The Green Challenger

Official Newsletter of the Willunga Hillsface Landcare Group

Willunga Hillsface Landcare Group

Working towards a healthy, vibrant and sustainable Willunga Basin

Autumn 2013

Is it too late to bring the red fox under control?

The red fox may be the most destructive species ever introduced to Australia. For a start, it carries most of the blame for Australia's appalling record of recent mammal extinctions.

Since European settlement, mainland Australia has lost at least 20 mammal species, far more than any other country over the same time period. Mostly these were bandicoots, bilbies, rat-kangaroos, quolls and hare-wallabies, along with relatively large rodents. Over vast areas of southern mainland Australia there are simply none of these medium-sized native mammals left – just seemingly limitless numbers of foxes and rabbits.

Did the fox act alone to cause these extinctions, or did it have help? Maybe other pressures – like competition from rabbits, changed fire regimes, or unknown diseases – were also important. The evidence, however, points consistently to foxes as the dominant cause. If other factors contributed it was probably by amplifying the predation pressure from foxes on native prey species. The European rabbit, for example, had an important subsidiary role by boosting fox numbers, and keeping them high even as native prey crashed to extinction.

The fox is also a significant pest to agriculture, mainly through preying on lambs and poultry. It can spread disease to domestic animals, and would be a carrier of rabies if that disease ever got into Australia (which is a distinct possibility). The combined environmental and agricultural impacts of foxes, and the effort expended on attempts to reduce that impact, probably costs Australia more than $200 million each year.

It could all have been so different. A brilliant piece of historical research by Ian Abbott shows how difficult it was to introduce the fox to Australia. Victorian settlers, who were keen to indulge the "noble sport of fox-hunting", released foxes on many occasions, beginning in the 1840s. Some early releases were evidently quite serious attempts to establish wild populations, such as a liberation of a group of at least six foxes in the Dandenong Ranges in 1864.

Released animals were rarely, if ever, seen again. They may have been killed by hunters or dingoes, or they might have taken poison baits that were laid for dingoes and stray dogs. In any case, they did not establish viable populations.

It was not until about 1874 that a fox population finally took off, on the Werribee Park property of the wealthy Chirnside family. From that point the fox was unstoppable. Despite all attempts at control it swept like an avenging fire through all of the southern half of Australia in just a few decades.

This history nicely illustrates an important biological principle. Small, newly introduced populations face a high intrinsic likelihood of going extinct. The small numbers of animals in such populations might be hard to find, but even poorly targeted control efforts can be useful if they increase those individuals' risk of death, and therefore make it even more likely that the population will go extinct.

As with any other well-established invasive species, it is very hard to turn back the clock and reduce the impact of foxes. Trapping and shooting generally have little effect on population size unless they are done intensively in well-defined areas where rates of re-invasion are low. Bounty schemes set up to encourage broad-scale fox removal by shooters, such as the programme recently established by the Victorian State Government, are likely to be ineffective and wasteful.

There are four control options that can produce sustained reductions of fox impact.

First, poison baiting using 1080 can give good results, because foxes readily take poison baits. There is a particular advantage in the use of 1080 to protect wildlife from fox predation in Australia, because while foxes are highly susceptible to this toxin, native Australian mammals are much less so because it occurs naturally in some Australian plants. A drawback is that reduction in fox abundance can result in increased feral cats (which are also susceptible to 1080 but generally

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Red Fox control–

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do not take baits), because foxes aggressively suppress cats. For some prey species, cats are just as significant a threat as foxes, or more so.

Fencing can be used to exclude foxes from high-value areas such as nature reserves, although the investment needed to protect large areas in this way is huge.

Livestock guardian dogs, such as the Maremma sheepdog, have proved their worth in protecting livestock from many species of predators, including foxes. Guardian dogs have even been used to keep foxes away from seabird colonies in southern Victoria.

Finally, in some situations dingoes can reduce populations of both foxes and feral cats. They do this partly by hunting and killing them. Intriguingly, dingoes have been recorded killing foxes and cats but not eating their victims, as if the killing was motivated by simple malice. This is a good thing, because it means that foxes and cats fear and avoid dingoes, so that habitats in which dingoes are active can serve as refuges for prey species that are especially vulnerable to both foxes and cats.

A product called "The Foxlight" *claims to give good protection from foxes under certain conditions.* BRIAN.

Author: *Christopher Johnson, Professor of Wildlife Conservation and ARC Australian Professorial Fellow at University of Tasmania*

Disclosure Statement: *Chris Johnson receives funding from the Australian Research Council and the National Environment Research Program. He is a voluntary member of the Tasmanian Government's Technical Advisory Panel on foxes.*

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Editorial

Where should I start with this? So much has happened since I produced the last copy of the Green Challenger! Many things that I could include in this newsletter there is nowhere near enough room for.

However, starting with us, the Landcare group has been working towards creating greater biodiversity with special plants used to achieve this. (See Regreen the Range report).

We have also had special planning meetings to reaffirm the group's objectives and goals for the next five years. This does of course depend upon continuation of funding and with a probability of a change in the Federal Government, who knows…

The group really do need a Secretary. Wayne has been doing this job for quite a while now, but he really has more than enough to do with his Regreen the Range work. Working with this committee isn't an onerous job as we are all nice and easy people to get on with. We only meet once a month and correspondence is limited, but a new person would be very welcome.

In an edition that I published last year I had an article about the experiment being carried out at Henbury Station. This elicited a response from a Landcare member which I published. The plan for Henbury was to regrow grasses, shrubs and trees to both sequester carbon and rehabilitate the degraded landscape. However, RM Williams Agricultural Holdings' chief operating officer Rory Richards says the long-term plan is to run cattle on Henbury station to complement the carbon farm.

"Our wish and ambition is that ultimately we can develop a programme that will include both," he said. Mr. Richards has not raised the possibility of restocking cattle with the Federal Government so there will be more debate on this issue for some time yet. BRIAN

Sheep get their wind measured

By Daisy Smith, Wednesday, 27/02/2013

Researchers are hanging boxes off the back ends of sheep to measure methane levels in their wind. It's called the butter-box system, and the Mingenew Irwin Group (MIG) will be using the method as part of their research project: Shrubs for Emissions Reduction and Carbon Storage (SERCS). The nation-wide study is the biggest research project undertaken by MIG.

Casey Palmer, MIG's SERCS officer. says assessing methane is one aspect of the project - the other part is studying soil carbon. "The SERCS project is trialling native shrubs for their anti-methanogenic processors," she said. "Agricultural is the second highest methane production in the world, so we want to trial these shrubs to see if the sheep grazing on them do in fact decrease the amount of methane they are producing, and by doing that we are using the butter-box system. "We will have controlled sheep that are grazed on pastures and then sheep that are grazed on the native shrubs, and we will compare the two."

There will be two sites examining soil carbon. "Native shrubs are a deeper rooted perennial and they provide leaf litter and again that's another source of soil carbon," she said. "The deep root provides another source of soil carbon to that deeper stage where pasture might not necessarily reach." Once the research is complete, both sites will be compared to see if or how anything has changed over the three years.

Sheep selectively graze when they are allowed to and this may help to settle their stomachs as there are some medicinal properties in the shrubs. This article and audio can be found at http://www.abc.net.au/rural/news/content/201302/s3699552.htm

Regreen The Range report

Couldn't we do with some rain! After a tremendous winter, rainfall wise, the spring and summer have been shocking. Less than half the long term average has fallen in Willunga over spring and summer. As a consequence revegetation the group conducted over the winter has suffered severe losses due to water stress.

This is not only disappointing to the Landcare group but also for the landholders on whose properties we revegetated. The group is hopeful it will be able to revisit these areas and re-do what has been lost. As a footnote to the lack of rain, the Australian Climate Commission states that over a ninety day period during summer, 123 new records were set for weather events Australia wide.

These new records were set for highest temperature on record for Australia as a whole, highest temperature in a number of single locations across Australia stretching from Western Australia to Tasmania, new daily rainfall records in Western Australia, Queensland and New South Wales and new records for flood levels in New South Wales and Queensland.

The project the Landcare group is conducting at the moment with funding from the Federal Government's Biodiversity Fund is doing quite well considering the lack of rainfall. Enclosures that were made to keep rabbits and kangaroos at bay are proving effective (apart from one where the kangaroos crashed straight through it) and the majority of the plants are surviving, though some are struggling.

The aim of this project is to increase the level of biodiversity within the revegetated areas and to provide a seed source, so that over time, the plants will be able to naturally regenerate and thus become self-perpetuating. At the moment this is proving to be a very cost effective method of reintroducing many different species of small ground-covers and native grasses. If the group can provide a viable seed source for self-regeneration to occur, this will prove an effective and cost efficient method of habitat restoration over the long term.

The group is also pleased to be revegetating three new properties on the hillsface. These properties will add to the large number of properties the group have already undertaken across the hillsface and will allow for the connection of previously revegetated properties with the new properties. The group will continue to actively engage with landholders in the district to continue its programme of revegetating as much of the hillsface as possible so as to add to the benefits that are currently being seen across the hillsface and across the Willunga Basin.

Wayne Lawrence

Soil carbon conundrum

There's a breakthrough with soil carbon trading. A how-to guide is being submitted to the Federal Government's carbon farming scheme that could get rural Australia sequestering carbon in the ground and earning credits for it

The first carbon credits have been sold under federal Labor's climate change strategy. An Adelaide-based landfill company earned nearly 350,000 credits by capturing greenhouse gases from its rubbish tips. Each credit represents a tonne of emissions, and a recent sale fetched just under the carbon price of $23. Credits are reported to have been sold to a Queensland energy company which now has to pay for carbon pollution under the emissions trading scheme.

Leading climate change lawyer Martijn Wilder has been watching the trades closely. 'We've seen a number of companies such as landfill companies—one called LMS in Adelaide and some other groups—do projects that produce carbon credits, and then selling those to the polluters under the federal government's emissions trading scheme,' he said.

Companies with significant emissions have a choice to buy a government permit to pollute at the carbon price of $23, or they can offset 5 per cent of their emissions bill with carbon credits produced by farmers or landholders. It's part of the government's Carbon Farming Initiative, where landholders and farmers can make money by avoiding emissions or sequestering carbon. Mark Dreyfus is now attorney-general, but as he changed portfolios he gave a final interview on carbon farming.

'The Clean Energy Regulator has issued 350,000 Kyoto Australian carbon credit units and assuming a price of $22.50 for a unit, which is one of the reported trades, that represents a benefit to Australian farmers and landholders of more than $7.8 million,' he said.

The carbon farming scheme is facing several challenges. A coalition win later in the year means polluters will no longer have to buy credits. It's also seeing farmers hang back, waiting to see what happens to the scheme if the government changes. And there are concerns that some high profile carbon farming methods haven't been scientifically proved.

Soil carbon is about getting plants to pull carbon dioxide out of the atmosphere and sequester it back into the land. Many believe that soil carbon can't be accurately measured and so trading is impossible, but a Queensland-based carbon company says it's made a breakthrough on this front.

Carbon Link is about to submit a new soil carbon methodology, or 'how-to' guide, to the government's carbon farming scheme. It involves a measuring system that aims to solve a long-standing problem: that paddocks often have a variety of soils that sequester carbon at different rates.

The full article is at: www.abc.net.au/radionational/programs/backgroundbriefing/the-carbon-conundrum/4532742

The audio is available too.

Pasture cropping: A regenerative solution

Through innovative farming methods, Colin Seis of New South Wales is able to raise cereal crops and sheep on the same land—a two-for-one deal.

Since the late 1990s, Australian farmer Colin Seis has been successfully planting a cereal crop into perennial pasture on his sheep farm during the dormant period using no-till drilling, a method that uses a drill to sow seeds instead of the traditional plough. He calls it pasture cropping and he gains two crops this way from one parcel of land—a cereal crop for food or forage and wool or lamb meat from his pastures—which means its potential for feeding the world in a sustainable manner is significant.

Seis had been watching the native grasses on his farm and began to wonder if nature didn't intend for annuals and perennials to co-exist. Nature certainly wanted weeds in his pasture—so why not a different type of annual instead, such as oats? He knew why: weeds liked to run a 100-yard dash while perennial grasses like to a run a marathon. Two different races…

What if it were just one race? What if grasses acted as a kind of cover crop for the annuals, keeping down the weeds but allowing the middle-distance runners, such as oats or barley or canola, to grow while the perennials waited for their turn on the racetrack? More to the point: what if you no-till drilled the perennial pasture during its dormant period with a cereal crop? What would happen?

As a farmer, couldn't he figure out a way to make them all get along symbiotically? If nature could do it, why couldn't he? He decided to give it a go."

Give it a go he did. So have many others. Today, over 2,000 farms practice pasture cropping across Australia, and many more overseas. The idea continues to spread as well. Here are some reasons why:

*High crop yields, sustained high pasture and animal production from cropped land, increased fodder for livestock, high rates of carbon biosequestration.

*Marked improvement in the water-holding capacity of the soils, improved nutrient cycling, improvements in biodiversity and resilience, even under drought stress.

*Significantly reduced input costs and risks, improved economic return from the vertical stacking of enterprises, improved happiness quotient on the farm.

It is this last point that is perhaps most important, Seis says. As a practice, pasture cropping is pretty straightforward: by growing an annual plant in the competitive niches in the root ecology of a perennial pasture, it avoids the need to kill pasture grasses prior to sowing a crop, thereby maintaining a living plant cover, which improves biological health of the soil and protects from wind and rain erosion.

Plus, a farmer gets two products—crops and animals—from one piece of land. Three, actually, if you harvest the grass seeds as a potential food source, as Seis has done, mimicking the Aboriginals who lived in the area historically.

A new Farm

The destruction of Australia's grasslands began 150 years ago, says Seis, with inappropriate grazing management and, later, ploughing, mostly to grow wheat for the nation's burgeoning population. Overgrazing, tilling, and the introduction of exotic animals in colonial times, including foxes, rabbits, toads, and a variety of aggressive plant species, all combined to devastate the continent's naturally nutrient-poor soils and largely defenceless indigenous wildlife. Topsoil began to wash away, along with its precious carbon and other organic matter, causing a general decline in overall soil health and crop productivity. Everything sped up with the introduction of the mechanized tractor in the 1920s, and not in a good way. This was followed by widespread application of herbicides, pesticides, and chemical fertilizer in a desperate attempt to salvage what remained of the soil's fertility.

Seis knows this story first hand—he saw it happen on his family's 2,000 acre farm, called Winona, located 180 miles north west of Sydney.

Seis' grandfather resisted the industrial changes being pushed on Australian wheat farmers by agricultural companies and government agencies. He was doing fine, Seis said. His son, Harry, however, decided to try something called New Manure, which turned out to be an early version of superphosphate, in an attempt to boost declining yields. His father objected, asking, "What's wrong with the old manure?" Trouble slowly escalated after Seis' father bought a tractor. He didn't know it, but his increased ploughing was depleting the soil, reducing carbon especially. A vicious cycle ensued: less fertility in the soil meant more chemical inputs were needed to compensate, round and round. Then the farm began to fail. Costs kept rising, fertility kept falling, salinity rose, trees began to die—and they were going broke.

"Still, the 'moron principle' prevailed in my family," said Seis, "you know, more fertilizer on and more on."

The farm ended up becoming dysfunctional and unprofitable. The granite soil on Winona had become compacted and acidic, and organic carbon levels had dropped to below 1.5 percent. The topsoil had declined to less that 100 millimetres deep and the subsoil had become sodic. Areas of salinity were also breaking out around the property as well.

Then, in 1979, a wildfire burned

almost all of Winona. Three thousand sheep died, all of the buildings were destroyed, 20 miles of fencing burned up, trees exploded, grass died, and Seis ended up in the hospital with burns on his body.

"Worst of all, there was no money to recover things with, which means we had hit rock bottom," Seis explained. "My grandfather had the last laugh, I'm afraid."

When Seis had recovered from his burns, he decided to rethink the way he had been practicing agriculture. It wasn't a criticism of Seis' father, who had followed the rules of farming for the time, but rather a realization that the rules themselves needed to change. The fire suddenly created an opportunity to do just that. Out of the ashes, Seis vowed, a new farm would emerge.

The first step was to physically rebuild the farm. The second step was to go cold turkey on fertilizer, herbicides, and pesticides, because they couldn't afford them. The pastures collapsed as a consequence. "They were addicted to phosphorus," Seis said. The third step was to research native grasses. Could they come back? Would they be an acceptable alternative? His father had battled against native grasses all his life, Seis told me, and they kept returning despite his efforts at eradication.

This led to the fourth step: study the holistic management ideas of Allan Savory, who had developed a way of managing animals on pasture that mimics the graze-and-go behaviour of wild herbivores. Seis resisted initially, but again felt that he had no choice. He quickly learned that it worked, especially when he sicced his sheep on the non-natives (with his father's reluctant blessing). This new approach created a long transitional period of low productivity, which reinforced his neighbours' belief that native grasses were not as productive as introduced ones. But Seis persisted with his plan.

"I'm stubborn like my dad and his dad," Seis said. "I wasn't sure if that was a good thing or not for a while, but in the end it paid off."

By 1990 things had improved substantially, and Seis was seeing benefits both on the land and in his bank account. But Seis knew it wasn't enough to completely repair all the damage that Winona has endured over the years. He needed a new idea.

"Before industrialized agriculture was developed, the world's grasslands and farms contained hundreds of plant species of all sorts," Seis said. "And they functioned with very few problems like disease, insect attack, or weeds because it was a balanced ecosystem. Pasture cropping returns that balance. It also creates good, rich soil with high carbon levels and good water-holding capacity."

Today, thanks to holistic management, pasture cropping, and other regenerative practices, Seis can catalogue Winona's recovery in detail:

*Conversion to native grassland with over 50 species of grass, forbs, and herbs savings around $60,000 annually in decreased inputs.

*Increased profits from improved sheep-carrying capacity, wool quality, and wool quantity; crop yields from pasture cropping comparable to yields from conventional cropping with 20-year oat yields averaging 2.5 tons per hectare.

*No insect attacks or fungal diseases in crops or pasture, increases in bird and native animal numbers and species diversity.

*Big improvement in soil health, soil structure, and water-holding capacity; significantly higher counts of fungi and bacteria in soil, evident in microbial counts.

*Average of 150% increase in all soil nutrients, 203% increase in soil organic carbon.

Today, Seis and his son Nicholas run around four thousand Merino sheep on Winona and pasture crop around 200 hectares (500 acres) annually in oats, wheat, and cereal rye.

How it works

The key to how pasture cropping works is the relationship between cool season (C3) plants and warm season (C4) plants—the difference being the number of carbon molecules and how they affect the process by which glucose is produced in a plant. C3 plants, such as wheat, rice, oats, and barley, grow early in the season and then become less active or go dormant as temperatures rise and light intensity increases. In contrast, C4 plants, such as corn, sorghum, sugarcane, and millet, remain dormant until temperatures become warm enough to switch on and begin growing.

Pasture cropping utilizes the niche created by C3 and C4 plants. When a C4 is dormant (during winter), a C3 plant seed is sown by no-till drilling into the C4 pasture. With the onset of spring, the C3 plants begin to grow. If managed properly, plus the right amount of rain, the C3 crop can be harvested before the C4 plants begin the vigorous part of their growth cycle. The removal of the C3 crop will then stimulate C4 plant growth (due to reduced competition). The mix of shallow- and deep-rooted plants also access water resources in the soil differently, which can reduce competition and increase overall productivity.

Central to understanding the process is understanding what's happening in the soil. C3 cereal crops provide sugars to soil microbes, such as fungi, nematodes, and protozoa, during the time when the C4 plants are dormant, which can improve soil fertility faster than a C4 pasture alone might. This also speeds up nutrient cycling, promotes an improved water cycle, increases nitrogen content, and adds organic matter to the soil, which can build humus. Additionally, the no-till drill lightly aerates the soil, allowing oxygen and water to infiltrate.

Another key is using grazing

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Pasture cropping–

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animals to prepare the C4 field before drilling. Grazing animals hit the perennial pasture hard, which gives the C4 plants a "headache," according to Seis, so that the C4 plants come up slowly, giving the C3 plants a chance to grow. By hitting the pasture hard with a large mob of sheep in a time-controlled manner, Seis can keep the C4 plants from growing too tall too early, and thus prevent them from shading the C3 plants. Animals can also control weeds, create litter on the soil surface, supply a pulse of organic nutrients for the crops, and remove dry plant residue from the pasture.

Seis says his use of sheep mobs has been controversial in some quarters due to a concern about soil compaction. This is only a problem where there are low levels of ground cover and litter, he says, or when the ground is very wet. "Where there are good perennial pastures and ground cover," says Seis, "pasture-cropped paddocks show very little compaction and soil structure problems."

Proper sowing is another key. So is an assessment of a pasture's potential before a farmer tries to crop it. Seis has some advice before sowing: Graze the paddock to three to four inches. Create as much litter as possible. Use herbicide to control weeds only if absolutely necessary. Use no-till equipment to sow at the correct depth and row spacing. Sow the correct crop for your soil type. Conduct a soil test, if possible. Sow crops up to two weeks earlier than usual (crops sown by pasture cropping are slower to develop). Avoid the use of fertilizer as much as possible—it shouldn't be necessary. In Seis' case, he started with normal rates of fertilizer, but reduced its use by 70% over time and today only uses organic fertilizer at very low rates.

One more key: never, never, never use a plough.

Seis also cautions that crop yields at the beginning are usually lower than with conventional industrial agricultural methods. He says this is more than offset by the ability to produce two (or three) products from the same bit of land, plus all the fertility that is being built up in the soil.

In 2010 the University of Sydney conducted a research project on Winona and an adjoining farm to evaluate the effects of pasture cropping versus conventional management on soil health and ecosystem function. Under the direction of Peter Ampt, the project compared paddocks of similar size on each farm. Here are some of the results of the research: Winona's paddock was 83% native perennial grass species, while the neighbour's paddock was 88% annual weed species. There was greater ecosystem function on Winona. Soil microbial counts showed that Winona had significantly higher amounts of fungi and bacteria over the neighbouring farm. Finally, crop yields were the same on the two farms, and Winona's sheep-stocking rate was double.

In the study's conclusion, Ampt and Sarah Doornbos write:

These results illustrate that the rotational grazing and pasture cropping practiced on the innovator site can increase perennial vegetative ground cover and litter inputs, compared to the continuous grazing system and conventional cropping practiced on the comparison site. Increased perenniality and ground cover lead to improved landscape function in the pasture through increased stability, water infiltration and nutrient cycling, which in turn can lead to improved soil physical and chemical properties, more growth of plants and microorganisms, and an ultimately more sustainable landscape. It also shows that rotational grazing and pasture cropping can improve landscape function while sustaining similar or higher stocking rates over the year compared to the conventional system.1

More good news

There are other good reasons to give pasture cropping a go. It can be used as a land-restoration strategy, for example. That's precisely how Seis used it on Winona—to convert a worn-out, weed-dominated, burned-over, failing patch of farmland into an ecologically healthy and economically profitable landscape. He did it by rotating pasture cropping around his farm over time, generally only cropping one quarter of his farm at a time. Seis is convinced the same strategy can be used anywhere similar C3-C4 plant relationships exist. "It's a great way to rebuild grasslands and can happen almost anywhere there's enough rain to grow a crop," he says. In arid environments, he says, you must drill more carefully and expect yields to be lower, especially in the first few years.

By the way, don't use fire to do this job, he insists. Don't burn anything. "Throw your matches away," he instructs. Use livestock instead.

Increased soil organic carbon

Another benefit is increased carbon, which Seis calls "rocket fuel for plants." According to research conducted by Christine Jones, soil organic carbon has increased 203% over 10 years on Winona compared to the same neighbouring farm studied by Ampt (the farm is owned by Seis' brother, who, Seis says, has been a good sport and good conventional farmer). Jones calculates that 171 tons of CO_2 per hectare has been sequestered to a depth of half a meter on Winona. This has contributed to a dramatic increase in the water-holding capacity of the soil as well, which, according to Jones has increased by 200 percent in 10 years and can now store over 360,000 litres per hectare with every rainfall event.

It's the same with other minerals. Winona has seen the following increases: 227% more calcium, 138% more magnesium, 146% more potassium, 157% more sulphur, 186% more zinc, 151% more phos-

phorus, 122% more iron, 202% more copper, 156% more boron, and 179% more cobalt. It has 277% more calcium than the neighbouring farm, and 151% more phosphorus.

Another benefit is what some farmers call vertical stacking—the stacking of enterprises on a farm that fit together and thus build more profit per acre. Pasture cropping is a perfect example. It also lowers the cost of growing crops to a fraction of conventional cropping methods. The added benefit is that up to six months extra grazing is achieved compared with the loss of grazing due to ground preparation and weed control required in traditional cropping methods. Other benefits include the recruitment of perennial plant numbers and diversity of the pasture following the crop. This means that there is no need to re-sow pastures, which can cost from $100 to $150 per hectare.

"The best way to improve your profits is to improve your soil," Seis likes to say. There's no reason pasture cropping can't be done organically, thus adding value to both the cereal and animal products.

All of these reasons are why pasture cropping has spread to 2,500 farms across Australia and a few other nations as well. The main obstacle is climate—grass species need a true dormant season for the technique to work properly, a condition that is unusual in tropical and sub-tropical environments. Another obstacle can be the land's lack of perennial grasses due to overgrazing, drought, or a combination of the two. This can be overcome, however, by re-sowing grass species and then encouraging their growth through pasture cropping, which stimulates plant vigour and seed recruitment once grasses take hold.

There's one further obstacle, Seis told me: our brains. Age-old practices and beliefs, such as ploughing, are too frequently the number one impediment to the adoption of innovative ideas.

This article was originally published in Acres magazine. For more of Courtney White's writing on conservation and agriculture see: www.awestthatworks.com.

References: Ampt, P & Doornbos, S. Communities and Landscapes project: Benchmark Study of Innovators. The University of Sydney (2011) [online] http://sydney.edu.au/agriculture/documents/2011/reports/Ampt_CiL_BM_Comb...

About Courtney White: A former archaeologist and Sierra Club activist, Courtney dropped out of the 'conflict industry' in 1997 to co-found The Quivira Coalition, a non-profit dedicated to building bridges between ranchers …

Editor's note: I have edited this article for space reasons. Full article is available at: http://www.resilience.org/stories/2013-02-21/pasture-cropping-a-regenerative-solution-from-down-under

High-tech weed detector to be trialled in WA

By Babs McHugh, 08/02/2013

A machine that detects weeds on farms using a world-first triple laser beam system being developed in Western Australia will soon start field trials. The Photonic Detection System differentiates between weeds and crops and will be used on broad acre and row farming.

Weed infestation costs Australian agriculture around $4 billion a year and many weeds are becoming herbicide resistant.

John Rowe, who's developing the Photonic System in collaboration with Edith Cowan University, says the technology can be retro-fitted to boom sprays and other equipment and will be another addition to precision farming

"Many years ago, skeleton weed research was done with a crowd of guys, sitting on the back of a trailer, chucking out bags of flour when they saw skeleton weed," he said. "So it's taken the human eye into the modern age."

This machine can spray out weed, not the crop. Spectral response of every plant is different and changes as the plant ages. This equipment has been designed so that it can be retrofitted. Sprays controlled by solenoids. Trials should be under way in 12 to 18 months.

WILLUNGA
Environment Centre Inc

Supported by Adelaide & Mt. Lofty Ranges Natural Resources Management Board

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Open Mon.–Fri. 10 am – 3 pm, Sat. 9.30 am – 1.30 pm.

COMING EVENTS:

Tuesday, March 19, at 7.30 pm
Speaker: Tom Hands, President of the Friends of Scott Creek Conservation. Park.
Subject: Habitat Restoration and Biodiversity in the Park.

Tuesday, 23 April, at 7.30 pm
Speaker: Steve Jenkins, from the local chapter of the Alternative Energy Association.
Subject: Renewable Energy trends and directions.

Discussion will incorporate how this information can be included in new home design.

Free supper provided

Registration essential:
Phone 8556 4188
or email
info@willungaenviro.org.au
to register

A vision without a task is but a dream.

A task without a vision is drudgery.

A vision with a task is the hope of the world.

Letters, emails or feedback of any kind on anything in this Newsletter would be very welcome. If you have something you would like to see published, please contact me.

Willunga Hillsface Landcare Group

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Meeting dates vary, but are usually held on Mondays monthly at 5.0 p.m. in the Willunga Hub, cnr. St. Peters Terrace, Willunga.

All members are welcome to attend these meetings.

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Willunga Environment Centre
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Our thanks to Leon Bignell, MP, local Member for Mawson for printing this newsletter.