

Newsletter

Number 47

December 2011



Field walk, Stipa Conference Nov 2011

www.stipa.com.au



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STIPA is not an acronym. The association was named after the *Stipa* genus of grasses, now *Austrostipa*. One of the *Stipas* is commonly known as spear grass. At its inception in 1997, the association aimed to spearhead a change in attitude to native grasses. As that change is occurring, Stipa continues to promote the use of native grasses to achieve profit from a healthy landscape.

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From the Chair

Annabel Walsh

Many of our members are continuing to build on years of innovation, tweaking their management practices as new science and innovation unfolds through our knowledge sharing and networking.

This is a very important aspect of Stipa, our recent conference in Holbrook highlighted how effective the Stipa organization is in creating a powerful forum for friendly constructive debate and innovation. The high degree of scientific research and practical experience held in the room by our members and participants greatly enhanced the groups contribution in moulding systems to address the cultural agricultural changes needed to meet the food security, climate and social challengers we face over the coming years.

The organization would like to thank Graeme Hand for heading up the conference committee and for guiding us through the conference proceedings as MC. Also many thanks to Christine McRae and Hilary Crawford as the forward scouts to Holbrook, establishing contact with local



organizations and suitable venues to conduct our sessions and evening events. Debbie Milne has taken on the secretarial work and did a fabulous job pulling the event together.

As an organization we must not lose sight of our original focus on promoting native grasses in grazing and cropping systems by conducting plant Identification workshops and explaining the management principles required to increase the percentage of native grasses in our farming systems. With the announcement by state and federal governments of a, clean energy future program and the NSW DPI \$1.7 billion carbon farming initiative, this will increase greatly the focus on native perennials in farm productive systems and Stipa is well positioned to make a

valuable contribution in designing and delivering these programs.

The role that Stipa plays will have to be very carefully thought through, the experience we have in our organization through our trainers and farmers, with years of innovative farming practices and most importantly, the wonderful collaborative sharing approach we have with science and practitioners can contribute greatly to the program. These qualities held within this loosely coupled organization are recognized and we must never lose sight of the importance of people, family, production and functioning landscape.

So, it will be with great interest to see how Stipa is positioned in 12 months time as the carbon farming initiatives are rolled out. There is a strong emphasis on planting trees and a very strong group lobbying for this type of carbon off set. We will be advocating for a cultural change in agricultural grazing and cropping practices. There is a massive amount of work in delivering the correct messages to enable farmers to get on with these principles in their own way on their own plot of land and develop an understanding of how their management decisions can effect their carbon storage and

landscape ecological function. The collaboration with science (ecological and financial) to establish creditable audit able measurements will be critical to providing the confidence needed to underpin this carbon farming strategy.

We would like to think the Stipa organization is well positioned to step up to the mark and be an important player in the design and delivery of this initiative to address the social and environmental needs for many years to come. One of the most exciting aspects of the program is the recognition of our wonderful native plants. They evolved here and have the intuition and technical mechanisms to adjust and adapt to our boom and bust climate. They know all about climate change it is not a new phenomena for them.

With Christmas approaching like a Japanese high speed train I would like to wish all our members a very happy Christmas and to enjoy the festive season to the fullest with family and friends, it is a time to rest, reflect and stoke up the imagination for a constructive and very busy 2012.

Best Wishes, Annabel Walsh

Chairman Stipa

From the CEO

Graeme Hand

In this report:

- details on the Holbrook conference
- future projects

Holbrook Conference

The 7th National Native Grasslands Conference, Holbrook NSW 9-10th November 2011 went very well with feedback and ongoing interest in speakers, projects and Stipa. The theme of the conference was Managing Native Grasslands for Soil and Animal Health. The presentations and notes are currently being loaded onto the Stipa website.

The messages from all the speakers linked the importance of managing for highly diverse, highly structured and functioning native grasslands as critical for producing healthy soils, healthy landscapes, healthy people and healthy profits.

The Friday workshop with Fred Provenza was also well attended with Fred expanding on the work



Photo By Lucy Hand

he has been doing with animals and diets. Further information on this work is available at,

<http://extension.usu.edu/behave/>

Future Projects

The Australian Government has recently announced the grant guidelines for the Carbon Farming Futures – Action on the Ground Program. Stipa is currently in the process of putting together partnerships to include in an application to demonstrate and trial some of the Action on the Ground priorities

Priorities for Action on the Ground are:

Reduced methane emissions

Reduced nitrous oxide emissions

Increasing carbon stored in soil

Reduce greenhouse gas emission and/or store carbon in soil through the application of innovative practices and/or abatement technologies

The developing project is to demonstrate, in a small trial area, that practices that increase native grassland function and structure also increase soil carbon, reduce methane emissions and reduce nitrous oxide emissions. This will require two small areas with one

managed for increased function and perennial diversity and one maintained with current management.

Please contact me now if you would like to be part of this project.

Wishing everyone a safe and very Merry Christmas and an exciting and prosperous New Year.

Graeme Hand



Dr Fred Provenza Workshop, Holbrook Nov 2011

Plant Conservation in Cemeteries.

Christine McRae

Small rural village cemeteries have been an interest of mine for some years now because they provide an insight into what the local vegetation was like before European settlement. Historical land tenure is often indicative of disturbance history, and consequently, of current conditions. Various land tenures such as tips, railway easements, some T.S.R.'s and cemeteries have long been spared intensive agricultural activities. Therefore we can be reasonably confident in 'Reading the Landscape' to find remnant examples of pre-European vegetation within lands under these various tenures. Cemeteries are unique in the security of their tenure. A sense of reverence prevents inappropriate activities such as grazing and firewood collection. Security for the other types of land tenure is subject to the vagaries of various levels of government.

Rural village cemeteries are usually large in proportion to the area required for burials. A trend towards dwindling populations in these outlying villages is detrimental to the communities' infrastructure such as schools, village halls and churches. On the other hand the dwindling human population is a bonus for the native vegetation as there are fewer burials and the grounds may not be as conscientiously maintained.

A fine example of this is Bookham Cemetery, located just off the Hume Highway about 72k NE of Gundagai. This cemetery was not carefully maintained, and obviously hadn't been mown for many months. The resulting vegetation was absolutely stunning in its variety and quality. Very few weeds were present, and those mainly along one of the boundaries. I don't think I have seen so many blue flowering plants in the one location before. Of course the usual suspects such as *Burchardia umbellata*, *Bulbine bulbosa*, *Microseris lanceo-*



Brunonia australis (Blue Pincushion)

Photo courtesy Christine McRae

lata, *Elymus scaber*, *Themeda australis* were there in abundance. What caught my eye were a *Wahlenbergia* species with huge flowers, and in particular *Brunonia australis* and *Cheiranthra cyanea*, two species I had only seen before in books.

After giving a presentation at the Biodiversity Conference at Dubbo in October this year I was approached by several delegates expressing their interest in putting together a database of cemeteries with good quality remnant native vegetation. The plan is to visit as many of these cemeteries as we can and put together species lists with some photos accompanying. Eventually it is hoped to be able to provide a website where interested people can view which cemeteries are worth visiting. So if you know of any small rural village cemeteries with good quality remnant vegetation could you please **contact me** by email on cmcrae@activ8.net.au. We hope to one day be able to influence the N.S.W. Government to bring their remnant vegetation management within cemeteries in line with that of the Victorian Government, which has specific guidelines for maintenance teams.

The Wisdom Body: Nutrition, Health, and Nature's Pharmacopeia

Dr Fred Provenza

Stipa 7th National Conference, Holbrook NSW



The wisdom body refers to the ability of creatures to grow, reproduce, and survive on foods they've become accustomed to eating in the social and biophysical environments where they've become adapted to living.

Of necessity, the wisdom body is preserved in all life. Nobody has to tell bacteria, insects, wild birds, fishes, or mammals how to eat, develop, and replicate. The body accomplishes these feats by integrating cells and organs with the palate to continually alter liking for food as a function of need. These relationships -- mediated by

nerves, neurotransmitters, and hormones -- are the basis for the nutritional wisdom of the body manifest through the ability to meet needs for energy, protein, amino acids, various minerals, and to self-medicate.

These expressed behaviors occur within the context of ongoing adaptation to environments where creatures are conceived, born, and live over many generations. With humans, and the animals in our care, the wisdom body is facilitated or constrained by the alternatives on offer and the choices individuals learn to make.

People are healthy when they learn to eat a variety of whole foods with diverse assortments of primary (nutrients) and secondary (phytochemicals) compounds, many of the latter with health-promoting and medicinal properties; they are obese and suffer many diet-related diseases when they learn to eat foods high in re-

finer carbohydrates, starches, and sugars. Likewise, wild and domesticated animals are healthy when they learn to eat diverse assortments of plants containing primary and secondary compounds; they become sick when they are confined and fed highly processed diets low in phytochemicals their bodies require for health.

All creatures are disadvantaged when they sever the transgenerational links that enabled them to become locally adapted -- anatomically, physiologically, and behaviorally -- to landscapes they've inhabited. When creatures including humans then perform poorly with regard to nutrition, health, and reproduction, we contend they cannot select diets to meet their needs. In so asserting, we do not consider that the choices they've learned to make are inappropriate for their bodies to behave wisely.

Those choices have caused us to become dependent on fertilizers, herbicides, and pesticides to grow and protect plants in monocultures; on antibiotics and anthelmintics to maintain the

health of livestock; and on nutrition supplements, pharmaceuticals, and modern medicine to maintain the health of people. At great cost to the health of soil, plants, herbivores, and people, these *technological fixes* treat *symptoms* of food-related ailments -- obesity, diabetes, heart disease, and cancer -- indicative of sick societies.

While we go to great lengths to study molecular biology, anatomy, physiology, biochemistry, pharmacology etc, we scarcely reflect on the *wisdom body as the integration and manifestation of all* these processes. In so doing, we fail to appreciate that the body was the first molecular biologist, geneticist, anatomist, physiologist, and, yes, the first nutritionist, pharmacist, and physician.

Given a chance, rats can rectify sodium - calcium - magnesium (tetany), and amino acid deficiencies by selecting an appropriate diet.



Rats rendered diabetic voluntarily select diets devoid of carbohydrates, consuming only protein and fat.

Think about the small things when forming your big picture; recent experiences from Australian research

Dr Dean Revell, CSIRO

Stipa 7th National Conference, Holbrook NSW

Plants contain macronutrients, micro-nutrients and extra-nutrients. You will know about the first two. Macronutrients are things like protein and carbohydrates (fibre or starch). Micronutrients include vitamins and minerals. But remember that micronutrients are so called not because they are any less important, but because only small amounts are needed.

A deficiency in a trace element (mineral) can have profound effects on animal health and performance – that's why there is a market for mineral licks.

The third category, which I've called 'extra-nutrients' are secondary plant compounds. In some ways it is unfortunate they've been called this, as secondary implies is lesser importance. Most people think of

secondary compounds as anti-nutritional, but this is a reflection of the consequences at high concentrations. At low doses they can have effects that have been described as 'extra-nutritional', or 'bioactive' or 'medicinal'. **Many of the extra-nutritional benefits occur via effects on the microbial ecosystem in the foregut of ruminants, and possibly by helping to control gastro-intestinal parasites.**

Of topical interest at present is methane production from ruminants. A goal for modern production systems is to sequester carbon *and* reduce methane emissions from livestock

Screening hundreds of Australian plants (mostly shrubs) over the past 6 years has revealed enormous diversity

in nutritional and extra-nutritional properties. We have seen the potential to use them positively to affect rumen (gut) function and parasite development. Adding alternative plants into the mixture that grazing livestock can access should be viewed as analogous to adding a fuel additive into a racing car. The additive improves performance and economy, but is

Why secondary compounds can be so influential

1. They act as readily recognised cues for nutritional traits or toxins

Provide a direct link to memory

2. They influence rumen fermentation patterns

The gut 'drives' the brain

3. They influence gastrointestinal 'health'

not a replacement for the fuel. Thus, the inclusion of forage shrubs to a grass-land pasture system can be seen as way to provide a performance-enhancing additive.

The best way to ensure grazing livestock access the full suite of macronutrients, micronutrients and extra-nutrients is to **provide plant diversity and provide animals with the opportunity to develop experiences** with all the plants.

Not all plants have to be consumed in large amounts to make a positive contribution to a grazing system. When given the opportunity, animals usually select a large number of plant species in their diet even though the bulk may be provided by a small number of species.

Recent experiments have shown the **power of animal selectivity**, with feeds ranging from hays, to annual pastures, to perennial shrubs. Our attempts at predicting animal preferences are not always very impressive, so be careful with second guessing what your animals will do. And whilst animal preferences can give us some clues on that to include in the smorgasbord, remember that preferences can change. For example, we have shown that animals will adapt from eating annual pasture and shrubs in a ratio of 80:20, to a mix of 50:50 as they gain experience of the mixture on offer.

Feeding saltbush or high-salt during pregnancy

Gene expression

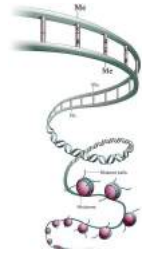
- 30% increase in DNA methylation
- 25% decrease in expression of the gene for renin

Hormones involved in salt & water balance

- 20% decrease in plasma renin
- 10% increase in the high-salt offspring

Kidney size and structure

- 15% decrease in the number of glomerular
- 15% increase in the size the glomerular & the kidney



Serina Digby, Megan Chadwick, Sharon Toy, Dean Revell

Early-life experiences are important.

For example, feeding ewes saltbush during pregnancy affects their offspring (as lambs and as weaners) in ways ranging from kidney structure, hormone levels, gene expression, salt excretion and water intake, through to diet selection and live weight gain. **Pre-natal programming provides a way for animal to physiological adapt to the world that may encounter.** But animals are not locked into dealing with the world by events they experience pre-natally. **Post-natal experiences provide behavioural adaptation**, ultimately influencing how animals perform.

Animals change where they go and what they eat depending on what other animals are doing. We've used this knowledge to **influence grazing behaviour of cattle that were re-located from a southern pastoral property to a northern agricultural property** in Western Australia. Other factors influence animal movement, including ambient temperature.

Providing niche environments for animals can have large effects on the efficiency with which they convert feed to weight gain. Providing the right thermal environment should be undertaken with the same attention as providing the right nutritional environment.

Shade and shelter are often the forgotten management tools. But they can have significant effects, such as reducing the risks of animal deaths at lambing or after shearing, but shade and shelter can also reduce the maintenance energy requirements of livestock – this benefit is rarely recognised, much like a sub-clinical nutrient deficiency.

And remember that the most consistent benefit of shelter on animal productivity is likely to via improved pasture production through conservation of soil moisture.

So we know that plants provide macronutrients, micronutrients and extra-nutrients, and experienced animals can capitalise on this. But of course plants do more than provide food for livestock. They should be also managed for soil health, carbon sequestration, reservoirs for desirable invertebrates (and managed to avoid harboring undesirable invertebrates and vertebrates), water use, wind erosion, and wildlife corridors.

The combination of plants in a farm system can be crucial in providing resilience to one of the greatest challenges facing agriculture: an unpredictable and variable climate.

Well positioned edible shelter

- Adding resilience to the feedbase
- Capturing and retaining moisture
- Improved pasture production
- Comfortable and efficient animals
- Reduced risk of sudden animal losses



*Bruce Maynard's farm,
Narromine, Central West NSW*

Messages

Dr Dean Revell CSIRO

- Variability is not only a fact of life – in fact life *is* variability
- Macronutrients – micronutrients – trace elements – secondary compounds: *all are important in their right dose*
 - Plant traits vary considerably (don't be fooled by taxonomy, animals aren't)
 - Animals eating only a small amount of particular plant may still be getting value from it
- Animals are individuals
 - Variability in supply helps meet the full range of demands
- Behavioural adaptation influences where animals go and what animals eat
- Plants do more than provide nutrients

Winona Native Seeds FOR SALE

- Warrego seed—*Paspalidium distans*(graded)
- Armgrass Millet—*Brachiaria milliiformis*(graded)
 - Cotton Panic—*Digitaria brownii*
 - Red Grass—*Bothriochloa macra*

Contact: Colin Seis on 02 6375 9256 or colin@winona.net.au

Soils Alive!

**Declan McDonald, Farm Services Victoria
Stipa 7th National Conference, Holbrook NSW**

Soil organisms contribute a wide range of essential services to the sustainable function of all ecosystems, by acting as the primary driving agents of nutrient cycling, regulating the dynamics of soil organic matter, soil carbon sequestration and greenhouse gas emission; modifying soil physical structure and water regimes, enhancing the amount and efficiency of nutrient acquisition by the vegetation, and enhancing plant health. These services are not only essential to the functioning of natural ecosystems but constitute an important resource for the sustainable management of agricultural systems (United Nations Environment Program, 2001).

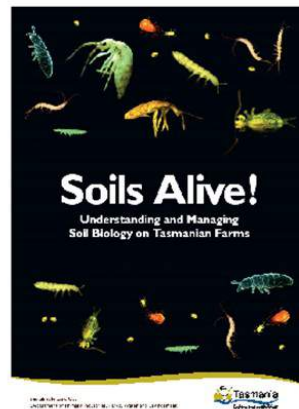
There is growing interest in soil health. A

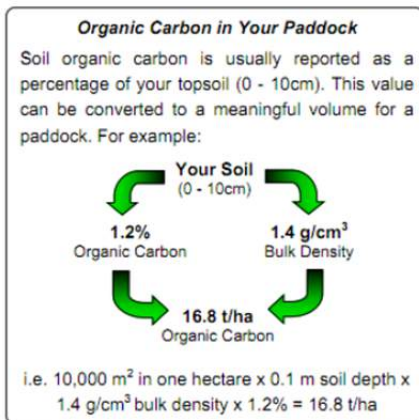
number of research projects have sought to explore this concept as awareness of the importance of soil biology to the functioning of soils as ecosystems has grown. The Tasmanian project *Soil Ecosystem Health Measures: An Interpretive Guide for Land Managers* was developed in response to a need to understand the biological make-up of soils, to establish some benchmarking data with regard to optimum populations of various micro- and macro-organisms, and to provide landholders with practical advice to better manage this resource. This book is the principal output from this project.

Carried out over 10 months in 2009, the project sampled a small range of land

Soils Alive – understanding and managing soil biology

- Caring for our Country
- Need for more options to understand biology
- Limited scope of project – Ferrosols
- Huge quantity of data
- Very positive response to publication
- Need to integrate findings into improved understanding of soil health





If the BD of the soil is 1.2 g/cm^3 then: $1.2\% \text{ SOC} \times 1.2 \text{ g/cm}^3 \text{ BD} = 14.4 \text{ t/ha}$

If the BD of the soil is 1.5 g/cm^3 then: $1.2\% \text{ SOC} \times 1.5 \text{ g/cm}^3 \text{ BD} = 18 \text{ t/ha}$

From ORGANIC CARBON, Pluske, Murphy & Sheppard http://www.namoi.cma.nsw.gov.au/3sh_organic_carbon.pdf

DEPARTMENT OF
PRIMARY INDUSTRIES | **farm** services

uses on the rich red soils of northern Tasmania. The project aimed to provide landholders with a useful guide to:

- understand the importance of soil biology to sustainable agriculture;
- improve awareness of the range and number of soil organisms on farms;
- help identify the range of soil organisms on individual farms; and
- provide guidance with regard to management practices that support healthy soil ecosystem function.

Research has shown the critical importance of soil organic carbon to soil health. Soil organic carbon is the principal component of soil organic matter, which itself is the broken-down remains of plant and

animal life. So what is the connection between soil carbon, soil health and soil biology? The health of a soil is a product of its biological, physical and chemical components and all need to be optimised to maximise the health of a soil.

The challenge for modern farming is to understand the functions of the 'micro herds' in the soil and how to capture the hard work of these creatures to improve the health and sustainability of our farms.

When soil is understood as an ecosystem – a natural unit consisting of all plants, animals and micro-organisms in an area functioning together with all of the physical and chemical factors of the environment – our management of it changes. It becomes something to be worked with, rather than just worked.

Here's a Very SPECIAL OFFER For You!

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3 Days = 6 DVDS = Over 13 Hours =
9 Speakers

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cattle properties**

Are you curious to extend what you are doing?

*Have you heard about STIPA Native Grasses
Association?*

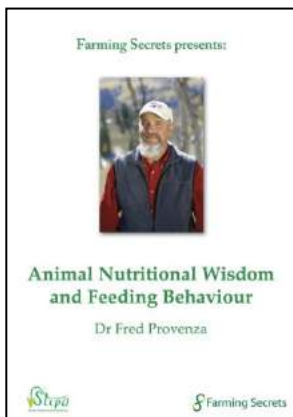
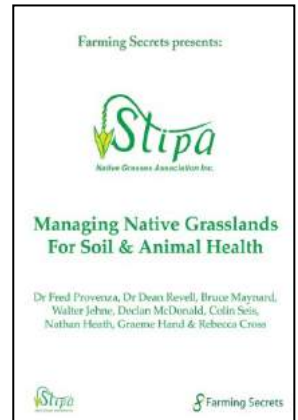
*What about Pasture Cropping?
Holistic Management?*

*Wisdom of Animals in Feeding and Behaviour?
Stress Free Animal Handling?*

*The Role of Animals in Pasture Biodiversity?
Experiences of Innovative Farmers?*

*The value of 100s of Australian plants for macro,
micro and extra-nutrients?*

Building Carbon with Ease



What was your answer? Why do we ask? Because these are all part of the great topics presented at this year's Stipa conference. The Stipa presentations were at once stimulating and provocative with the information which in most cases resulted from 1000's of hours of research, much of it mind boggling and far too much to retain in the short time provided.

Stipa National Conference 2011: - Managing Native Grasslands for Soil and Animal Health

\$97 (3 DVDs)

Day 1 & 2 includes presentations from:

Dr. Fred Provenza, Dr Dean Revell, Bruce Maynard, Walter Jehne, Declan McDonald, Colin Seis, Nathan Heath, Graeme Hand and Rebecca Cross and a farm talk from Anna Coughlan. All brilliant!

For instance **Dr. Fred Provenza** showed through studies with shepherds that sheep follow a daily diet if given the choice, **Dr Dean Revell** showed how animals can sense nutrient rich food and **Bruce Maynard** gave examples of grazing strategies to even train animals to eat what we consider weeds. Far too much for me to describe here! It is all captured and presented in this DVD set - 2 days of top research and information.

RRP **\$97**

Animal Nutritional Wisdom and Feeding Behaviour

— **Dr. Fred Provenza**

\$97 (3 DVDs) Includes

The Wisdom Body

Day 3 as well as Fred's 2 presentations at the Stipa Conference.

Fred is a leading authority on animal feeding behaviour and management and has co-authored over 230 papers. For 27 years Fred has been researching and teaching. He provides a fascinating insight into the world of animal and human nutrition. Funny too!

We came away in awe of the members we spoke to and of the work being done which is groundbreaking and of interest to all. For more details or to join Stipa visit: www.stipa.com.au

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A. densiflora

Is native grassland diversity important?

Graeme Hand

We have always believed that native grassland diversity was important but recent articles and some of the conference presentations have clarified the importance of diversity in enabling native grassland managers to produce stable increasing profits, lowering costs while regenerating land and reducing workload. This grassland diversity also ensures that soil carbon is captured and persists. It is exciting that as new research and knowledge comes out that it only strengthens Stipa's position of developing and promoting highly diverse native grasslands

Key Points:

- Diversity is critical for stability of profits, land and animal health, ecosystem health, biological carbon capture and storage and low stress management of seasons.
- Diversity is required at many levels:
 - Age structure of plants
 - Growing season
 - Perennials & annuals
 - Species etc
- Diversity is driven by increasing grassland function and structure.
- Grassland function and structure can be produced, at a

profit, by management that regenerates native grasslands.

Animal performance & health

Highly diverse native grasslands push our scientific understanding of what generates animal health and production. For example the Harvey's (near Geurie, NSW) recently held a field day where plant tests for energy and protein suggested that steers would be losing weight when in reality they were gaining weight. This was on a highly diverse native pasture with greater than 100 species (Harvey pers. comm., 2011).

Research by Dr. Fred Provenza and

Dr Dean Revell who both presented at the conference have shown that there is no such thing as a standard animal and that a very wide range of macronutrients, micronutrients and extra-nutrients (secondary compounds) is required to allow for this wide variation in animals. (Stipa conference 2011).

As Dean clearly explained at the Holbrook conference “the best way to ensure grazing livestock access the full suite of macronutrients, micronutrients and extra-nutrients is to **provide plant diversity and provide animals with the opportunity to develop experiences** with all the plants”.



Bookham Cemetery, photo courtesy Christine McRae

Profit

When I visit Stipa member properties overwhelmingly there is a move to low cost production. For example Anna Coughlan's paddock presentation for the conference explained how they achieved a cost of production of less than \$0.40/kg beef live weight (earnings before interest and tax plus drawings and no capital repayments). This cost of production produces profits at most market prices.

Soil carbon capture and persistence

A recent article in Nature, Persistence of soil organic matter as an ecosystem property (Schmidt et al, 2011) has questioned our understanding of how carbon persists in soils. The his-

torical view was that as carbon became more complex (humic macromolecules) that it was protected from breakdown by soil life. The emerging understanding is that this is not the case but that it is the variation in soil structure, moisture, air spaces, etc. that allows simple carbon (simple biomolecules) to persist.

The importance of this understanding is that how best to get persistent carbon (non-labile) into the soil may need rethinking. For example material like biochar and other fire derived organic matter has been shown not to persist in certain circumstances possibly because of lack of physical protection and interaction with soil minerals. (Schmidt et al, 2011).

As far as I can understand this paper supports the idea that management



Field walk, National Conference , Holbrook Nov 2011



Bookham cemetery, photo courtesy Christine McRae

that regenerates native grasslands will also increase soil carbon and its persistence.

“....increasing long-lived and deep rooted perennials with lots of specific mycorrhizal associations etc as being the best strategy...” (Ampt pers. Comm.,2011)

The abstract and clarifying diagrams for the article can be found at the web address below.

<http://www.nature.com/nature/journal/v478/n7367/full/nature10386.html>

Diversity

Regenerating native grasslands requires deep understanding of native grassland diversity. The best explanation that Col Seis and I have been able to come up with is that we need

to produce conditions that increase function and structure:

Function

- perennials
- ground cover
- decomposing/ composting
- litter

Structure

- varying heights
- density
- age groups
- species
- perennials
- annuals
- complexity

How to create these outcomes is more important than any recipe.

Please contact me if you have any questions. References are available.

Letter to the Editor:

I'm a keen supporter of the use of native grasses and other native plants in agricultural systems, especially in low rainfall areas where there are few perennial options for pastures. I'm not blind however to the many difficulties that can be associated with incorporation of native species on farms.

Recently I came across a problem that was new to me, caused by a native grass. On a farm in the Northern Agricultural Region of WA many young lambs had "bell boots" around their lower legs, resembling birds' nests, and caused by accumulation of masses of spikelets of *Aristida contorta* (I believe). The wet spring had resulted in massive growth of native grasses on this farm. The lambs af-



ected were mostly Merinos, but some Dorpers were also affected. Very few ewes were affected. These masses were light but obviously inhibited movement of young lambs, making it difficult to keep up with their mothers or walk long distances to water. I expect they would have been very uncomfortable, like having lots of pins constantly pricking the skin.

A lamb which had died and which had grass seed masses on its legs, had many small abscesses throughout its

lungs due to *Staphylococcus aureus*. This bacterial infection may have gained entry to the blood stream from the skin via numerous tiny stabs by the seeds.

I've had a love-hate interest in *A. contorta*. On my own small farm it appears to be totally unpalatable to my sheep and in spring the spikelets stick in fleeces



Reply from the Editor:

and my socks. Its seeds only just penetrate skin (although very annoying), so I don't think it's a problem in sheep skins or carcasses, compared with, for example, brome, barley grass and stork's bill (*Erodium* sp.). In spring, when seeding, its mauve-brown appearance is admittedly very attractive.



For years I have wished it would disappear from my place but it has been a great survivor through our tough years. One application of superphosphate had no effect nor did an accidental fire in January a few years ago.

Regards, Roy Butler

A R (Roy) Butler,
District Veterinary Officer
Dryland Research Institute
Dept of Agriculture and Food, WA
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Dear Roy,

Thanks for your question and agree with the love hate relationship with some of the lower successional perennial native grasses. Having too many of these grasses tends to lower animal performance and create seed issues. As far as I know, long term low cost control of this problem can only be achieved by promoting higher successional grasses. During farm visits I look for areas that have better, higher successional grasses (softer seeds, more palatable, usually first to drop out of the paddocks when over used). Then if possible and the management is known try to reproduce this management over greater areas of the farm. If there are no areas then I suggest a trial to determine why the current management is favouring these species (overuse?).

Newsletter articles that may help – Regenerating Native Grasses, June 2010, Developing Enclosures, December 2010 and Never eat the weed and always let it seed, August 2011.

Regards,

Graeme

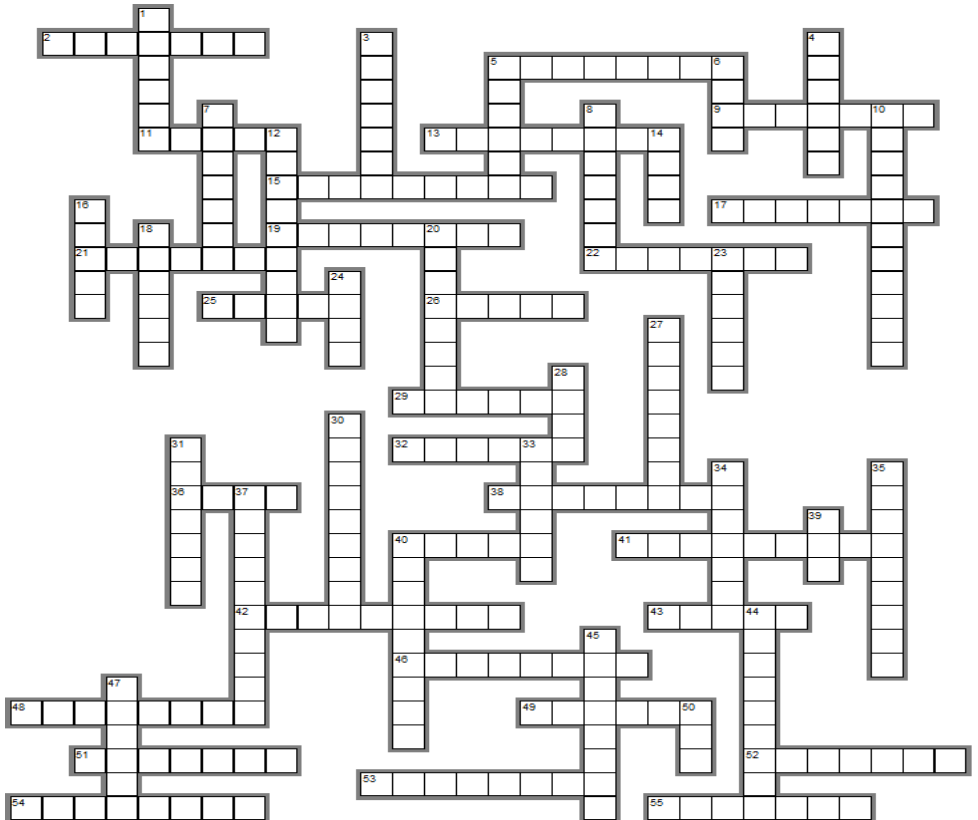
Crossword**Christine McRae****Across**

- 2 Burr Daisy Genus
- 5 The period of time when pollen is being shed
- 9 *Lactuca serriola* - Prickly _____
- 11 Formerly *Eulalia fulva*, Silky Browntop, *Eulalia* describes the golden brown colour of the spikelets
- 13 An Australian grass genus with spirally arranged leaves
- 15 *Dichelachne* species have _____ awns
- 17 Cup Like
- 19 The central axis of a grass spikelet
- 21 These regulate gaseous exchange in the leaf
- 22 *Panicum* _____ has distinctive glandular hairs along the leaf margins
- 25 The leaves of the *Sorghum* genus is characterized by a prominent and often _____ mid-rib
- 26 The Greek word for beard
- 29 A woody grass
- 32 *Elymus* _____ has a flag leaf that projects out at a right angle below the inflorescence
- 36 *Oryza sativa*
- 38 Many *Brachiaria* species now belong to this genus
- 40 *Digitaria brownii*, Cotton _____
- 41 Wild sage, *Salvia verbenaca*, belongs to which family
- 42 The portion of a stem between the nodes
- 43 The dock genus
- 46 The mat-ruch genus
- 48 Having a bloom on the surface
- 49 *Trifolium subterraneum*, Subterranean clover is a cool season _____
- 51 Khaki-weed - *Alternanthera* _____
- 52 CH₄
- 53 A stamen consists of an anther and a _____
- 54 Common name for the *Maireana* genus
- 55 Without a stalk

Down

1. _____ *bonariensis*, Fleabane
3. Collective term for the petals of a flower
4. Common name for *Poa annua*, _____ grass
5. The wattle genus
6. halophytes are tolerant of _____
7. The spinifex genus
8. CO₂ - Carbon _____
10. Stinking Lovegrass, *Eragrostis* _____
12. *Themeda* _____ has long hairs at the leaf/sheath junction
14. Myrmecochory - seed dispersed by _____
16. The leaves of flatweed, *Hypochaeris radicata*, occur in a _____ rosette

18. The ryegrass genus
20. Curly Mitchell Grass-Astrebla _____
23. Verbena bonariensis, Purpletop, has stems which are _____ in cross section
24. Cleistogamous flowers remain closed and are usually _____ pollinated
27. Venation in grasses is _____
28. flowers in the Brassicaceae family have _____ petals
30. An older name for Poaceae, not in common usage
31. The barley genus
33. This project investigated the use of native shrubs as forage plants
34. The latin name for millet
35. Male and female flowers on separate plants
37. Growing in tufts
39. Swainsona, Glycine, Lotus and Medicago are all genera belonging to the ___ family
40. The timing of growth and reproduction within a year
44. the outermost layer of cells of a plant organ
45. In some areas this native grass has developed glyphosate resistance - Chloris _____
47. Austroanthonia species have a _____ of hairs
50. Short term pasture



Membership renewals

Please note

Stipa is changing the way they renew memberships. We will endeavour to mail out your renewal tax invoice one month prior to your expiry date. If you would like to renew please mail us a cheque or EFT your membership.

Please remember to make reference on all EFTs and return cheques your **INVOICE NUMBER** (found on the top of your Stipa tax invoice).

Attention all members

To ensure that you continue to receive Stipa newsletters and updates, please remember to advise us of any change of address.

Also if you wish to receive emails about forthcoming events and other matters of interest, it is important that we have your correct email address.

Contact Stipa

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Or

Administration

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Stipa promotes and proves the profitable management of native grasses by motivated people in healthy landscapes.

(please keep a copy for your records) **TAX INVOICE**

MEMBERSHIP APPLICATION/RENEWAL

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Annual membership (please select one – note that subscriptions include GST):

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Payment options (please select one):

Cheque/money order (to Stipa Native Grasses Association Inc.) for \$..... is enclosed.

Direct deposit Deposit of \$..... made on (date).
Stipa Native Grasses Association account at Westpac BSB: 082 647 Account: 108 924
Please include your surname in the reference field to help us match your payment to your membership.

Send your completed membership form (with your payment, if applicable) to:
Stipa Native Grasses Association, 15D Carroona Lane, Branxholme Vic 3302

For more information contact: Stipa CEO Groomed Hand on (0419) 502 155, fax (03) 5570 6370 or email groomedhand@stipa.org.au

Stipa Native Grasses Association aims to:

- * promote native grasses pasture and for conservation
- * educate the community about native grasses
- * document pasture systems using native grass
- * distribute information to agencies and landholders
- * network with other groups with complementary activities.