEWNR to manage feral goat populations by doing tubal ligations on young female goats under general anaesthesia. These *"Judas goats"* are fitted with radio tracking collars, then released back in to the wild. When they team up with other feral goats, the whole mob can be easily located and removed from the area.

Goat mob following "Judas Goat"

Farmers gain information through projects

Mallee Sustainable Farming Inc. (MSF) is working with ten groups throughout the Mallee as part of projects funded through the Australian Government's Caring for our Country, South Australian Grains Industry Trust, Future Farm Industries Cooperative Research Centre and GRDC. Dodgshun Medlin are facilitating the groups, assisting the groups to gain up-to-date and practical knowledge of agronomic management on farms. The project involves each group meeting twice over two financial years, with the project finishing in June 2014.

Topics include:
Basic agronomy; Frost management; Pre-emergent applications; Varietal information; Snail management; Precision agriculture; *Rhizoctonia* management; Weed control; Rotations and Nutrition

Each workshop will meet the needs of the group. Specialist consultants at each workshop will answer the groups' and individual's questions. All farmers are invited to attend.

Group/ District	March	June
Loxton	Tues 5th	Tues 11th
Partners in Grain Bowhill	Wed 6th	TBA
Lameroo	Thur 7th	Thur 20th
Geranium	Fri 10th	Fri 14th
Lowbank	Tues 12th	Tue 25th
Swan Reach/Nildottie	Fri 15th	TBA
Karoonda	Thur 21st	Thur 13th
Wanbi/Copeville	TBA	TBA

Two additional groups (Waikerie and Karoonda) will investigate options for planting perennial fodder shrubs/ grasses.

For further information, please contact Leighton Pearce on 0408 159 953 or lpearce@dodgshunmedlin.com.au

Introducing Alex Stewart, new Rural Solutions SA Consultant

Alex is based at the PIRSA Murray Bridge office, working in the areas of animal nutrition; grazing and pasture management, complementing the PIRSA animal health skills currently based at Murray Bridge.

Alex grew up on a grazing property near Kingston in the South East with emphasis on wool production (Merino sheep); with first cross White Suffolks and beef cattle as secondary enterprises. He completed his Agriculture Science degree with Honours through University of Adelaide, Roseworthy Campus.

Starting work with SARDI, he was involved in sheep research and the selection demonstration for merinos, followed by work on alternatives to mulesing at University of Adelaide. Alex then moved into private agricultural research, working on a range of trials in areas including animal health, and pesticide/herbicide and fungicide effectiveness.

Alex's varied career has also included time at Laucke Mills, Daveyston as a ruminant specialist. Prior to starting with Rural Solutions SA, was a stint with *Total Result Ag. Consulting,* working as a dairy productivity consultant.

There will be opportunities to catch up with Alex at a range of events in the mallee in the coming months, including the MSF Changing Climate Conference in Mildura in early March. .

Alex can be found at the PIRSA office, State Flora precinct, Bremer Road, Murray Bridge or phone 0477 362 664

Alex at his desk in the Murray bridge office

This edition of Mallee Matters proudly sponsored by

mallee sustainable farming

CARING FOR OUR COUNTRY

Australian Government
Department of Agriculture, Fisheries and Forestry

IMPORTANT NOTICE

Although PIRSA has taken all reasonable care in compiling this publication neither PIRSA nor its officers accept any liability resulting from the interpretation or use of the information set out in this document. Information contained in this document is subject to change without notice.

COPIES ON THE WEB!
www.msfp.org.au

Mallee Matters is edited and compiled at the Murray Bridge office. Any queries or comments on **this edition** can be directed to
Merri Tothill
P : 8539 2112
E: meredith.tothill@sa.gov.au

RURAL SOLUTIONS SA

Government of South Australia