The Green Challenger

Willunga Hillsface Landcare Group

Official Newsletter of the Willunga Hillsface Landcare Group

Spring 2012

THE WHEEL OF LIFE

Humans are overloading the Earth with Nitrogen. Hogan Gleeson explains where we are going wrong, and begins an exploration of the remedies.

For centuries, the working lives of traditional farmers and gardeners around the world turned with the 'wheel of life'. By returning to the soil all the animal and vegetable matter produced in their community's activities – the law of returns – the health and productivity of their crops, animals and people was maintained. The farmers and gardeners knew that whatever magic lay within their compost was only scantily available to much of their biological world, and so treated it as a precious resource.

They also understood the processes that made it available to them and learned a healthy respect for the cycles of nature. 'The Law of Returns' was not just their gardening practice, it was their guiding principal.

As poet Robert Louis Stevenson wrote: *"I fling my soul and body down, for God to dig them under."*

This intuitive understanding of the nitrogen cycle – or as they called it, the wheel of life – emulated nature and kept the human ecology cycling within the natural systems of the Earth.

In stark contrast, the industrial processes that have characterised manufacturing and agriculture over the last century show little regard for where their inputs come from or where their outputs go. Disregard for the law of returns makes the linear industrial process the only system on Earth that produces something nobody wants – waste!

Waste is a product which is not, or cannot be, recycled through the natural systems, therefore building up over time. Nitrogen produced for, and by, industry and agriculture is becoming a toxic waste problem that is beyond the capacity of the wheel of life to recycle. With our industrial processes and industrial lives, we have entered what I call 'the age of purchase'.

THE NITROGEN CYCLE

The atmosphere is 78 per cent nitrogen. All organisms require it to live, and it is the most common chemical element in living tissue. Despite this, most plants and animals cannot utilise it directly from the air. Small amounts of nitrogen are made available – or 'fixed' – by natural processes, but the bulk of nitrogen is tied up as biomass (plant and animal matter) and is continually cycled between the living and non-living components of the Earth's ecosystems.

Before industrial activity arrived, new nitrogen entered the system primarily through lightning and nitrogen-fixing organisms – mostly algae and the symbiotic bacteria

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WILLUNGA **Environment Centre** INC.

18 High St.

Supported by the Adelaide & Mt. Lofty Ranges Natural Resource Centre

Come on Wednesday, 12th September at 6.45 p.m.

to hear well-known author

TIM MARSHALL'S talk on

Organic Farming and Gardening

The talk will be preceded by Willunga Hillsface Landcare Group's AGM

Free supper provided

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Editorial

I'm sitting in the 'office' at home listening to heavy rain on the roof. On the news this morning farmers in the north of South Australia were saying they were badly in need of rain. What a gamble farming is, and although I try, I find it hard to find really positive stories to put in this newsletter.

However, I came across an interesting and very positive youtube video recently that I think is well worth the 5 minutes it takes to watch it. It's called "Australian Agriculture – The Greatest Story Never Told" and can be seen using this address:

http://www.youtube.com/watch?v=fFUZ_j2cCe0&feature=player_embedded

John Campbell and I attended an NRM Open Day recently. Four of these open days have been held to get community comment on the draft future plan for the NRM which have to be reviewed every five years.

Unfortunately, there were more NRM people there than general public at the time we were there. This is an area that the Board needs to review. A slick Powerpoint-style presentation was wasted in my opinion, because the people that really need to see where the Board is headed are the landholders and they weren't there.

Landholders should make the effort to go into one of the Board's offices to check out their plans for the future because they are the ones that will be mainly affected by it. More information is also available from their website:

www.amlrnrm.sa.gov.au

Please make a note of the talk advertised on the front page. Tim Marshall is a very knowledgeable man and well worth listening to.

Brian

In a full grown rye plant, the total length of the roots may reach 613 kilometers (380 miles).

Anon.

Letter to the Editor

Hi Brian,

I appreciated Langdon's letter and his contribution on the important subject of 'Carbon Capture' and biodiversity, as relating to the rangeland areas that cover the greater areas of the Australian land mass.

I would like to add my thoughts to his, as a keen observer, a researcher and annual traveller to the northern Flinders Ranges and in earlier days to Central Aust and further north to the Kimberleys.

It is my understanding that the most significant environmental degradation of these areas, since European settlement has been the great loss of topsoil through water and wind erosion. The predominant reason appears to be caused by the overgrazing or even just the grazing of 'hard hoofed' animals such as sheep, cattle, wild horses, camels, goats and rabbits. The soil is damaged by compaction, disturbance and by overgrazing leading to a loss of soil biomass, leaving it highly susceptible to the intermittent flooding, thunderstorms, high winds and high temperatures typical of this rangeland country.

This relatively fertile topsoil, rich in carbon humus, has been lost to much of this country and the carbon to the atmosphere.

It is important to note that this once structured topsoil is now shallow and not there to capture and store the rainfall, reduce flooding and to strongly grow the grasses and vegetation, which then in turn would stabilize the soil profile and sequester and store carbon.

It is in quality topsoil where a high portion of carbon is stored and can be relatively stable and thus not be greatly affected by bushfire or climate.

My thoughts are that this degraded landscape needs to be managed so that deep rooted and fire tolerant indigenous pioneer species are encouraged, so they can do their job of building soils and biodiversity. This is a long process and stock needs to be managed or excluded in this period

In earlier times little knowledge of these rangelands, the climate, soils, etc. has often led to massive overstocking, especially when caught by long drought periods.

I know this is not the full story, but I delight in the thought of these lands having a greater distribution of over-storey shrubs and trees that protects the soil and feeds carbon deep into the soil profile, increasing water infiltration and storage, to enable the feeding of deep rooted perennial grasses The grasses have this special role of holding it all together.

Regards, John Campbell

Carbon farmers challenged by rigorous process

By Laurissa Smith and Anna Vidot, Monday, 20/08/2012. ABC Rural

It could be some months before farmers in Australia's rangelands can earn carbon credits for restoring native vegetation. The guidelines which set out how they can make money from schemes like the Federal Government's Carbon Farming Initiative are still being developed.

Dale Miles, from environmental consultants Outback Ecology, says it's a fairly rigorous process. "It's still sitting under consideration with the Domestic Offset Integrity Committee which is the committee tasked under the clean energy regulator to review the methodologies.

"So we hope that it's going to become available for public interest by early 2013." Broadacre farmers involved in intensive agricultural industries have had access to various Carbon Farming Initiatives since July 1.

Meanwhile, the Federal Government has released another carbon farming methodology for public comment. The new methodology would allow farmers to earn credits for promoting native revegetation on their properties.

It is based on the methodology already approved, which allows landholders to earn credits for environmental plantings on their properties. Public comment on the proposed methodology will be accepted until September 26.

Regreen The Range report

The Landcare group recently held a strategic planning day to determine the direction and activities the group should undertake in the future.

This was an opportunity for the group to look at what it has achieved in the past and how this aligns with the vision the group has for local environmental outcomes it would like to achieve. It also provided a chance to lay out a direction and strategy the group would like to take into the future.

The group has achieved very good results over a number of years in regard to the number of landholders the group has engaged with to achieve positive environmental outcomes across the hillsface. As properties change hands across the hillsface new landholders become aware of the work the Landcare group are undertaking and are keen to participate in the Regreen The Range project.

Some landholders that have had their land for quite a while are also contacting the group to seek assistance in revegetating their properties, in some instances landholders wish to revegetate their entire properties, in other instances only a portion of the property.

As the Landcare group is dependent on funding to achieve these outcomes and this funding is provided to the Landcare group predominately by Federal and State Government bodies, the focus can change over the years as to what the funding bodies would like to fund.

This change of focus requires the Landcare group to be very dynamic and flexible in how it sources the funding required to continue to work with landholders across the hillsface. The Landcare group needs to be aware of all the funding options that are available and to be pro-active in its search for funds.

Members of the group feel the planning day was very beneficial in that it reinforced why members of the group continue to participate to achieve positive environmental outcomes on a voluntary basis and looking forward, there are many positive and exciting projects that will occur in the near future.

The group has put a strategy in place to make the most of the available funding arrangements into the future and is extremely optimistic about being in a position to continue to deliver positive environmental outcomes for local landholders and the broader community.

OGW across the Willunga Escarpment in 2011-12

A total of $81,607.20, of NRM funding was spent on on-ground works (OGW) on 13 properties for the financial year of 2011-12. All of the OGW conducted, except for one, was to control invasive pest plant species in or around remnant vegetation. The two most significant plants targeted were Gorse, found on three properties and Blackberry, found on four properties. Feral Olives were controlled on five properties and Montpellier Broom, Boneseed, Sweet Pittosporum and Pinus Radiata were controlled in isolated patches across the hills face.

The Landcare group also spent a total of $19,600 it received from the Federal Govt. through the Community Action Grants scheme to revegetate a significant creek system that flows off the hills face.

The Landcare group are grateful to both the Federal Government and the Adelaide and Mount Lofty Ranges NRM Board for their continued support for the Willunga Hillsface Landcare Group in its effort to rehabilitate the hills face. The group looks forward to working with both the Federal Government and the NRM Board into the future to provide assistance to landholders to achieve positive environmental outcomes.

Wayne Lawrence

Use of beer bran as an adsorbent for the removal of organic compounds from wastewater

NOW there is another reason to enjoy that glass of cool beer on a hot summer evening. Beer bran, a by-product of brewing beer from barley, can be used to clean polluted waters.

Researchers at Kobe Pharmaceutical University in Japan have demonstrated that the bran adsorbs hazardous organic compounds including benzene and trichloroethylene (TCE) from chemical and industrial wastewater. The US National Academy of Sciences reported last week that there is growing evidence that TCE, used in adhesives and paint, can cause cancer.

At equilibrium, the adsorption efficiency of beer bran for benzene, chloroform, and dichiloromethane was higher than that of activated carbon. The removal of these organic compounds by beer bran was attributed to the uptake by intracellular particles called spherosomes

The object of this work was to investigate several adsorbents for the effective removal of organic compounds from wastewater. The Environmental Protection Agency is carrying out a new risk assessment of the chemical.

Companies commonly use filters made from activated carbon to remove pollutants from water. The dry, porous material has a large surface area, allowing it to trap large quantities of impurities. However, it is expensive and energy-consuming to produce, as it is made by heating coal to around 900°C, says Atsuko Adachi at the Department of Hygienic Sciences, Kobe Pharmaceutical University, Japan.

www.ncbi.nlm.nih.gov/pubmed/16910709

Earth's nine lives

Up to now, the Earth has been very kind to us. Most of our achievements in the past 10,000 years – farming, culture, cities, industrialisation and the raising of our numbers from a million or so to almost 7 billion – happened during an unusually benign period when Earth's natural regulatory systems kept everything from the climate to the supply of fresh water inside narrow, comfortable boundaries.

This balmy springtime for humanity is known as the Holocene. But we are now in a new era, the Anthropocene, defined by human domination of the key systems that maintain the conditions of the planet. We have grabbed the controls of spaceship Earth, but in our reckless desire to "boldly go," we may have forgotten the importance of maintaining its life-support systems.

The demands of nearly 7 billion humans are stretching Earth to breaking point. We know about climate change, but what about other threats? To what extent do pollution, acidifying oceans, mass extinctions, dead zones in the sea and other environmental problems really matter? We can't keep stressing these systems indefinitely, but at what point will they bite back?

Last year, Johan Rockström, director of the Stockholm Environment Institute in Sweden, sat down with a team of 28 luminaries from environmental and earth-systems science to answer those questions. The team included Nobel laureate Paul Crutzen, NASA climate scientist James Hansen, Gaia researcher and "tipping point" specialist Tim Lenton, and the German chancellor's chief climate adviser Hans Joachim Schellnhuber.

They identified nine "planetary life-support systems" that are vital for human survival. They then quantified how far we have pushed them already, and estimated how much further we can go without threatening our own survival. Beyond certain boundaries, they warned, we risk causing "irreversible and abrupt environmental change" that could make the Earth a much less hospitable place (Ecology and Society, vol 14, p32).

The boundaries, Rockström stresses, are "rough, first estimates only, surrounded by large uncertainties and knowledge gaps." They also interact with one another in complex and poorly understood ways. But he says the concept of boundaries is an advance on the usual approach taken by environmentalists, who simply aim to minimise all human impacts on the planet. Instead, he says, boundaries give us some breathing space. They define a "safe space for human development". And here they are:

1. Acid oceans

More carbon dioxide in the atmosphere means more is absorbed by the oceans, creating carbonic acid – bad news for animals with shells.

2. Ozone depletion

With most of the culprit chemicals now banned, the worst of the danger has passed – but it has not entirely vanished.

3. Fresh water

A quarter of the world's river systems no longer reach the ocean for at least part of the year. This is drying out swathes of the landscape.

4. Biodiversity

Individual species may not matter much on their own, but collectively they form ecosystems that provide a range of vital "ecosystem services."

Humans are driving species to extinction by ploughing up or paving over their habitats, by introducing alien species like rats and weeds, by poisoning them with pollution, by hunting them for food and, increasingly, by changing the climate. Individual species may not matter much on their own, but collectively they form ecosystems that provide a range of vital "ecosystem services," such as recycling waste, cleaning water, absorbing carbon and maintaining the chemistry of the oceans.

Although we know that high levels of biodiversity are essential to healthy ecosystems, it is not yet clear how much can be lost before ecosystems collapse, nor which species are the key players in a given ecosystem. So Rockström's team settled on crude extinction rates as the best "interim indicator" of the state of ecosystems. They put the current extinction rate at more than 100 extinctions per million species per year, and rising. That compares with a natural "background" extinction rate of around 0.3. Up to 30 per cent of all mammal, bird and amphibian species will be threatened with extinction this century.

This cannot go on safely. Current rates may even mirror those of the "big five" mass extinctions of the past half-billion years, including the meteorite strike that did for the dinosaurs. While the world carried on after those events, it was massively transformed. To avoid a repeat, they suggest a safe long-term annual extinction rate of no more than 10 per million species per year. By that measure, they say, "humanity has already entered deep into a danger zone... if the current extinction rate is sustained."

5. Nitrogen and phosphorus cycles

We fix around 121 million tonnes of nitrogen a year, far more than nature does – and nature cannot cope.

Nitrogen is an essential component of all living things, yet only a small amount of the planet's stock of nitrogen is in a form that living things can absorb. This is "fixed" out of the air by bacteria in a range of leguminous plants. But you can have too much of a good thing. So other microbes "denitrify" ecosystems, converting the element back into forms not available for living things. This is the nitrogen cycle.

Farmers have always interfered with the cycle, because nitrogen availability often limits the fertility of soils. They have boosted production by planting more leguminous crops, like clover.

Then, a century ago, the nitrogen cycle changed forever when Fritz Haber, a German chemist, invented an industrial process for fixing nitrogen from the atmosphere to make chemical fertiliser. Today, 80 million tonnes of nitrogen is fixed from the atmosphere in this way each year and poured onto the world's fields.

Farming inefficiencies mean that most of this nitrogen runs off the land into rivers and oceans. Much of the nitrogen that does get into crops is later excreted by humans into sewers. We further fix nitrogen by cultivating legumes and burning fossil fuels, timber and crops. Put all that together, and we fix around 121 million tonnes of nitrogen a year, far more than nature does – and nature cannot cope.

Excess nitrogen is acidifying soils, killing vulnerable species and saturating ecosystems so that they lose the ability to recycle the nitrogen back into the air. Meanwhile, some over-fertilised lakes and seas in heavily farmed regions fill with "blooms" of aquatic life which then die and decompose, sucking all the oxygen out of the water in the process. The legacy of such blooms is anoxic "dead zones." At the last count there were more than 400 such zones in the oceans, covering 250,000 square kilometres, including parts of the Gulf of Mexico, the Baltic Sea and waters between Japan and Korea.

Rockström tentatively sets the safe level for human additions to the nitrogen cycle at about 35 million tonnes a year, one-quarter of the current total. Reaching that figure while continuing to feed the world is, to say the least, a tough ask.

Phosphorus, also used as fertiliser, is potentially part of the same problem. Around 20 million tonnes of phosphorus is mined from rock deposits annually and about half of this ends up in the ocean – about eight times the natural influx – where it contributes to blooms and dead zones. Rockström's team estimates that we can add up to 11 million tonnes of phosphorus per year without serious repercussions.

6. Land use

Half the world's tropical rainforests are gone, and large areas of grasslands once open to wildlife are now fenced in for livestock.

7. Climate change

Every degree of warming caused directly by CO^2 is amplified by feedback processes that could drive temperatures much higher.

8. Aerosol loading

We have more than doubled the global concentration of aerosols such as soot since pre-industrial times.

9. Chemical pollution

There are approaching 100,000 different human-made chemical compounds in use around the world today, and many of them harm humans and wildlife.

CONCLUSION

However you cut it, our life-support systems are not in good shape. Three of nine boundaries – climate change, biodiversity and nitrogen fixation – have been exceeded. We are fast approaching boundaries for the use of fresh water and land, and the ocean acidification boundary seems to be looming in some oceans. For two of the remaining three, we do not yet have the science to even guess where the boundaries are.

That leaves one piece of good news. Having come close to destroying the ozone layer, exposing both ourselves and ecosystems to dangerous ultraviolet radiation, we have successfully stepped back from the brink. The ozone hole is gradually healing. That lifeline has been grabbed. At least it shows action is possible – and can be successful.

This article by Fred Pearce. He is New Scientist's senior environment correspondent Full story available at newscientist.com

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Making water from thin air

An Australian designer has won an international prize for creating a device that can extract water from air, says The Sydney Morning Herald. Edward Linacre beat 500 other entrants for the global James Dyson Award with his design, the Airdrop, which can harvest 11.5 millilitres of water from every cubic metre of air – even in the driest desert conditions.

The device delivers water directly to the roots of crops by pumping air through a network of underground pipes and "cooling it down to the point where water condenses." A small-scale prototype in Linacre's parents backyard yielded about a litre of water a day, but a few design tweaks will allow it to increase the volume. It's the second consecutive year that an Australian has scooped the prize: last year's winner was Sydney designer Sam Adeloju, whose life-saving bazooka can deploy an emergency flotation device as far as 150 metres out to sea. Linacre said he was inspired by the Namib Desert beetle, which survives in arid conditions by collecting dew from it's back. He plans to use his £10,000 ($15,700) prize to develop his invention on an agricultural scale.

With droughts predicted to become more severe, Linacre's invention is "likely to have significant global applications." Best of all, the Airdrop's abundant source material-thin air-means it can be used anywhere in the world.

The Week, 18th November, 2011

The wheel of life–

continued from Page 1

that lived in nodules attached to the roots of a relatively small number of legumes.

Our forests, deserts and ocean beds have evolved to look and behave the way they do as a result of the limits of the nitrogen cycle. Humans, however, are replacing these highly evolved, biodiverse native ecosystems with vast monocultures of nitrogen-producing soy beans, chick peas and other nitrogen-fixing legumes.

Industrial activity produces nitrogen gases that contribute to greenhouse pollution and acid rain. Other human activities that liberate nitrogen previously stored as coal and oil, tree trunks and soil organic matter include:

- Burning fossil fuels
- Land clearing
- Rice cultivation
- Draining of wetlands

However, the major source of new nitrogen in the system is synthetic fertilisers applied to our agricultural lands, gardens, golf courses and other public spaces. According to a study by The Ecological Society Of America (ESA) published in Issues In Ecology (Spring 1997): "The amount of industrially-fixed nitrogen applied to crops during the decade from 1980 to 1990, more than equalled all the industrial fertiliser applied previously in human history."

Also, every year, human activity is "effectively doubling the annual transfer of nitrogen from the vast but unavailable atmospheric pool to biologically available forms."

SATURATING THE ENVIRONMENT

The ecosystems of our heavily populated areas are becoming nitrogen saturated. This is when an ecosystem's soils, plants and microbes cannot use or retain any more nitrogen, and all new nitrogen deposited is dispersed to streams, groundwater, and the atmosphere. As they go, negatively charged nitrates take with them positively charged alkaline minerals, such as calcium, magnesium and potassium. This process strips fertility from our agricultural and forest soils, leaving them acidified and often toxic to plants.

Further, biocides and high salt index fertilisers damage the biological mechanisms that maintain soil fertility. As a result, higher applications are deemed necessary, leading to a spiral of excessive fertiliser use.

Adding biologically available nitrogen into the system stimulates processes that liberate previously fixed and stored nitrogen. Again, Issues In Ecology points out that: "Even in wild or un-managed lands downwind of agricultural or industrial areas, rain or wind-borne deposition of human-generated nitrogen can spur increased emissions of nitrogen gases from the soils."

OUR CHANGING PLANET

These huge quantities of liberated, or newly fixed, nitrogen are finding their way into ecosystems that were once nitrogen deficient. This, according to Issues in Ecology, is effecting "changes in their chemical environment for which they have no evolutionary background and to which they are not adapted."

Unique species assemblages that have adapted to low nitrogen conditions are disappearing, being outcompeted by the few species that can take advantage of increased nitrogen levels. Ecosystems made 'species-poor' by nitrogen deposition, show less resilience in the face of drought or other changes in conditions. Loss of biodiversity in the aquatic environment has also been driven by increases in nitrate levels, but also by acidification and eutrophication.

Issues in Ecology points out that: "Fish populations, in particular, have been reduced or eliminated in many acidified lakes across Scandinavia, Canada, and the North-Eastern United States."

Eutrophication (and resultant toxic blooms) can lead to conditions of low or no oxygen in bottom waters of certain oceanic ecosystems, resulting in significant losses of fish. The ESA study also found that eutrophication has been linked to species loss in the seafloor community – including corals, seaweeds and sea grasses – and that acidification and eutrophication are "arguably the most serious human threat to the integrity of coastal ecosystems."

A wide array of human activities are also effecting changes in the chemistry of the atmosphere. In particular, the increase in nitrogen-based trace gases which are potent greenhouse agents affecting climate change. These gases play other roles in atmospheric chemistry that result in photochemical smog, acid rain and ground level ozone, which have serious ramifications for human health and plant productivity.

POISONING THE WATER

Nitrogen pollution of water supplies has been well documented. Studies outlined in Issues In Ecology estimate that total nitrogen dissolved into most of the temperate zone rivers of the North Atlantic Ocean Basin may have increased by up to 20-fold since pre-industrial times.

The levels of nitrates in drinking water raises concerns for human health, especially in developing countries. Infants and the malnourished are particularly susceptible, where a condition in infants known as methemoglobinemia can cause brain damage or death.

Over 18 million people a year are seriously affected by methemoglobinemia – mostly infants poisoned by milk formulae made with nitrate-polluted water. Mouth and sewage bacteria turn nitrates into nitrites, hence nitrosamines which are cancer-associated.

Nitrate levels of 10 parts per million in drinking water are considered safe in the USA. In the European Economic Community (EEC), where few water supplies could hope to meet this level, the standard is 50ppm. Many developing countries, where testing and regulation are rare, probably far exceed these levels.

Heavy fertiliser use has become common place in many developing countries. The pressure to generate foreign currency to service debt and feed rapidly increasing populations has led to loss of traditional forms of agriculture. Many of these countries, now reliant on synthetic fertilisers, have dangerous levels of nitrate in their water supplies.

BREAKING THE WHEEL

The human ecology no longer cycles its nutrients back onto its farmlands. (For those who have not considered what constitutes a `human ecology,' I mean all the biological processes and relationships surrounding human activity, including the products and by-products of our systems.) Instead of returning nutrients to the earth, we pour synthetically-produced nitrogen into our agricultural soils, transport it as food all over the world (at great ecological cost), and tip it as sewage into our oceans. In the USA, 250 million tons of solid waste are produced every year, of which over 80 per cent is organic material that is potentially an agricultural resource.

In 1994 – it may have improved, but I doubt it – almost 97 per cent of this material was buried in landfills or incinerated to become probably the single greatest contributor of global methane emissions (J. Jenkins, The Humanmanure Book, 1999). We are not only operating outside the wheel of life, we have overwhelmed it, producing more nitrogen than the total natural processes of the planet.

THE AGE OF PURCHASE

Our central relationship to the world has become that of a customer. Disconnected from how our food is produced, we have no real appreciation of its value, discarding as we go the organic material that was once so precious to traditional farmers.

If we are to halt the huge ecological damage that is being done, we must return all the organic materials that we use to the soil – and I don't mean to landfill. These composted materials could help replace the synthetic fertilisers that are a major source of the nitrogen problem, and rebuild the biological functions of the soil food web that are the basis of a healthy ecosystem. If sensible purchasing decisions and a political will to change can be saddled to the resources of industrial engineering, this can easily be achieved.

THE COLLECTIVE BACKYARD

The collective backyard is a huge, worldwide ecosystem whose management has significant impacts on the global ecology. More toxic chemicals enter the ecosystem through the urban environment than are sprayed onto agricultural fields (Mollison, Permaculture: A Designers' Manual, 1988).

Over use of nitrogen fertilisers is just as much an issue for home gardeners as farmers, even organic farmers and gardeners. Improper use of manures and natural nitrogen fertilisers, though not adding new nitrogen to the system, can still pollute the ecosystem. Here are some actions that consumers and gardeners can take to help get things back into balance:

• All manure should be fully composted before it is added to the soil, though aging and drying of low-nitrogen manure – such as cow and horse manure – is usually enough.

• If, for space reasons, it is not possible to compost your kitchen scraps, then small, self-contained worm farms are commercially available and will easily fit on a balcony.

• Avoid all synthetic nitrogen fertilisers, particularly on green leafy vegetables such as spinach, which can concentrate toxic doses of nitrogen in the leaf. Chemically fertilised spinach has recorded levels of nitrogen over 300 times the 50ppm considered safe for human consumption (Mollison). Over-application of natural fertilisers, such as blood and bone, can produce toxic levels of nitrogen, though not to the same degree.

• Judicious use of legumes can generate sufficient nitrogen for your garden's needs.

• Buy organic food and recycle the scraps into your garden. You can also collect from friendly neighbours.

• Since we have become a community of customers, we must use our purchasing power to drive markets toward sensible production systems. Buy natural fibres (organic where possible) – the production of nylon generates significant nitrogen pollutants.

• Support locally grown and manufactured goods. Approximately 90 per cent of the energy used in agriculture, and the resultant emissions, is from packaging, marketing and transport.

Most importantly, we must re-institute the law of returns as our guiding principle and begin to re-align ourselves within the wheel of life.

THE ORGANIC GARDENER, SPRING 2002.

The oldest recorded living tree is a Bristlecone Pine *(Pinus longaeva)* growing on Wheeler Peak in east Nevada. It is believed to be more than 4,600 years old.

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

Willunga Hillsface Landcare Group
PO Box 215
WILLUNGA SA 5172

Meeting dates vary, but are usually held on Mondays monthly at 4.30 p.m. in the Willunga Hub, cnr. St. Peters Terrace, Willunga.

All members are welcome to attend these meetings.

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