



## Diligent Approach to Erosion Control Pays Off by Bundle Lawson

Bernie Conway and his wife Margaret took over the management of 'Ballandry' at the top of the Kyeamba Valley 53 years ago. Together with their son James and daughter-in-law Sarah, the Conways run self-replacing flocks of Merinos and first-cross ewes to produce wool and prime lambs. They also have a self-replacing beef cattle herd producing vealers and do a small amount of cereal cropping on the 972 hectare property.

"The property has a small amount of granite soil but is mainly slate country," Bernie said. "We expect 700 - 750 millimetres of rainfall each year on average, and will take the opportunity to buy in a few steers to fatten in good seasons."

### Making a start

From the early days, Bernie was keen to address the many erosion problems areas that had developed on Ballandry. As soon as time and finances allowed, he purchased a Fiat crawler tractor to begin earthworks around gullies and problem areas.

"We had initially implemented a liming program over the entire property as we were experiencing a lot of runoff due to the predominantly acid soils. We had already put out more than 1000 tonnes of lime before 1990, but I knew we needed to do more at the head of actively eroding gullies to address the issue," Bernie said.

Bernie's approach was to fence off the gullies and fill them in where possible, before creating contour banks at the head of gullies to divert water into a series of small dams. This slowed the water down and prevented it from further eroding the gully. The water from these dams was then let back into the gully well below the actively eroding head area.

"We also ripped around the gully wherever we could, and planted the fenced off area to trees, again to try and reduce runoff," Bernie said. "The only problem we have found with fencing off these areas and planting them out is that they then become a haven for wombats, which in turn cause us further erosion problems due to their burrowing."

### A targeted approach

By far the largest erosion control project the Conways have undertaken came in 2000 when they received funding to construct a dam and concrete overflow flume in what was originally a seven-metre wide and seven-metre deep gully.

"I have been particularly impressed by the effectiveness of this construction as it hasn't moved or eroded any further since it was built, even during the extreme rainfall of recent years," Bernie said.

"It was constructed during a dry winter which made life easier, but we then had enough rain for good grass and reed establishment around the dam and flume. I am now thinking this excessive amount of vegetation may be slowing the water down too much, as it is tending to run over the surrounding contour banks rather than over the spillway. I may have to build the banks up a bit more to stop this from happening."

### Use of trees

The Conways have continued to plant trees on their property, not only around fenced off gullies as erosion control but also to form tree corridors and farm forestry plots.

"In 1993 we were part of a nutrient control project in the Valley, where trees were direct seeded in plots across the property. I remember it took up to three years for all the trees to germinate due to the varying aspect, terrain and soil conditions, but now you can't pick these later germinating trees. In fact, they have done so well on a whole that they are probably considered too thick in some areas," Bernie said.



**The Conways have been particularly impressed with the flume constructed to control erosion as part of a funded project, as it has stood up well to the recent severe rain events.**

<b>Scientific name:</b>	Acacia genistifolia
<b>Common Name:</b>	<b>EARLY WATTLE</b>
<b>Occurrence:</b>	Dry sclerophyll forest on gravelly and shaley soils.
<b>Description:</b>	Multi-branched, spreading, prickly shrub, 1-3m high with a sparse appearance
<b>Phyllodes/ Leaves:</b>	Green, thick and stiff, needle-like, 15-50mm long x 1-3mm wide, with one gland near the base.
<b>Flowers:</b>	Pale lemon-yellow globular flower heads, usually carried singly or in pairs from the phyllode axil, on smooth stalks 5-20mm long. Flowering June to October.
<b>Fruit/ seed capsule:</b>	Pale, long, narrow, straight to slightly curved pods, 5-11cm long x 0.4-0.6mm wide.
<b>Seed collection and propagation</b>	Collect seed from dry, splitting pods November to December. Monitor closely as seeds released immediately or within 1-2 days of maturity. Pour boiling water over seeds; soak and cool for several hours before sowing. Self-seeds and/or suckers.
<b>Values or Uses:</b>	Useful low-level cover in windbreaks. Coloniser of bare land. Legume—improves soil fertility by 'fixing' nitrogen. Excellent habitat for small native birds due to prickliness.

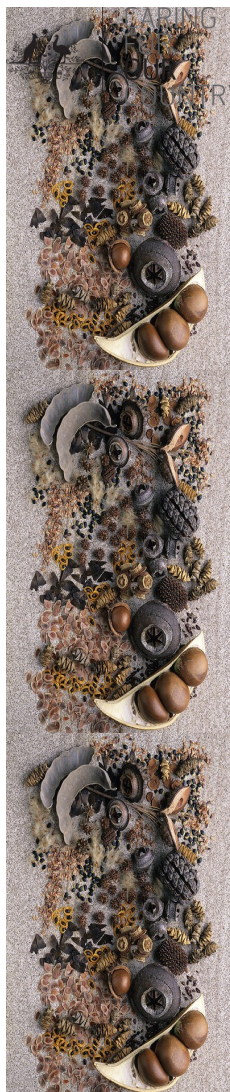


### DRY SCLEROPHYLL FOREST ...

Sclerophyll means hard-leaf, and describes the leathery foliage of understory plants in eucalypt forests generally adapted to dryer conditions, with a rainfall less than 1,000 mm per year. Dry **sclerophyll forests** are adapted to these dryer conditions and to high fire frequencies. They usually have a multi-levelled overstorey of eucalypts of different ages, relating to fires that occur once every 5 to 25 years in low rainfall areas, and a sparse understory of small trees, hard-leaved shrubs and bracken fern or grasses. Trees are slower to grow in dryer conditions, and the overstorey of mature dry sclerophyll forests often does not reach more than 30 metres in height.

<b>Scientific name:</b>	Stypantra glauca
<b>Common Name:</b>	<b>NODDING BLUE LILY</b>
<b>Occurrence:</b>	Sclerophyll forest and woodland. Abundant in some areas. Found on sandy or poor stony soils in woodland communities. Occurs in abundance in some localities.
<b>Description:</b>	Shrubby grass-like perennial, erect or sprawling, with stems to 1m high, fibrous roots and a creeping rootstock. Bright blue flowers, mainly spring.
<b>Leaves:</b>	Blue-green, 5-20cm long, up to 1.5cm wide, smooth, stem clasping, uniformly arranged along opposite sides of stem.
<b>Flowers:</b>	Bright blue or occasionally white, with six equal petals, on slender nodding stalks. Anthers bright yellow, 1-2mm long. Flowering in spring.
<b>Fruit/ seed capsule:</b>	An oblong, 3-valved capsule, 3-12mm long. Seeds black about 2mm long.
<b>Seed collection and propagation</b>	Collect December-January. Monitor closely as mature seeds soon shed. Propagate from seed or division in autumn. Seeds should germinate in 3-4 weeks. May be difficult to grown from seed.
<b>Values or Uses:</b>	Capable of colonizing disturbed and eroded sites. Useful for revegetation and also attractive in the garden planted in clumps.





## PROVENANCE SEED COLLECTION FOR PROPERTY REVEGETATION PROJECT

by Susan Duffy



The KVLG Provenance Seed Collection Project began on Thursday, 8<sup>th</sup> December 2011 with Mardi Pillow hosting the formalities to sign up for TAFE courses with Jeanette Coventry to ‘Collect, Treat & Store Seed’ and ‘Undertake Propagation Activities’. After being issued with excellent secateurs and long pole loppers we set off to Dick Green’s property, “Flakney Springs”, to begin collecting.

We learnt to recognise healthy trees and seeds ripe for picking, and several methodologies for collecting pods and seeds including picking and cutting pods from the trees and bushes at ground level, using the loppers to bring down higher branches safely and laying out ground sheets to shake down very fine seeds. We also learnt the importance of record keeping for correct identification of species and local conditions to ensure our propagated trees and bushes are ultimately planted out at the same altitude with similar slope and soil conditions to give the plants the best chance of survival.

With plenty of seed to sort, clean and store we began treating the seeds according to their species (eg. heating with boiling water or soaking overnight) to prepare them for germination in seed raising trays. Jeanette tended to the trays in the greenhouses at the North Wagga Campus of TAFE and within a week we had a carpet of plants in each tray to pot on into tubes. There are now hundreds of trees and bushes available for members of the KVLG to plant out, and thousands of seeds left in the KVLG seed bank for germinating at any time!

It’s been a great project with excellent instruction from Jeanette and 3 generations of age groups bringing their knowledge and experience to each class. We’ve also been provided with some fantastic resources from TAFE NSW, Greening Australia and, of course, the Federal Government “Caring for our Community” grant that Mardi and Jeanette successfully applied for in 2011 to start the whole project.

Our very great thanks to Dick Green and Darren Foster for opening their properties to us; to Arthur Webb for collecting so many seeds from a wide variety of plants and trees (and helping to propagate them) for the benefit of the KVLG and its seed bank; to Mardi Pillow for keeping everyone organised and informed and, finally, to Jeanette Coventry for her enthusiasm, knowledge and many out of hours work to help KVLG and its seed bank.

Jeanette invites Members to attend the Primary Industries Centre (Cnr Farrer & Coolamon Roads) on any Wednesday from 9am - 3.30pm to assist propagating more trees & shrubs. For enquiries about taking the potted trees for planting at your homes and properties please contact Mardi Pillow.

<b>Scientific name:</b>	Brachychiton populneus
<b>Common Name:</b>	<b>KURRAJONG</b>
<b>Occurrence:</b>	Widespread throughout this area. Found growing on granite outcrops, rocky slopes and other well-drained soils
<b>Description:</b>	Small to medium sized tree, 5-15m tall with a dense, rounded crown and short, stout trunk.
<b>Leaves:</b>	Glossy green, 5-10cm long x 2-4cm wide, paler beneath on long stalks. Very variable in leaf shape from poplar-like to deeply 3-lobbed. Young leaves tinged pink.
<b>Flowers:</b>	The flowers are creamy –white and speckled with red, usually from March to December
<b>Fruit/seed capsule:</b>	Distinctive seed pods, dark brown to black, boat shaped, 3-7cm long, packed with large powdery yellow seeds, with bristly yellow hairs which can be an irritant if touched.
<b>Seed collection and propagation</b>	Seed can be collected early July to late January. Seeds released 3-14 days after maturity, and opening of pods. Keep an eye open for <b>weevils</b> , as the seed is a food source for many insects. Soaking of seed for 12 hours in boiling water before sowing enhances germination. New seedlings can have totally different shaped leaves.
<b>Values or Uses:</b>	<b>Shelter:</b> Useful medium-level cover in windbreaks. <b>Wildlife:</b> Excellent habitat tree for wildlife. Flowers are a food source for Sugar gliders, Squirrel Gliders, native birds and insects. Insect-eating birds are attracted to hollows. The wood is very fire resistant and fire retardant. String and fishing nets are made from the fibrous bark. The seed roasted and eaten, also firstly removing the hairs they can be eaten raw. Very unique flavour, highly palatable flour source produced by roasting and milling the cleaned seed. Yam like tuberous roots of young plants can be eaten.



## Diligent Approach to Erosion Control Pays Off—continued

“Between 1992 and 1995 we created tree corridors to link timber stands across the property, with help from the KVLG. Some of these corridors were constructed around actively eroding gullies, including one particularly deep creek which is no longer visible as a gully today.

“Then in 2003-04 we took on a number of farm forestry projects, which involved us planting over 9000 trees on the property. The fire in 2006 killed quite a few of these trees which have since been replanted, including 1000 planted last year alone.”



The first step the Conway’s take to control water erosion is to plant out the head of a gully to trees, to slow runoff down and stabilise the area.

### Into the future

As far as specific erosion control goes, the Conways are still continuing to fill in gullies where possible, rip areas for trees and use contour banks at the gully head to redirect water and slow runoff. They are also experimenting with using five inch poly pipe through dam banks and using overflow banks to redirect water and take it from dam to dam.

“The tricky part is trying to ensure good weather when doing initial earthworks and stabilising an area,” said Bernie. “Of course you can’t control this, but it makes such a difference if good conditions were prevailing during and after construction work.”

“From my experiences, the most important thing is to just bite the bullet and have a go at tackling erosion problems. This need not be expensive, as probably the most important first step is to at least fence off the area from stock, rip where possible and get some trees established in the area.

Earthworks such as contour banks and filling in gullies can happen down the track when conditions are suitable and the right equipment available.”

## KEY FACTS ABOUT SOIL CARBON

Susan Orgill, Soil Carbon Research Officer, NSW Department of Primary Industries



Soil organic carbon is a vital component of productive agriculture, but there are many myths and misconceptions about it. Staff at the NSW Department of Primary Industries have recently put together a Fact Sheet outlining the key messages about soil carbon. A basic summary of some of the messages of most relevance to land holders in the Kyeamba Valley are outlined below.

*Soil is a significant carbon sink.* Sequestration of carbon in agricultural soils through appropriate management actions can be an important tool to mitigate climate change

*Increasing soil organic matter can improve agricultural productivity.* This can be achieved by improving soil structure, increasing nutrient cycling and encouraging diversity of soil organisms, which can lead to greater resilience to a more variable and changeable climate

*Farm productivity is closely linked to soil functions that depend on decomposition of organic matter.* When soil organisms decompose organic matter they make some of the nutrients available for plants. They also help bind soil particles together, which improves soil structure, allowing improved root growth and movement of air and water through the soil

*To increase the amount of carbon stored in soil, carbon-based inputs need to be greater than the losses.* The main losses of carbon from the soil are through organic matter decomposition by microorganisms, soil erosion, biomass burning, and product removal in food and fibre



## HEARTLANDS FARM FORESTRY FIELD DAY

Rob Kuiper, CMA Project Officer

On Saturday 24 March a group of interested landholders and landcarers gathered at Ian & Rayma Kemmis' property "Woomahrigong" to inspect 2 farm forestry sites planted in 2001 & 2003.

The 2 sites were established by funding from the *Heartlands* Initiative which had been developed by the CSIRO for targeting land use change in 4 focus catchments in Southern NSW and Northern Victoria to achieve more sustainable agricultural landscapes. This included options such as farm forestry, native vegetation and perennial pastures integrated within existing agricultural systems (1).

Through the Kyeamba Valley Landcare Group the funding was targeted to exploring the role farm forestry has in implementing positive land use change within the valley. A total of 12 farm forestry sites were established over a 3 year period (2001-2003) with a range of native species and provenances to determine which could perform well in the valley on a range of landscapes (eg ridgetop recharge and valley discharge sites) and soils.

Farm forestry has many farm and environmental benefits such as stock shade and shelter, improved biodiversity if established on less productive farming and grazing land, farm aesthetics, salinity control and improved soil & water quality. Direct financial returns are based on timber, seed collection and foliage but depends on species planted, growth rates, markets, distance to markets and price received for the products and quality of pruning and thinning regimes.

The 3 sites established in 2001 were thinned in August 2011 by a professional forestry contractor from Canberra/Goulburn. Ian & Rayma Kemmis' site planted in 2001 was one of those to be thinned.

The group that met on Saturday 24 March first inspected the site planted in 2003 which had not yet been thinned and pruned. A number of species were observed with excellent survival and growth rates. Two species of spotted gum (*Corymbia maculata* and *Corymbia variegata*) displayed the best growth rates and form, with sugar gum (*Eucalyptus cladocalyx*) and red iron bark (*E. tricarpa*) second best.

The second site to be inspected was the site planted in 2001. Once again survival and growth rates were excellent, reflecting the excellent ground preparation and weed control prior to planting. Growth rates were quite different between, for example, the ironbarks and southern mahogany species with the Saltgrow\* clones showing remarkable growth for the 10.5 years since planting. Pruning had also been carried out on most species on this site in 2004. Consequently the Saltgrow\* clones



especially do show good potential for timber production over the coming 10-15 years, depending on the ongoing management regimes implemented.

To date all the sites and trials established through the *Heartlands* Initiative have demonstrated that farm forestry does have potential as an alternate land use for the Kyeamba Valley when combining the farm and environmental benefits and financial return. From the range of species and provenances planted it is possible to select one that suits most landscapes and soil types found in the valley.

The field day concluded with a sausage sizzle with Ian and Rayma Kemmis thanked for hosting the day.



\***Saltgrow**. is a cloned cross between river redgum (*E.camaldulensis*) and flooded gum (*E.grandis*) or Tasmanian bluegum (*E.globulus*).

## The Australian Government's Carbon Farming Initiative

Nicole Maher and Edwina Hayes

thinkchange



The Carbon Farming Initiative (CFI) is an Australian Government scheme to enable land managers to earn income from sequestering carbon or reducing greenhouse gas emissions through changes to agricultural and land management practices.

In terms of the CFI, 'carbon' includes greenhouse gases such as nitrogen dioxide and methane. These are measured in terms of their effect on the environment, as carbon dioxide equivalents (CO<sub>2</sub>e). An eligible activity that results in the reduction of greenhouse gases by one tonne of CO<sub>2</sub>e will be eligible for one Australian Carbon Credit Unit (ACCU). An ACCU will be able to be sold on the carbon market.

Before an activity is eligible to generate ACCUs under the CFI, it requires an approved method for counting and verifying abatement - a methodology. Methodologies are assessed and recommended by the Domestic Offsets Integrity Committee (DOIC), and approved by the Minister. To date the only approved methodology likely to be of relevance to land managers in the Kyeamba Valley is for Environmental Plantings. Environmental Plantings involve the establishment and management of permanent native forests that increase the removal of CO<sub>2</sub> from the atmosphere. More detail on this is available on the website, below.

There are a range of other potential activities which land managers could implement to either sequester carbon or reduce/avoid emissions, however to date there are no approved methodologies for these activities to enable land managers to generate ACCUs for them through the CFI. Government organisations, industry groups and private enterprises are all working on developing methodologies for such activities, including fertiliser use, manure management and biochar production/use.

More information on the CFI, including updates on new methodologies which are open for comment or approved, are available on the CFI website: [www.climatechange.gov.au/cfi](http://www.climatechange.gov.au/cfi).

**If you have any questions, you can also contact Nicole Maher, Regional Landcare Facilitator - [nmaher@murrumbidgeelandcare.asn.au](mailto:nmaher@murrumbidgeelandcare.asn.au), or 0487 953 776.**

### KEY FACTS ABOUT SOIL CARBON Continued ...

*There are different types of organic matter in soil, and some decompose more quickly than others.* Organic matter in soil comprises partially decomposed organic residues, microscopic organisms, well-decomposed humus, and burnt residues such as charcoal. Each of these serves diverse soil functions, so it is important to have all the components to sustain soil functions

*The mass and forms of carbon in soil depend on soil type, climate, vegetation and land management.* For example, clay particles are more effective than sand and silt particles at protecting soil organic matter from decomposition; organic matter decomposes more quickly in warm humid environments than hot and dry environments; and legume residues break down more quickly than low nitrogen materials such as cereal stubble

*Some land management options can increase the amount of organic carbon in soil.* Such practices include maintaining groundcover, and improving plant production through nutrient management

*The mass of carbon in soil is closely related to the amount of nitrogen, phosphorus and sulphur in soil.* This is because the transformation of organic residues into humus by soil organisms requires the presence of all of these elements, either within the organic residues or as additions to the soil

*Many Australian agricultural soils have the potential to store more carbon.* This is due to the fact that they have much less soil organic matter today than in their native vegetation state. While achieving this potential may be difficult, the best option is to manage land to maximise biomass production and biomass return in the most profitable and sustainable manner.

The complete Soil Carbon Fact Sheet can be downloaded from the NSW DPI website at: [www.dpi.nsw.gov.au/agriculture/resources/soils/soil-carbon/key-messages](http://www.dpi.nsw.gov.au/agriculture/resources/soils/soil-carbon/key-messages). Thank you very much to Susan Orgill (Soil Carbon Research Officer, NSW DPI) for her work in putting this helpful Fact Sheet together, and for allowing us to reproduce some of the key findings in our newsletter.

