



**Talkin' Soil Health  
Conference wrap-up**

**Regional NRM Strategy**

**Weeds of National  
Significance**

*The Noongar people recognised six seasons in their year, Bunuru, Djeran, Makuru, Djilba, Kambarang and Birak, and managed the budjar (land) accordingly. The climate of this country ranged from mild to temperate and was divided into these six seasons, during which, land management practices and hunting & gathering patterns were guided.*

## **Bunuru - February-March**

*Hot easterly and north winds from February to March*

The fruits of the zamia (*Macrozamia riedlei*) were collected and treated for toxins by a process of burying, soaking and roasting.

## **Djeran - April-May**

*Becoming cooler with winds from south-west from April to May*

Bulbs and seeds were collected for food.

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**wheatbelt**  
natural resource  
management

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CARING  
FOR  
OUR  
COUNTRY

# What are the future drivers of change in the Wheatbelt region?



**By Dr Elizabeth Kington**  
Program Manager Sustainable Communities

*In reviewing the regional NRM strategy for the Wheatbelt region a range of interviews were conducted with community members. Their feedback identified a number of major drivers of future change in the region – both positive and negative. These responses ranged from really big global drivers to local and smaller farm-scale ones. Overall, the agricultural region appears to be in for some major challenges and the future community will be strongly affected by these and other modern world technologies.*

## The events community say have driven change in the region

<b>Aboriginal land use, agriculture, mining</b>	<b>The ebb and flow of wheat prices and the demand for wheat and wool</b>	<b>These days everything is cropped</b>
<b>The political scheme to wholesale clear land</b>	<b>“Removal of the reserve price scheme on wool... sheep were not then valued”</b>	<b>GPS auto steer has led to farmers filling in waterways and the removal of environmental ‘obstacles’, such as paddock trees. For example... “My neighbour now has a paddock that’s 3km long!”</b>
<b>Trace elements and subterranean clover</b>	<b>The system is driven by diesel</b>	<b>“Reliability of seasons has changed since 2000 ... the one year that made us money”</b>
<b>Grain, rail and government departments</b>	<b>Continuous cropping</b>	<b>Frost is a killer...you know when it’s not raining, but frost happens to the best crop and overnight. “Frost is a kick in the guts ... before this we were doing well”</b>
<b>The railway line and water pipeline through the Goldfields.. “as this allowed the agriculture base to grow and this was the biggest cause of land clearing”</b>	<b>Increased landscape recharge</b>	<b>Families move to Perth during high school</b>
<b>The pipeline has fed all people along the Great Eastern Highway</b>	<b>Farm technology changes over biological farming</b>	<b>“The speed of travel now means it takes 3 hours to get to Perth from Wheatbelt towns, such as Dalwallinu”</b>
<b>Rabbit infestation of the 1930s</b>	<b>60 years of fertiliser application</b>	
<b>1950s Crown grants</b>	<b>Cost price squeeze (especially since 2000) and bigger farms</b>	
<b>1950 was the last timber cut</b>	<b>Droughts and flood events and sporadic rainfall events (It was also suggested that the rainfall was going in 30-year cycles)</b>	
<b>The River Training scheme in 1958</b>	<b>Direct drilling - driven by no-til over the past 20 years. More chemicals, more minimum til and fewer sheep</b>	
<b>The Meckering earthquake of 1968 – this took out the local water table</b>		



Scan the qr code left on your smart device to access the Draft Regional Strategy on our website





# Josh Byrne helps tackle weeds in York



*Mick Davis, Elder Boyd Kickett, Josh Byrne, Greg Warburton and Rachael Major who spoke at the Weed Wars workshop in York on Saturday 27th April 2013*

***On Saturday 27th April, Josh Byrne from ABC TV's Gardening Australia program joined over 60 people at the York Town Hall to learn about sustainable gardening and how to reduce the impact of nasty weeds in gardens and bush and along the Avon River.***

The half-day workshop was run by Wheatbelt Natural Resource Management. and funded by the Australian Governments Caring for Our Country program.. Speakers raised awareness of the impact of Weeds of National Significance (WONS) that have recently been discovered along the Avon River, with a particular spotlight on Bridal Creeper and Small Flowered Tamarisk.

Both of these weeds have been listed as Weeds of National Significance (WONS), due to their ability to invade undisturbed bushland and the many challenges in controlling their spread. Weed surveys along the Avon between the towns of Toodyay and Beverley have resulted in more than 2000 infestations of these two weeds. Other environmental weeds were also been spotted during the surveys, which have been underway since October 2011.

Wheatbelt NRM's Regional Landcare Facilitator, Mick Davis was pleased to see such a great turn-out. 'It's magnificent to see so many local residents interested in learning more about controlling WONS in the Avon region' he said.

"Although the task our survey team has uncovered seems rather daunting, it's fantastic to have a keen and interested community of towns folk and landholders along the Avon River, who are keen to get involved" Mick said.

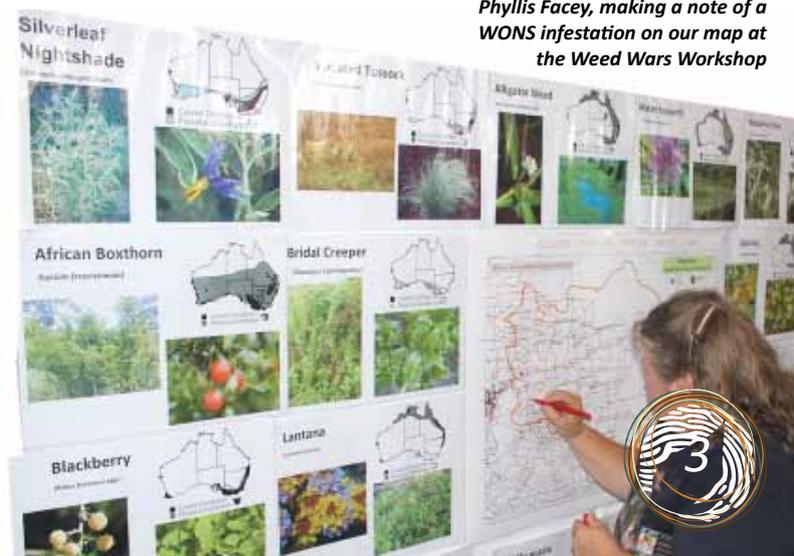
Six key control sites have been identified for intensive weed management into the future; West Toodyay, Northam, York's Mile Pool, Gwambygine Pool and Beverley Pool. Another site on private property is already under intensive management to eradicate both Tamarisk and Bridal Creeper.

These six sites have some of the largest and worst infestations of WONS known in the Avon region.

"It's hard to make weed management interesting and fun" said Mick "but Josh really captured the audience's attention with his focus on sustainability, responsibility (for weeds) and weed management.' said Mick.

It is planned that after the workshop, more work will continue along the Avon River to eradicate Bridal Creeper and Small Flower Tamarisk. But this is only likely with ongoing funding support, keen volunteers and the ongoing commitment of local community environmental groups to get involved in weed management projects.

*Phyllis Facey, making a note of a WONS infestation on our map at the Weed Wars Workshop*



# Weed Wars Continue along the Avon River

## ***The National Weeds Strategy has Identified 36 Weeds of National significance (WONS). Infestations of two species have been found along the banks of the Avon river.***

The weeds identified are regarded as the worst weeds in Australia due to their invasiveness, potential for spread, economic and environmental impacts. In response Wheatbelt NRM is conducting on-ground surveys for WONS along the Avon river. This information will be used to inform management at priority areas along the Avon river. This improved knowledge and management of priority areas will also help inform the national database and help regional and state coordination of WONS control

efforts. Management techniques for Tamarisk will include mechanical and chemical control methods, plus a monitoring program to allow for adaptive management.

Wheatbelt NRM has been conducting on-ground surveys along the Avon River to locate infestations of Bridal Creeper and Tamarisk. This data has been placed in a national database to assist with national management strategies. Locally the information is being used by on-ground teams to identify and treat the worst infestations along the Avon river.

Current management actions for WONS along the Avon river include chemical control, manual removal and photographic monitoring at designated areas between Toodyay and Brookton.

## **Small Flower Tamarisk**

*Tamarix parviflora*

Tamarisk is an invasive species that tends to be naturalising in the more southern semi-arid areas of Australia. This presents an emerging weed risk to the Avon river. It is a semi deciduous small tree or shrub (to 6m) that is native to Israel, Turkey and south eastern Europe. Recognised for its hardiness it was planted between the 1940's and 1970's as windbreaks and erosion control.

It is spread by seed and vegetative material either by human activity or by natural events including flood.

### ***T. parviflora* can have the following effects on ecological systems:**

- dry up viable water sources;
- increase surface soil salinity;
- modification of hydrology;
- decrease native biodiversity of plants, invertebrates, birds, fish and reptiles;
- increase fire risk.

## **Bridal Creeper**

*Asparagus asparagoides*

Bridal Creeper is a declared weed in Western Australia, it is highly invasive and has severe environmental impacts. Initially introduced in the 19th century as a garden and floristry plant, it was not long before it escaped into bushland and began to spread. Bridal Creeper berries are eaten by birds, foxes and possibly rabbits resulting in further spread.

### **The problem with Bridal creeper:**

- It invades bushland, smothers native plants and reduces the health and diversity of our natural and agricultural resources.
- It produces a large volume of seed, which is readily spread by birds and animals;
- The roots form a thick, impenetrable mat, preventing natural regeneration of native plants;
- It survives harsh conditions such as fire, frost, and drought; and tolerates a range of soil types;
- Can spread further than its current range if nothing is done.



## Bridal Creeper

### WHAT CAN YOU DO?

If you think you have seen some Small Flower Tamarisk or Bridal Creeper, take a picture and email it to [info@wheatbeltnrm.org.au](mailto:info@wheatbeltnrm.org.au) - alternatively contact the landowner directly.

### WHAT HELP IS AVAILABLE?

For private landowners who have large infestations, help is available on a case by case basis. Small infestations of only a few trees or saplings should be controlled by landholders directly when detected. Management techniques can include mechanical and chemical control methods. This should also be followed up with a monitoring program to allow for adaptive management. If you need help or want to report Tamarisk or Bridal Creeper on Public land then contact Wheatbelt NRM on 9670 3100.

## Small Flower Tamarisk



# Cultural lessons from the past in Cunderdin

By Mick Davis



Some of the many 'flakes' left lying on the ground during the tool making process thousands of years ago



***The European histories of locations across the Wheatbelt are generally well known and documented in the broader community; however the same cannot often be said for sites of Aboriginal cultural significance.***

At Youndeggin, near the border of Cunderdin and Quairading shires in the central wheatbelt, Wheatbelt Natural Resource Management Inc. is supporting landholders with a growing interest in understanding the relevance and history of cultural sites on their properties.

Three local landholders have been working with Wheatbelt NRM to identify, record and help explain the significance of several artefacts found over the years in the nearby area. The artefacts include grind stones and stone tools as well as 'flakes' of stone, which are the basis of stone tool manufacture. Some of these artefacts may have been created, used and discarded thousands of years ago.

Over recent years these three keen-eyed farmers have noticed a range of artefacts on their properties. During a recent visit to one of the sites by staff from Wheatbelt NRM's Aboriginal Program and the Department of Indigenous Affairs one of the farmers agreed to a further investigation of the site.

"A lot of areas have been lost – we ought not lose any more of them" he said.

The focus of the survey was to record the distribution and density of artefacts across the area and to try to gauge the activities conducted at the site in the past. The results were collated, and will be used to inform the landholders and the wider community regarding the likely significance of this site to other nearby areas.

At this stage it is apparent that the landscape feature was a preferred source of stone in the past.

The area contains a seam of hard material that fractures so finely it was quarried and used to make stone tools.

The site contains thousands of pieces of stone with diagnostic features suggesting they were the by-product of stone procurement for tool manufacture.

This special place is one piece of a landscape jigsaw that tells the story of past life and culture. Stone from this site would have been taken to an occupation site for use in food preparation, wood working and other activities. The landowner has been documenting other finds on his property that add to the picture of the past. It is through his efforts that the location of significant cultural material has been recorded and will enrich our understanding of the long history of the area.

When asked why the project was important, one of the landholders replied "I think it's important these sites are recognised and preserved."

So far the local Noongar people have been involved in the DIA investigation and cleaning up rubbish from the site. "It would be good to see some Noongars come and have a look and enjoy it too; maybe get a reconnection to their heritage."

Removal of the old tin and Iron on the site has improved the aesthetic values and protected heritage values.

This study has helped all three landholders and Wheatbelt NRM staff better understand the cultural significance of this site, and provided information relevant to other sites nearby.

For more information on this survey, or to find out more about Wheatbelt NRM's Aboriginal Program, phone 9670 3104 or email [info@wheatbeltnrm.org.au](mailto:info@wheatbeltnrm.org.au)

# Short-Beaked Echidna



**Tachyglossus aculeatus**

**Family:** Tachyglossidae

**Conservation status:** Not listed

## Identification

The short-beaked echidna varies in colour from light brown to almost black depending on the individual animal and the location. Its spines are pale brown with black tips and the hair varies in colour from pale brown to dark and from short to long and shaggy depending on the area. Its long, beak-like snout is hairless and has a tiny mouth at the end, through which its long extendible tongue flicks out and draws in insects. The short-beaked echidna has strong claws which help it to dig through the soil. It has one particularly elongated claw on the second toe of its hind feet which is used for grooming between the spines on its back. Underneath, the echidna has coarse hair and no spines. Unlike other mammals, but like birds and reptiles, the echidna has only one external opening for the functions of reproduction and the elimination of wastes.

## Habitat and distribution

Short-beaked echidnas are found in most parts of Australia. They even occur in areas that receive snow, and will hibernate for part of the year when conditions are inhospitable. In the Avon region, the short-beaked echidna occurs in bush areas, especially where fallen timber and dense shrub areas have been left as wildlife refuges. It is usually solitary, and shelters under dense bushes, piles of debris, in hollow logs or even in rabbit burrows when it is not digging for food.

## Diet

Ants and termites make up almost all of the diet of the short-beaked echidna, although it has also been known to eat beetle larvae and other soil invertebrates. Echidnas ingest a large amount of soil, termite mound and ant nest material while licking up their prey. As a result, their droppings are distinctively cylindrical and are composed mostly of sand and the hard, shiny, undigested exoskeletons of insects. Echidnas have no teeth; instead their prey is ground up between a hard plate at the back of the tongue and a similar structure on the palate.

## Reproduction

Breeding begins in June and sometimes up to 10 male echidnas will follow a receptive female, looking for an opportunity to mate with her. The short-beaked echidna is one of the few mammals to lay eggs. Two weeks after mating, the female lays an egg into her strong, muscular pouch. The young is born 10 days later. The female echidna secretes a thick, rich milk through pores in the skin inside her pouch which the young sucks up through its snout. Once the young is about three months old, the mother leaves it in a den and seals up the entrance while she goes out to feed. She returns every one or two days to feed the young, usually for about half an hour at a time. The young gradually develop spines while in the den and it is thought that they are weaned at about eight months old. Independent young have been recorded around September to November, at about one year old.

## Threats

Apart from occasional animals being killed on roads, adult short-beaked echidnas have few threats to their survival. When disturbed, an echidna rolls itself into a ball or uses its powerful claws and muscles to dig itself vertically down into the soil or lock itself between rocks, making it difficult for predators, including cats and foxes, to attack it.

## Management actions

Adequate reserves, especially those with fallen timber and some dense bushes for cover, aid this species. The maintenance and replanting of wildlife corridors and refuges in farmland areas are also valuable. Fox control in conservation areas helps to reduce predation of young animals.



## SHORT BEAKED ECHIDNA FACTS

**SIZE** (head and body length)  
300 - 450 mm

**SIZE** (tail)  
85 - 95 mm



### WEIGHT

2 - 7 kg  
Average 4.5 kg (females)  
Average 6.3 kg (males)

### HABITAT

Occurs in virtually all land-based habitats except cities and intensive farming areas.

### DIET

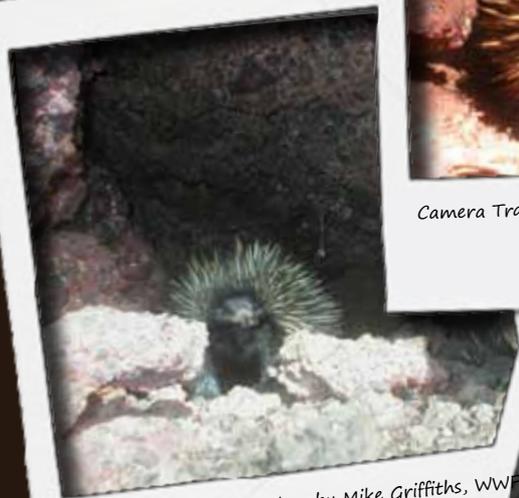
Specialises in ants and termites, occasionally takes beetle larvae and other invertebrates.

### REPRODUCTION

Egg-laying mammal. One egg is laid in the pouch. Young hatches in 10 days, is fed milk in pouch for 3 months, and then fed in burrow until 8+months. Independent by one year.



Camera Trap photos taken by Mike Griffiths, WWF



Camera Trap photos taken by Mike Griffiths, WWF



Camera Trap photos taken by Mike Griffiths, WWF





# Talkin' Soil Health Conference wrap-up



***The two-day conference was opened by the National Soil Health Advocate, Major General Michael Jeffrey and featured keynote addresses from Dr Christine Jones, Prof. Michael Robertson and Federal Minister for Agriculture, Senator Joe Ludwig, drew together community members and stakeholders from across the Wheatbelt and beyond.***

***The conference provided an opportunity for participants to share knowledge and facilitate adoption of technologies and practices to improve soil health. A highlight of the conference was the filmed presentations by five “Wheatbelt Champions”, which told the story of the farmers’ and their families’ journeys towards sustainable farming practices. The Wheatbelt Champion presentations were an inspiration to all the conference attendees, generating enthusiastic discussion and debate.***

Over 200 farmers, scientists and industry representatives were amongst the crowd in York to learn how to tackle declining soil health and improve farmers sustainability. Characterised by innovation and insight, attendees of the event were treated to contributions from farmers and the academic community regarding soil preparation, cropping, agroforestry techniques and grazing.

The Talkin’ Soil Health summit was officially opened by the country’s first Advocate for Soil Health Major General Michael Jeffery.

The Federal Agriculture Minister Senator Joe Ludwig also gave a keynote speech before meeting with Wheatbelt NRM staff and landholders.

Senator Ludwig talked about the importance of encouraging farmers to adopt sustainable land use practices.

Wheatbelt NRM’s Program Manager for sustainable agriculture Dr Guy Boggs said the conference helped cover issues including acid soils, the importance of soil biology and sequestering carbon.

“Farmers were able to hear from some of the country’s top scientists about how our soils have reached crisis point,” Dr Boggs said.

“But the experts also spoke of solutions and other farmers shared their stories about how they have successfully introduced new management practices to deal with these problems.”

CSIRO Ecosystem Sciences Principle Research Scientist, Dr Michael Robertson, described a distinct gap between current average outputs and output under optimum conditions in WA.

“The smarter guys are getting into soil testing and are making clever decisions that impact on reducing cost inputs,” he said.

“Leading farmers are consistently examining their subsoil, implementing early grazing programs without yield reduction, experimenting with pasture cropping and using technology such as mouldboard ploughing,” he said.

“That yield gap will continue to close as other farmers adopt these technologies.”

Delegates were able to participate in hands-on workshops including helping to identify the living organisms that exist in their soils and how to build carbon.

“These were by far the most popular workshops, which reflects the desire by landholders to find out exactly what makes their soil tick,” Dr Guy Boggs said.

“We had limited spaces for these workshops, but at least 85 farmers were keen to learn more.

“This reflects the fact that farmers realise soil health is instrumental in trying to build a resilient farming enterprise.”

The event was funded through the Australian government’s Caring for our Country program and major sponsor Australian Mineral Fertilisers.



# Wheatbelt Champions

*The Talkin' Soil Health Conference was part of Wheatbelt NRM's "Wheatbelt Champions: farmers leading the way to soil health" project and had the goal of facilitating the further adoption of farm practices to manage soil quality in the Avon River Basin (ARB). The farmers featured in this DVD have adopted practices to improve soil quality on their own properties. We hope that by listening to their stories, other farmers will be similarly inspired to adopt sustainable farming practices.*



## Maitland and Margaret Davey

Maitland and Margaret are community leaders in NRM. Maitland is the Chair of the Gabby Quoi Quoi Catchment Group and encourages neighbouring landholders to participate in sustainable practices. The Davies have plantings of brushwood and have propagated their own saltbush over many years. Maitland and Margaret have established a fodder trial of several species of saltbush, grasses and legumes to determine the most suitable plants to provide feed for stock on this semi-saline site.



## Ray Fulwood and Wendy Porter

Ray and Wendy are true innovators and not afraid to step outside the boundaries of conventional farming wisdom. They are long-term proponents of no-tillage methods of farming and have implemented many innovative practices into their farming system. A partnership in the real sense of the word, Wendy and Ray continue to strive to farm in a sustainable way in the face of an increasingly unpredictable climate and challenging economic environment.



## Trevor and Renae Syme

Trevor and Renae Syme purchased their property in 1994. At the time they were told that it was the worst property in the State and they would go broke farming it. Since then, the Symes have fenced remnant bush to exclude stock; planted tagasaste on deep white sand for stock; used no till since 1995 and retained all their stubble with the exception of burning canola windrows for weed control. In 2001 Trevor and Renae first attempted claying to deal with non wetting soils and since then have resolved the non wetting issues to some degree by clay spreading, rotary spading and delving. Since that time, approximately 1100 hectares have been completed and the farm is looking better than it ever has.



## Nick and Lucy Kelly

Nicholas and his father, Malcolm, have for some years been developing a total cropping, weather resilient farming system which is improving soil health, sequestering carbon, reducing erosion, increasing moisture retention, reducing chemical use and increasing yields.

The system incorporates: retaining stubbles; growing summer crops (primarily millet) to keep a live root system in the ground; use of a disc-seeder to restrict soil disturbance, and crop rotations both to control weeds and fix nitrogen.

Allelopathic qualities in millet appear to suppress weeds. Elimination of trifluralin has been result. Fuel consumption has been reduced.



### Mario and Lucia Varone

Mario and Lucia Varone are focussing on being excellent primary producers of wool and wheat while adding value and enjoyment to their farming life by engaging in many sustainable agriculture and self sufficiency practices. They regularly have members of the local community and people from further afield visiting their farm to get inspired and informed - whether it's a tree crops field day, a local woman wishing to plant her own vegetable garden, or people at the local tennis club asking about the ins and out of keeping guinea fowls, Mario and Lucia are happy to share information and learnings.

The Varone's feel that the ability to be involved in a diverse range of farming and self sufficiency practices has many benefits, including adding enjoyment and quality to the farming life, keeping costs down by fulfilling a large part of your own food needs with quality, home produced food, having natural pest and weed control, and focussing on doing things that improve the quality of the soil and environment they are farming in.



### Gavin, Amanda and Colin Hagboom

Farming in south Dowerin, on light sandplain, Gavin, Amanda and Colin Hagboom have adopted soil improvement techniques outside the square. Incorporating soil biology (mycorrhizal inoculums), humates, buffered fertiliser and foliar they have been able to promote a stronger more disease resistant plant with reduced inputs. The Hagbooms are one of the pioneers of the modern serradella industry and have been able to use the early season (Charano and Yelbini), hard-seeded yellow serradella, to build organic matter, water holding capacity, recycle nutrients and produce cheap nitrogen in rotation with cereals. Since 1998 they have planted over 200 ha of commercial pine and 60 ha of sandalwood with Forest Products Commission. Incorporating the trees into the farming system has had measurable results with wind erosion and lamb survival. The Hagbooms have been privileged to be able to spread their knowledge to farmers and international guests through farm field days and information days demonstrating how farming on light soils can be more productive and sustainable with a hybrid approach incorporating biological, physical and chemical balances



### Andrew and Paula Pike

Since taking over the management of the family property, Andrew and Paula Pike have used clay and lime spreading, planted native shrubs, perennial pastures, sandalwood and pine trees. On 30 ha of unproductive land, Andrew has planted 5000 Rhagodia and 5000 Saltbush shrubs with a 'Caring For Our Country' Federal Government grant. Over the past four years the Pikes have planted Saltbush on other parts of their farm and now have over 100 ha of native shrubs which they use for sheep feed. Five years ago Andrew planted sandalwood (*Santalum spicatum*) in partnership with the Forest Products Commission with *Acacia acuminata* (Jam) being used as hosts. Pine trees have also been planted on unproductive land to reduce wind erosion and are anticipated to turn a profit in 30 years' time



To get your copy of the *Wheatbelt Champions* DVD call Dr David Grasby on 9670 3100 or email [dgrasby@wheatbeltnrm.org.au](mailto:dgrasby@wheatbeltnrm.org.au)





# Perennials for the Avon Basin/Central W

By Elise Bowen & Natalie Hogg, D



***The incorporation of perennials into WA farming systems in the Central Wheatbelt has been varyingly successful, primarily due to the wide range in climatic conditions and soil fertility over the region. Growers are naturally interested in species that are performing well in other parts of WA, but at this stage the species which have demonstrated their resilience over time are the best options.***

In the Northern Agricultural Region (NAR), sub-tropical perennial grasses such as Rhodes grass and Gatton panic have been established by many growers and have proven to be highly productive on poor quality sandy soils. However these species are sensitive to frost and require warm temperatures for establishment and growth. The key to their success in the NAR is that they continue to grow for most

or all of the annual growing season. In contrast, with cooler temperatures and occasional frosts in the central wheatbelt the grasses are likely to shut down from late autumn until mid-spring, so biomass production will be restricted even if they persist. As a result they may have a limited role in the western part of the region where the growing season is longer. The wetter than normal conditions in spring and early summer has allowed good establishment of sub-tropical grasses by some producers in 2011, but the questions over long-term persistence and productivity remain.

Many temperate perennial grasses which are commonly grown in the eastern states, such as perennial ryegrass, phalaris, cocksfoot and tall fescue are poorly adapted to the conditions in the central wheatbelt, due to the combination of low soil fertility, low annual rainfall and a short growing season. The distinctive summer drought is a major limitation.



# Wheatbelt Region

Department of Agriculture and Food, Western Australia



Table 1: Suitability of perennial species to climatic and soil characteristics of WA.

	Lucerne	Tall wheat-grass	Veldt grass	Saltbush	Tagasaste	Bluebush
Min. rainfall	250mm	350mm	300mm	250mm	300mm	250mm
Clay soils	**	***	NS	NS	NS	NS
Loam soils	***	***	*	*	NS	*
Sandy soils	***	***	***	***	***	***
Soil pH	4.8+	4.5+	4.0+	4.0+	4.0+	4.0+
Salinity tolerance	M	H	U	M	P	M
Waterlogging tolerance	P	H	P	M	P	P
Drought tolerance	H	H	H	VH	H	VH

## What current options may work for you?

There are some perennial pasture options which have shown their resilience under the environmental conditions in the Central Wheatbelt. The six best perennial pasture options are: lucerne, tall wheatgrass, perennial veldt grass and three shrubs (saltbush, tagasaste, bluebush). The suitability of these six perennials to varying climatic and soil characteristics (Table 1) are highlighted by their high drought tolerance, low rainfall requirements and comparatively low soil fertility requirements.

## Uses in the system - what works where?

**Lucerne (*Medicago sativa*)** is a deep-rooted legume that is highly palatable and of high feed quality, with metabolisable energy between 8-11 MJ and crude protein between 15-25%. Lucerne has moderate to high soil fertility requirements, and is not suited to waterlogged or saline soils, and the rhizobia are susceptible to soil pH below 4.8. Winter growth varies from dormant to actively growing, though all varieties are very responsive to out-of-season rainfall.

**Tall wheatgrass (*Thinopyrum ponticum*)** is a summer-active, temperate grass that has been grown on WA saltland since the 1940s, playing a role in lowering shallow water-tables in the management of salinity. Winter growth is slow, and subsoil moisture or rainfall is required for good summer production. Tall wheatgrass is often grown with companion legumes, as the nitrogen promotes increased growth, palatability and nutritive quality.

**Veldt grass (*Ehrharta calycina*)** is native to South Africa, and is hardy and productive on infertile sandy soils. It is an invasive weed throughout the south-west, but is valued in agricultural systems for its role in stabilising drifting soils. Veldt grass also responds to soil nitrogen provided by companion legumes, and the feed value can be quite high, with metabolisable energy ranging from 7.3-10.7 MJ and crude protein from 9-30%. Production is highest in spring and autumn, becoming dormant after heavy winter frosts.

**Saltbush (*Atriplex spp.*)** plays a key role in the eastern wheatbelt in the management of salinity, with their long tap roots acting as pumps to reduce water table depths. Saltbush has low soil fertility requirements, growing well on sandy soils that may be deficient in nitrogen and phosphorus. Nutritive value for energy is between 7.1-7.6 MJ, and crude protein ranges from 7-17% in summer to 17-23% in winter.

**Bluebush (*Maireana spp.*)** is native to the eastern wheatbelt, and like saltbush is used in the management of salinity, as well as providing high quality out-of-season fodder. Metabolisable energy provided is 7-8 MJ, and crude protein ranges from 10-14% in summer to 21-22% in winter. Both bluebush and saltbush are best used as part of a species mix, as they contain moderate oxalate concentrations and are high in salt.

**Tagasaste (*Chamaecytisus palmensis*)** or tree lucerne is a leguminous shrub that is well adapted to deep, well-drained sandy soils, though it does not tolerate highly acid soils or those with high aluminium content, such as Wodjil sands. Feed quality is greatest in winter and spring, but declines steadily over summer and by autumn tagasaste on its own will only maintain animal live weight. Sheep should be restricted to 6-week grazing intervals as tagasaste contains high levels of phenolic compounds, which interfere with rumen function.

When selecting perennial pastures it is important to note that they require some form of rotational grazing to ensure long-term persistence and to maintain feed quality. Lucerne and veldt grass require rotational grazing for persistence in the long-term, as they can be selectively grazed. Tall wheatgrass requires summer grazing to delay plant maturation and maintain feed quality and palatability. Established saltbush and tagasaste can withstand hard grazing, but rotational grazing is required to allow them to recover between grazings. When grazing tagasaste with sheep, the plants need yearly cutting to prevent them flowering and hence maintain production.

Want to read more on what perennial pastures may work for you then visit [www.wheatbeltnrm.org.au](http://www.wheatbeltnrm.org.au) or [www.agric.wa.gov.au/pastures](http://www.agric.wa.gov.au/pastures).



# Future Farm Tour

By Georgie Troup



***15 farmers enjoyed three days of fun and learning with Wheatbelt NRM's Project manager Georgie Troup as part of the Future Farm Tour, held on Wednesday 20th to 22nd March 2013.***

The three day tour showcased leading farmers of the region and new advancements in the Oil Mallee industry. The tour included a visit to the new BioChar plant, Oil Mallee harvester and new distillery at Ian Stanley's property near Kalannie. Thanks to the Liebe Group for hosting an afternoon at Dalwallinu, with Liebe members sharing their experiences with soil acidity issues, ameliorants, revegetation and saltland pastures. The tour focused on not just learning but also creating a fun social experience for farmers from all over the region to get away before the seeding got underway. The group also enjoyed a night of barefoot bowls at Dalwallinu, and were entertained by local farmer and musician Georgie Sadler at the Dowerin Hotel the following evening. The tour was delivered in partnership with the Oil Mallee Association of WA, and was funded by the Caring for Our Country program. The group thoroughly enjoyed the experience and are looking forward to what's on offer next year!



