Newsletter

Number 55

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Native Grasses Association Inc

Tour of the Wild Ass Sanctuary, Gujarat state of India

Inside: International Grasslands Congress 2015, India

Update on spring spelling

Perennial Grass—foundation of sustainable agriculture

www.stipa.com.au

CONTENTS

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

Welcome to the first of our Stipa newsletters for 2016. The Stipa executive have been working hard to engage with government and agencies to promote the values of our Stipa farming practices. This is important for several reasons one, to attract funding for our activities and secondly to try and assist with the vital discussions that are needed to design the farming practices that will take us towards 2050.

2050 might sound a long way off but with the speed of technology over the past 10 years, when one projects an escalation of this in the next 20 years one realised that farming is going to look very different even by 2035. We need to ask the question, what will these differences look like? What technologies need nurturing to assist our farmers to feed our nation's people healthy food that will arrest many of the chronic disease plaguing humanity, while regenerating our soil and mitigating global warming.

We need to ask the question what are the basic principles that will underpin our farming systems. We can have all the technology in the world but if we cannot answer this question we will be flying blind.

Stipa farmers through planned adaptive grazing and pasture cropping practices using native perennials have developed methods of production that are can contribute greatly to this debate and help with the answers to these questions.

Graeme Hand has had wonderful feedback from his Spring Spelling article in our last newsletter, it has create valuable debate and it is through this form of interaction that we will further the innovation so needed to perpetuate our Stipa farmers successes in increasing profit, decreasing inputs, production of quality produce while regenerating the landscape.

So I wish everyone a successful year and encourage active participation in our workshops and conferences.

From the CEO

Graeme Hand

Photo By Lucy Hand

In this report:

- International Grasslands Congress, IGC-2015
- Update - Spring spelling

International Grasslands Congress, IGC-2015 New Delhi

In November 2015 Annabel, Ariungerel and I attended this conference. The keynote presentation is included in this newsletter as well as a summary of the grassland tours. It was clear that Stipa needs to be providing solutions, from a farmer context, to grassland problems worldwide. While acknowledging that the majority of Australian grassland management is the same, if not worse, the degradation of these once beautiful grasslands was pretty distressing especially when thinking about the future of Indian children. The thinking that degraded grasslands can be restored by adding woody plants has created a disaster with the aerial seeding of mesquite (Prosopis juliflora). I have described this decision as a crime against humanity. Degraded grasslands can only be restored by regenerating the grasslands. We may need to become more vocal against this school of thought.

We are investigating ways of funding Stipa members to these conferences and tours as the time and cost to personally fund is significant

Update Spring spelling

This article has generated a lot of discussion, comments and questions. In the update, I have attempted to describe how a grazing business may be able to always make a profit by ensuring that we never run out of grass. It is clear that different triggers and forecast will be required in different areas of Australia but the principles of enterprise design and policies may be of help

Let me know your thoughts on these issues or anything else of interest.

Graeme

International Grasslands Congress IGC-2015, New Delhi

Pre conference Gujarat Grassland Tour

The tour of the Wild Ass Sanctuary and Banni Grasslands was a great experience. The areas we travelled through were very rural with small farms being managed for fodder, vegetables and cotton. High stocking rates (>3 SAU/ha - 30 DSE/ha) and lack of a grazing plan resulting in a lack of recovery. Animal impact was high enough to promote perennial grass germination. Mesquite (Prosopis juliflora) was rampant.

Annabel and Ariungerel listening to translation from herder, Banni Grassland, Gujarat

Clear example of piosphere effect indicating grazing management is degrading the grassland

Presentation to International Grasslands Congress IGC 2015 New Delhi

Management of grazing lands through educating communities

D. Ariungerel, Graeme Hand and Annabel Walsh

Abstract

The Mongolian steppe is one of the world's largest grassland and it is an arid to semiarid land with a strong climate gradient. Biodiversity loss leading to desertification and land degradation is estimated to be impacting around 65% of the total area of Mongolia. The preliminary objective of this project was to trial the Positive Deviance Methodology to determine if this method assists herders to design behaviors to reverse this biodiversity loss. This project is a partnership between Mongolian Herders, Mongolian rangeland scientists and Australian based Stipa Native Grasses Association. The Positive Deviance Methodology has five basic steps based around creating the conditions that allow the local community to identify practices, develop solutions and create benchmarks and monitor progress. This project focuses on allowing herders to design regenerative practices and behaviors. Baseline monitoring, meetings and interviews were used to define the current practices for summer and winter grazing areas. Separate degradation mechanisms were identified for the different areas. Descriptions of outcomes from regenerating practices, high landscape function and perennial grass diversity, were clearly in the memories of older herders and in verbal history of younger herders and allowed the identification of temporal positive deviants. Herder meetings were then

held so that the local community could start investigating the design and development of activities that would expand and amplify possible solutions. Herder initiated practice change was recorded after one herder meeting.

Key words: piosphere, positive deviance, transhumance

Introduction

The economy of Mongolia was primarily based on transhumance grazing for centuries until collectivisation commenced in the 1950s when the aim was to settle the migratory rural population on collective farms (Suttie, 2005). However, this process was generally not successful and these collectives were privatized beginning in 1991. Many of the livestock enterprises then reverted to family ownership with the re-establishment of transhumance grazing management (Suttie, 2005). However, some of the traditional knowledge on which the grazing industries had successfully used the land for thousands of years may have been lost. In addition, there was a dramatic increase in the human population of the country including a nearly doubling of the rural population between 1956 and 1997 (Suttie, 2005). Modified land management skills coupled with the increased rural population has resulted in an increase in grazing land degradation throughout the country.

Biodiversity loss leading to desertification and land degradation is estimated to be impacting around 65% of the total area of Mongolia (Anonymous, 2015).

The loss of biodiversity, leading to the loss of biological processes, is also contributing to climate change and increasing droughts and flooding (Cardinale *et al.,* 2012).

Reversing this biodiversity loss has been described as a 'wicked problem (Conklin, 2006), and suggested solutions such as winter supplementation, hay and reserved forage plots, sowing introduced species such as alfalfa/ lucerne have failed overtime due to the unintended consequence of reducing biodiversity further while increasing risk and cost (Savory pers. commun.). The result is an urgent need to find more reliable solutions to the seemingly intractable problems of social disruption, land degradation compounded by climate change.

Stipa Native Grasses Association

Creating behavior change is notoriously difficult and seems to be especially so in reversing biodiversity loss and the resultant desertification and degradation of grasslands. The main challenge in Mongolia has been identified as 'the lack of participation by herders in the planning process' (Anonymous, 2015).

Stipa Native grasses Association (Stipa) is an Australia based, farmer led, non-profit association founded in 1997 to promote the use of perennial native grasses in agriculture. To fulfil this purpose Stipa members have developed training, extension and demonstrations of grazing and farming practices that regenerate perennial grasslands at a profit.

Behavior change has been based on:

- Diffusion of Innovations - comparative advantage and easily trialed (Rogers, 1983)
- Community Based Social Marketing – identifying key behaviors and addressing barriers and benefits to adopting these behaviors (McKenzie-Mohr, 2011)

- Managing Holistically (Savory and Butterfield, 1999)
- Positive Deviance technique– looking for uncommon successful practice and then amplifying this practice. (Pascale *et al*., 2010)

In partnership with Mongolian rangeland scientists Stipa undertook to travel to Mongolia to determine if any of the Stipa developed educational and extension methods that had some success in Australia would be of assistance in starting to reverse biodiversity loss in Eastern Mongolia.

The Positive Deviance Approach

The Positive Deviance technique (Pascale *et al.,* 2010) was selected as a possible approach to creating behavior change in Mongolia as it fits most of the criteria below:

- The problem is not exclusively technical but social also and requires behavioural or/and social change.
- The problem is complex, seemingly intractable, and other solutions haven't worked.
- Positive deviant individuals or groups exist suggesting that solutions exist.
- There is sponsorship and local leadership commitment to address the issue.

To meet the above mentioned criteria, it is appropriate to use a technique that is based on:

- Deep respect for community, its members, and its culture, and focuses on interactive engagement with intention to let the community lead.
- Identifying solutions for sustainable behavior and social change within already existing system.

Leadership Involvement and Resource Team

The initial aim was to achieve steps 1 and 2 in the Positive Deviance methodology (Anonymous, 2010). The project commenced with two trips to Erdenetsagaan soum of Sukhbaatar aimag, Eastern Mongolia during July 2014 and September 2014.

The focus of the first trip was meetings with community leaders to discuss the reasons for our visit and to gain leadership support and start to build a resource team. During this trip we emphasized that we would not be providing advice, practices or forage species from other parts of the world but would be attempting to discover which indigenous practices had maintained Mongolian grasslands for thousands of years before collectivization began in the 1950's.

This approach appeared to overcome the blockage that "problems embedded in social and behavioral patterns resist technical fixes" (Pascale *et al.,* 2010).

Defining the problem (Step 1)

Stipa experience is that where perennial grasslands are regenerating, an 'inverse' piosphere effect is produced where the landscape function and perennial grass diversity is higher closer to water points (Savory and Butterfield, 1999). During the July 2014 trip baseline data was collected from three gradients of the pasture at each of three locations near Erdenetsagaan soum (summer ground). At each site, estimated ecological site description (Herrick *et al.*, 2005), landscape function (Tongway and Hindley, 2004), vegetation and soil data were collected. These data confirmed that a strong piosphere effect was present with no evidence of per-

ennial grassland regeneration. Small mammal burrowing, typically Brandt's vole (*Lasiopodomys brandtii*), was high near roads and water points. During the September 2014 trip the above data was collected as well as soil cores for baseline soil organic carbon from summer ground sites and winter ground sites. The winter ground sites were 50-80 km from Erdenetsagaan soum. The winter ground sites, that had not burnt, were characterised by higher landscape function, high levels of oxidising litter and low impact of small mammal burrowing. Interviews and meetings were used to determine current perceived causes, challenges and constraints, common practices and desired outcomes. Perceived causes were overstocking, overgrazing (undefined), small mammal burrowing, and climate change which all have been reported in the literature. Common practice and desired outcomes were recorded.

Determine the presence of positive deviant individuals and groups (Step 2)

Using the inverse piosphere effect as evidence of perennial grassland regeneration, no current positive deviants were found during these trips. Descriptions of outcomes from regenerating behaviors that produce inverse piosphere, high landscape function and perennial grass diversity, were clearly in the memories of older herders and in verbal history of younger herders. These memories provided evidence of previous positive deviants.

Discover uncommon but successful behaviours and strategies through inquiry and observation (Step 3)

During the search for positive deviant individual and groups older herder leaders described previous successful behaviors and strategies. These were shifting more frequently (pre small trucks) not using the same area on the summer ground. These conditions were discussed in detail as this previous management developed strong race horses whereas currently race horses need to be fed for performance. Further, winter ground management will be investigated during the next trip planned for 2016.

Design activities to allow community members to practice the discovered behaviours (Step 4)

Discussion on the impact of fires, climate change, small mammal burrowing, overstocking and overgrazing led by one herder group came to the conclusion that, with modern motor transport the same area was used each year for a summer camp. This meant that the same grazing patterns were in place for long periods each summer and were the same year after year. The group decided to trial using different areas of the summer ground each year and to attempt to ensure that grazing patterns were frequently changed, in an attempt to mimic previous practices. Stipa practice is to trial in small enclosures but the Herders, unprompted, suggested a much larger trial.

Monitor and evaluate the resulting project and encourage further change (Step 5)

Estimated Ecological Site Description (Herrick *et al.*, 2005) was used for baseline monitoring and Landscape Function Analysis (Tongway *et al.*, 2004) was used to identify the causes of grassland degradation.

This project can be described as social research supported by rangeland science and monitoring.

After one herder meeting a group of herders changed their practice of using the same summer place. “This summer his family and some herders didn't come to close soum center. They are sitting 3 km far from last summer place” (D. Ariungerel, *pers. commun.*)

Conclusions

This study indicated that the positive deviance approach provides simple and quick measures from within current common practice for checking grassland degradation. The herders were able to identify which previous practices regenerated and maintained perennial grasslands and because these practices were identified by the herders themselves, resistance to adoption appeared to be low. Future research prospects include studying winter ground grazing practices and the transfer of this technique to other herder groups.

Acknowledgements

I express my deepest appreciation to Ariungerel Dorjgotov, Annabel Walsh and R D B (Wal) Whalley who provided valuable professional support and guidance during this study. Part of the funding for Graeme Hand’s travel was provided by a travel grant from the Australian Rangeland Society.

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Spring Spelling Update

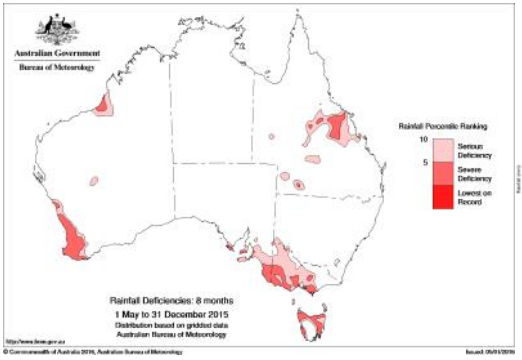
Graeme Hand

Key points:

- Risk based research shows typical district stocking rates are too high to keep money in the business overtime
- In Western Victoria using the financial year as your production year could lower risk
- With planned grazing the risk is low rainfall years.
- Wetter years, that grow more grass, can be used to increase land-scape function

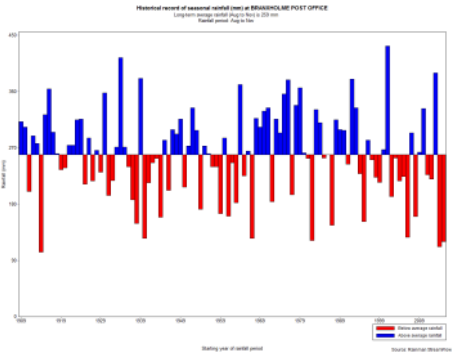
The original Spring Spelling article in the mid-year newsletter, number 54, created great interest and lots of feedback. Luckily, the seasons in South West Victoria continue to provide plenty of practice and feddback. (Figs 1&2).

Figure 1



Source: http://www.bom.gov.au/climate/drought/

Figure 2



Source: Rainman Streamflow

Most of the comments and questions related to more detail on forecasts and how much to reduce stocking rate by.

The policy we have been trialling is based on Dr Tim Hutchings research

Spring Spelling Update

continued

which shows that making continuous small profits and minimising losses is more important for farm viability than windfalls and maximising profits. Increased risk with increased intensification is why his research comes to this conclusion (intensification works where rainfall risk can be eliminated - such as irrigation). Tim's work also shows that except for high rainfall years (Decile 9) that our district stocking rates are too high, increasing risk and lowering the money we keep.

Policy

This spring spelling policy is still very simple and will need further fine tuning but works in practice. Your policy will need to be adjusted for your area and time of peak growth. South West Victoria peak growth is August to November.

Seasonal forecast	Reduce stock by(June July August)
Spring Forecast poor	**50%** *(SW Vic 15 dse/ha to 7 dse/ha)*
Spring Forecast average to good	**33%** *(SW Vic15 dse/ha to 10 dse/ha)*

Policy works as long as we follow it each and every season. Only time this policy has failed for us was when we did not follow and hoped for a big rain to save the spring. When the forecast is wrong and it is wetter that forecast then we **slow down moves** and use temporary electric fence to increase stock density pushing litter onto the soil surface and clearing perennial grass growth points. As discussed in previous articles we use gut fill scoring to decide when to shift animals out of a paddock. This generally results in moderate animal performance and high utilisation which has been shown to increase landscape function, perennial grass density and diversity.

Notable successes with failed springs were 2006-2007, 2014-2015, & 2015-2016. We missed adjusting in 2008-2009 and ending up feeding. There was no excuse as even though I was working in Tasmania we could have paid someone for 2 days cattle work to sort this out and would have saved a significant amount of money, work, pasture/ grass-land damage and stress.

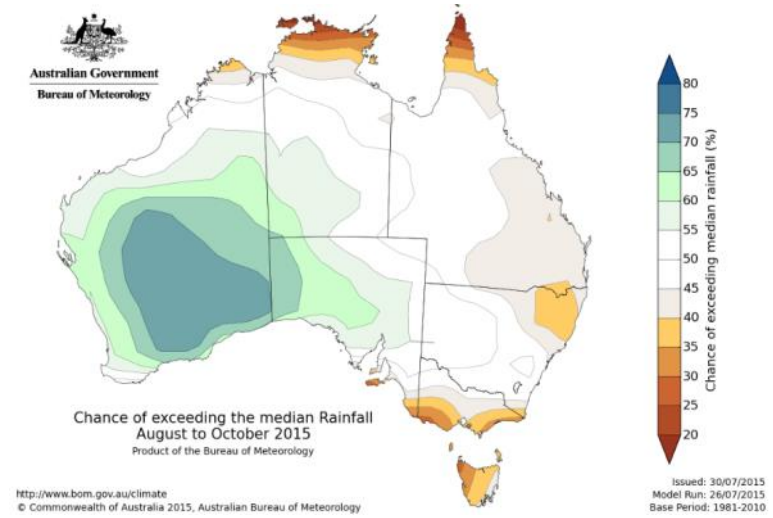
Spring Spelling Update

continued

Forecasts

Forecasts are sourced monthly from the Bureau of Meteorology (BOM) (Figure 3) and from the Victoria the Department of Economic Development, Jobs, Transport and Resources (DEDJTR). State agencies provide excellent seasonal summaries such as 'The Break' and the 'Fast Break' in Victoria. You can subscribe by emailing the.break@ecodev.vic.gov.au. Each state will have their own summaries.

Figure 3



Source: www.bom.gov.au/climate/outlooks/#/rainfall/median/seasonal

Dale Grey and Graeme Anderson (DEDJTR) have been a great resource and very patient. Graeme Anderson's presentation at the Best wool Best Lamb conference, June 2015 is worth a watch.https://m.youtube.com/watch?v=DU5XGO1_Tw0&feature=youtu.be

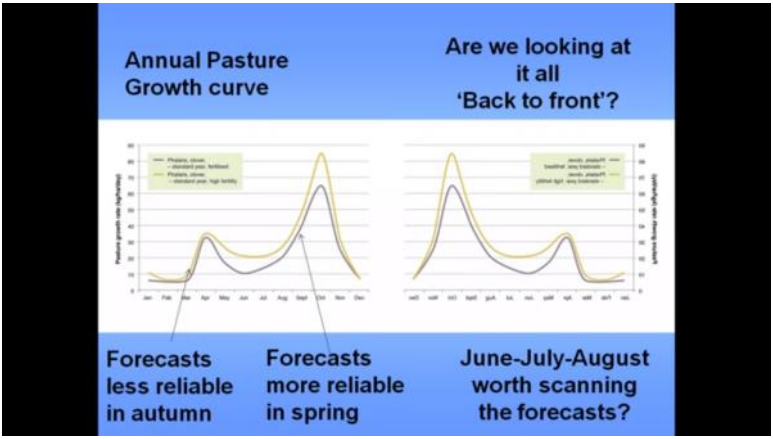
A key idea from this presentation is that seasonal forecasts are more accurate for spring than other times of the year. Deciding on stocking rates for the next 12 months during June July and August is the best chance

Spring Spelling Update

continued

we have of matching stocking rate to grass growth (Figure 4). Please check with BOM or your state agency or myself for your best month to plan from.

Figure 4



Source: https://m.youtube.com/watch?v=DU5XGO1_Tw0&feature=youtu.be

Results:

The policy is going well this year with moderate cow performance and excellent ground cover and dung beetle activity. Further fine tuning has been to wean one month early at 9 months. Some cows at condition score 2 with the majority condition score 3. We have increased the number of moves per day to maintain gut fill.

We made the decision not to sell steers when the budget, at the time, indicated that we would have dry grass until end of July. Some very hot days have reduced the budget to the start of May. We will sell steers and some heifers if feed quality drops further.

Budget is calculated by measuring area mob needs for 1 day (phone app). This area is then divided into area of paddocks not yet grazed to get the number of days of feed available.

Perennial grass - the foundation of regenerative agriculture

Graeme Hand

Stipa's purpose of promoting native perennial grasslands at a profit is the only known practice that can make agriculture regenerative, lower risk and stable. This article will hopefully promote some discussion on the management and future landscape we need for agriculture in Australia.

Key points:

- Only perennial grass based agriculture can regenerate and then maintain soil health
- Legumes, tap rooted forbs, salt bush and annual grasses need to be less than 5% in total of the plants in a perennial grassland
- We need to grow and use less grain for a sustainable planet
- Grass plant perenniality is more important than perennial grass plant diversity until landscape function is very high

The above statements and key points are bold and run counter to most of the advice on how to lower agricultures impact. Only by defining the context or outcome we want to produce can we have any chance of designing the future agriculture we need.

Generic Future Resource Base for Australia (Part)

Future Resource Base:

Land: Our land will have high stability, water infiltration and nutrient cycling (landscape function) and soil will be healthy and building in carbon. The land will be converting solar energy to wealth and life for most of the year and biodiversity will be increasing. Waterways and coastal areas will be clear of topsoil and nutrient runoff and have abundant increasing life.

This gives us a clear target to design towards and it is clear that many of the practices considered to be sustainable fail within this context. I will only do a brief analysis of current practices as most readers know them in detail.

Analysis of current practices

Current Cropping (not Pasture Cropping which is perennial grass based):

All cropping practices rely on annual plants resulting in erosion, unbalanced carbon nitrogen ratios, nitrogen leaching, low fungal content, low soil carbon, declining biodiversity etc. The consequences of an annual system are a high need for fertiliser, herbicide, lime, machinery, high carbon emissions, etc. The lack of profitability and frequency of crop failure does not produce enough cash flow for maintenance of lime additions, carbon and soil life to maintain soil health. Practices such as multi species cover cropping slows down these consequences but have been measured as producing high nitrogen/carbon ratios which will fail overtime. These practices cannot produce the future resource base described nor clean healthy food and water nor healthy people. Growing more grain for animal feed and biofuel can only destroy the planet faster.

Annual Legumes:

Annual legumes, at a high percentage of groundcover, acidify soils, leach nitrates, have low ground cover (at certain times of the year) resulting in erosion. They also produce low fungal content, low soil carbon, increasing soil pH, declining biodiversity etc. Legumes cannot produce the future resource base described nor clean healthy food and water nor healthy people

Perennial legumes and tap rooted herbs and forbs:

Plants such as Lucerne, white clover, chicory and plantain do not have fibrous roots to provide habitat and nutrients for soil biota, do not produce much litter and have a high nutrient requirement. When these plants are at a high percentage of ground cover these properties result in producing land low in nutrient cycling, water infiltration and water holding capacity. Erosion is generally high and soil can become more acidic therefore these plants at more than 5% of total area cannot produce the future resource base described nor clean healthy food and water nor healthy people

Salt bush:

Same as tap rooted forbs. Can be very good if a small component but at higher levels provide excess protein (like too much legumes) which results in grazing animals scavenging the perennial grasses to balance their diet resulting in bare ground, erosion and compaction.

Annual grasses:

Research shows that annual grasses and annual grass litter does not increase soil carbon, cycle nutrients, water infiltration and water holding capacity as much as perennial grasses do nor do they provide seasonal stable ground cover. These plants as a high percentage of groundcover produce unbalanced carbon nitrogen ratios, nitrogen leaching, low fungal content, low soil carbon, declining biodiversity etc. These conditions cannot produce the future resource base described nor clean healthy food and water nor healthy people.

Perennial grass (especially native) based agriculture analysis

Perennial grasses:

Perennial grasses when proactively managed for high landscape function not only build soil health but builds biodiversity, increases nutrients availability and soil carbon. This point tends to get missed but soil health is a consequence of soil surface management to increase perennial grass density with the soil surface between the tussocks covered in decomposing litter. David Tongway has shown that until landscape function is high then perennial grass diversity is less important than being perennial. This fits with Col Seis and my experience.

Jerry Glover, a soil scientist, shows off a perennial wheatgrass plant's long roots, which grow deeper than annual plants' roots [on the right], improving soil structure and reducing erosion.

Source: Discover Magazine, Digging Deep: How to Feed the World with Perennial Food Crops, May 2014, http://discovermagazine.com/2014/may/11-feed-the-world

Crossword Clues

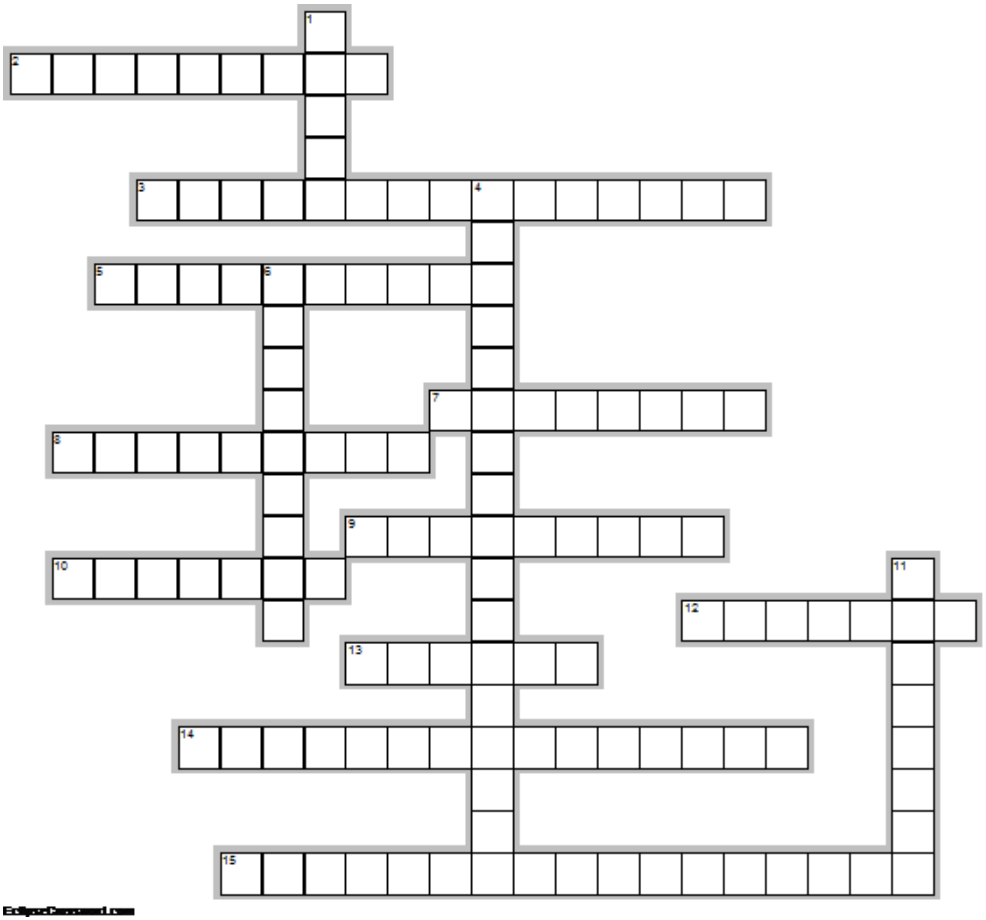
Across

2. Presence indicates a degrading grassland
3. What do we need to do to make sure we don't run out of grass in SW Vic
5. Perennial grass with deeper roots than annuals
7. Sanctuary where Annabel was training rangeland scientists
8. Plant that unbalances animal diet if too dense in a grassland
9. City where International Grasslands Congress 2015 was held
10. Pre conference tour was in this State in India
12. Plant in the family Fabaceae that needs to be less than 5% of a healthy grassland
13. Surname of soil scientist showing off roots
14. Foundation of sustainable agriculture
15. Presence indicates regenerating grassland

Down

1. We need to grow less of this for a sustainable planet
4. Method to allow communities to design regeneration
6. Name of seasonal summary in Victoria
11. Woody plant taking over degraded grassland in Gujarat

Crossword Grid



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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Crossword Answers