



The Green Challenger

Official Newsletter
of the
Willunga Hillsface
Landcare Group

Willunga Hillsface Landcare Group

Spring 2011

Feed the soil... feed the World

A 30-year experiment shows there's a way to feed the world and conquer climate change. There's only one thing we have to focus on, soil expert Dr. Paul Hepperly tells SIMON WEBSTER.

Many questions, one answer," says Dr. Paul Hepperly. "Improve the soil." Speaking to cattle farmers at a soil workshop in Casino, in northern NSW, the American has plenty of expertise to back up his claim. With a doctorate in plant pathology and a master's degree in agronomy, Dr. Hepperly is also former research manager of the Rodale Institute, a Pennsylvania-based organization that has been conducting extensive organic trials for 30 years.

Since 1981, the Rodale Farming Systems Trial has compared three systems of broadacre cropping:

- * chemical-based conventional;
- * a 'vegetarian' organic system, in which legumes are used as cover crops and fertilizers;
- * and a manure-based organic system using aged cattle manure or compost in addition to legumes.

The systems have all been fine-tuned over the years to maximise their efficiency. In recent years each system has also been trialled on a till and no-till basis. The experiment has found that organic systems produce healthier soil, cleaner environments and more nutritious food.

But it has also come up with a big surprise: in contrast with the commonly held view that organic agriculture produces lower yields than conventional farming, the Rodale trial has found that organic systems can match chemical ones, and even outdo them.

Organic systems have produced similar corn yields to the conventional systems in typical years, and outperformed them in Drought years, by a remarkable 28 to 34 per cent—thanks largely to the increased organic matter in the soil, and its ability to absorb and hold water.

Healthy soil also rains better. In 2004, when Rodale experienced one-in-100-year rainfall, the organic systems again came to the fore, producing 15 per cent higher yields than the conventional farming systems.

This bodes well for organic growers as climate

change produces more extreme weather. It's also good news for those parts of the world worried about how they are going to grow food when the oil runs out.

Organics takes time

If organics is so efficient, why do so many other studies show it to be less productive than conventional agricultural methods, and organic food to be no more nutritious than the conventional equivalent?

First of all, those studies tend to be too short, according to Dr. Hepperly. "Most research programmes are funded on a three-to-four-year cycle," he says. This is a result of how the university system works, he explains: it is just long enough for a junior professor to show he has done enough research to become a senior professor, but not long enough to see soils come back to life after organic conversion. It takes time for organic matter, water infiltration and microbial activity to get back up to scratch.

"If you plant maize straight into depleted soil you're going to get big losses," says Dr. Hepperly. "You don't get the transformation until the fourth year. Then this transformation continues."

Secondly, not all studies are as bias-free as they might be. "Follow the dollar," says Dr. Hepperly; lots of research funding comes from seed technology companies.

Dr. Hepperly acknowledges that Rodale too has an agenda. Founded in 1941 by organics pioneer, author and publisher Jerome Irving Rodale, the institute exists not just to research organic agriculture, but to promote it. It has published more than 50 journal articles and does invite conventional farmers to visit and scrutinise results.

Farming carbon

"We have global warming; we need global worming," says Dr. Hepperly. Organic agriculture, also known as regenerative agriculture, does not just mitigate the effects of climate change by helping crops perform better in extreme weather. It might also stop climate change dead in its tracks.

First of all, organic farming reduces greenhouse gas

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Feed the soil... feed the World—Continued from Page 1
emissions: organic corn and soybean production use 33 per cent less fossil fuel than conventional production, according to the Rodale experiment. This is because the biggest consumer of energy in conventional systems is the use of nitrogen fertilizers and herbicides, which organic systems do not use. The biggest use of fossil fuel energy in organic systems is in buying seed, followed by the use of machinery. Save seed or convert an organic system to no-till, in which crops are flattened and seeds planted into the mulch in one pass, and the energy savings go up to 66 per cent, says Dr. Hepperly.

Secondly, organic farming takes carbon from the air (where it is a greenhouse gas) and puts it into the soil in the form of organic matter (where it helps us grow food). Conventional agriculture does the opposite: some deep prairie soils in the American Midwest have gone from 20 per cent carbon in the 1950s to less than two per cent carbon now, says Rodale.

In contrast, levels of carbon (and organic matter - the terms are more or less interchangeable, as organic matter consists mostly of carbon) in the Rodale organic plots have gone up from one per cent to 30 per cent in 30 years.

“The biggest factor is using cover crops,” says Dr. Hepperly. “Every year you have a cover crop instead of a winter fallow you get a 600 to 1200 kilogram-per-acre net deposit of carbon into the farming system.”

Add some other methods of increasing organic matter, such as compost or animal-crop integration and the effects are even more pronounced.

“Improving soil is the biggest chance we have of fixing climate change,” says Dr. Hepperly, who believes that by converting the world’s farmland to organic, “we could counteract present-day emissions.”

Animal magnetism

Surprisingly, the secret weapon in producing great soil comes on four legs and has udders. The much-maligned cow could not only help us grow better food but might go from zero to hero in the climate change fight, if only it were managed better, says Dr. Hepperly.

“The best soils in the world come from grasslands with large ruminants, where rainfall matches evaporation. You can optimise your system by leveraging animals and plants together.”

Well-managed paddocks with animals on them produce soil perfect for growing crops. In broadscale farming, Dr. Hepperly advocates a rotation system that integrates cropping and grazing, with paddocks spending two years under pasture before entering a two-year cropping rotation.

During the pasture years, the animals don’t spend all their time in one field. “Mimic nature: that’s the real intelligence,” says Dr. Hepperly. A system known as holistic grazing management does just that: it rep-

licates the graze-and-move lifestyle of animals in the wild by moving large herds frequently through small paddocks. The animals are moved on before they eat the plants too low, and the paddock is allowed to rest long enough for grasses and legumes to grow stronger, develop larger root systems and add yet more organic matter to the soil.

“Roots make soil,” says Dr. Hepperly. The animals’ manure, meanwhile, is absorbed into a living soil by dung beetles, rather than just lying on the surface of a dead soil and gassing off into the atmosphere. In net terms, well-managed cattle on a soil rich in biology are doing the environment a favour. “The carbon sequestration value can be much greater than the emissions of cattle belching and the decaying matter,” says Dr. Hepperly.

The methane production for which cattle are routinely castigated is “a product of being fed grain rather than the ruminant itself.” When it comes to increasing soil carbon, and fighting climate change, the cropping-grazing model could be critical, says Dr. Hepperly.

“Cover crops are more effective than no-till, compost is more effective than cover crops; integrating pastures with cover crops is incredibly powerful.”

Compost is king

Backyard food growers can integrate animals into their cropping system, perhaps through the use of chicken tractors or rabbit hutches, Dr. Hepperly says.

However, if he has one piece of advice for backyard food growers it is this: “Start a compost pile. That’s the best thing you can do for your garden. Compost stabilises the materials that are most needed for vibrant production and soil health.”

This is something the Rodale researchers, discovered when they began composting their cow manure in 2005. The manure-based organic cropping system - in which aged cow manure was applied every three years - had performed a little better than the ‘vegetarian’ system. Turning it into compost had a dramatic effect on organic matter, and boosted yields by a further 15 per cent in good years.

Applying compost in the backyard may not replicate the “incredibly powerful” integration of pasture and crops, but it is better than simply applying manure: well-made compost is more stable, and loses less nitrogen to the atmosphere.

“Some of the problems we have with our farming systems are related to unintended consequences,” says Dr. Hepperly. “If we understand the real nature of how things work we can create a human intention to improve our lot, working with living systems because we see them as a friend, not an enemy.”

“We have to change our intention and creativity towards increasing natural abundance rather than killing things. Above all, we must remember: whatever the question, the answer is simple.”

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Letter to the Editor

As an environmentalist, food producer and one who has been closely involved with agriculture for 50 years and locally with Landcare, TFL and FOWB memberships, I welcome the opportunity to highlight the terrible imposts proposed by the NRM.

In Oct./Nov. last year I went to 'Consultation' meetings with NRM on Water Allocation Plan (WAP). At the first meeting I found disbelief in what was being presented; hence subsequent 'consultation' meetings.

The essence is a concept by the environmental group/s that farmers have abused the environment and the NRM are mandated to rectify all the past mistakes by impositions on the rural sector that are deemed to strangle food producers off their land. Much has already been sold off. Prime vegetable producing land has disappeared forever.

I urge the sincere and concerned people to hear or read Prof. Julian Cribb's 'The Coming Famine'. All arable land must be kept for the sole purpose of growing food for Australians and the world.

There is no balance in the proposed NRM WAP and the scientists' produced 'data' in WAP looks impressive, but is greatly flawed. We have evidence that that is so and have proven this to hydrologists.

So why are producers outraged?

- Flawed water data on which the plan is based is WAP 2010-11
- No economic impact studies
- Select prohibition on all water harvesting -dams/tanks: Sect 5.4.7 and 2.2.1
- Water diversion from surface and roof catchments: Sect 5.4.7
- Non-issuance of water license for dam water use if the environment is deemed more needy
- The simplistic view on watercourse management
- Endangering lives - encouraging vermin/weeds
- Water meters on dams - water charges will follow: Part Sect 2.5
- Concrete structures to stop the majority of watercourse runoff from entering dam. (cost so far up to \$20,000)
- Claiming of water from dam catchment for non-existent 'dependent ecosystem.' Sect 3.1
- Requesting payment for 'quantity of water allocation' whether water is used or not: Sect 5.2
- Water allocation for roof run off if 'commercial industrial, environmental or recreational' use is required if ones roof is a certain catchment size: Sect 5.4.9
- Forestry plantations of pinus or eucalyptus are deemed water consumers so will need to be licensed - at the moment on new plantations only: Sect 6.2.4
- The complete disregard and knowledge of

disease-carrying personnel on to properties.

- Food producers can not produce on these continuing imposts by the environmental push to take the land back 300 years.

There has been much bridge building over the last two decades between farming and the environment. The Landcare movement is a farming initiative. TFL have the figures on native vegetation plantings during this period. Primary Industries and farmers worked closely together to improve production and carrying capacity of the land including the often misguided hobby farmers.

The Soil Conservation boards liaised closely with councils and the odd badly managed land - where advice was more useful than litigation.

The goodwill and respect between the land holders and the environmentalist has sadly been lost through the 'environmental police' who do not show the most common of courtesies.

The trust and confidence has sadly been destroyed by the underhanded and arrogant treatment of farmers by this NRM. The issues have not even reached many hardworking food producers.

In the Mount Lofty Ranges, the impact will be first felt in our wonderful farmers' markets. How many carrots, lettuces and cabbages do you have to grow to justify a \$20,000 low flow structure on your dam? You then have to pay for the water in your dam, the use, which is monitored by a meter costing on average \$700 dollars, plus installation costs, plus fencing, plus pump, plus trough, plus header tank and pipeline!

Why are we angry? The word environment is not the fuzzy, wonderful image it had.

SUBMITTED BY K. EDWARDS

EDITOR'S NOTE: I heard on the news today that the NRM are considering a softening of their regulations as a result of many farmers' complaints.

In his book, *The Coming Famine*, Prof. Julian Cribb lays out a vivid picture of impending planetary crisis—a global food shortage that threatens to hit by mid-century that would dwarf any in our previous experience. Cribb's comprehensive assessment describes a dangerous confluence of shortages of water, land, energy, technology, and knowledge, combined with the increased demand created by population and economic growth... But, far from outlining a doomsday scenario, *The Coming Famine* offers a strong and positive call to action, exploring the greatest issue of our age and providing practical suggestions for addressing each of the major challenges it raises.

Feed the the soil... feed the World—Continued from Page 2

"It's all about soil improvement. The emphasis on agricultural inputs misses that fact. We need to get back to the basic truth that the improvement of soil is the improvement of life. In other words: "It's the soil-lution."

ORGANIC GARDENER, JULY/AUGUST 2011

Another call to look after your soil's health

Many of us don't think too much about soil, and see it as just the dirt under our feet – even as we scrub it off the potatoes for our evening meal!

Gardeners and farmers understand just how vital this natural resource is to all of us and that farming and gardening is totally reliant on soils being healthy and 'alive', to produce crops or plants.

However, farmers and gardeners may not realise that across Australia soil is being lost at an alarming rate, and its health is deteriorating in many rural, coastal and urban areas. Soils in rural and urban Western Sydney are affected by salinity.

Soils along coasts are affected by acidity and most soils are affected by structural decline, erosion and soil health or quality. With the amount of time it takes soils to form, it could be thousands of years before soil lost to erosion is replaced and available again for farming and the environment.

So what is it about soil?

Soil is a wonderful, complex substance, made up of decomposing rock, decaying material and living organisms. Soil structure is determined by the mix of these elements and by local conditions such as drainage, the type and age of rock being broken down and climate factors.

Healthy soil is essential for healthy pastures, crops and gardens – it contains the building blocks for life that is air, water, structure and nutrients.

Healthy soils also provide us with a range of 'eco-system services.' 'Healthy' soils support and allow the best plant growth, resist erosion, receive and store water, retain nutrients and act as an environmental buffer in the landscape. Soils supply nutrients, water and oxygen to plants, and are populated by soil biota (micro-organisms), which are essential for decomposition and recycling processes.

Because it is such an ancient and weathered continent, Australia's soils are generally poorer than those of the Northern Hemisphere. Our rates of soil formation are very low by world standards. Scientists estimate that in many parts of the country it would take one thousand years for just 3cm of soil to form, and much longer than that on hillsides and in dry areas.

This means that we have to consider Australia's soil as a non-renewable resource – something we can not afford to waste, through erosion and other forms of degradation. We can replace soil in small areas like gardens, but on most of the country, when the soil is washed or blown away, it is gone for good.

Landowners are also facing issues such as mineral and organic matter loss due to a couple of centuries of over grazing, cultivation, and exposed soils. Soil acidification is another problem which is reducing yields, and fertilizer resistance and impacting on waterways

and fish as well as on vegetation.

Some studies suggest that up to six kilograms of soil can be lost for every loaf of bread produced using unsustainable farming practices.

Australia accounts for around 19% of the total soil moved each year globally, even though it is only 5% of the world's land area. This is potentially having a major impact on our farming systems and environment.

The dirt on soil erosion

Many Australians will remember the massive dust storm that enveloped Melbourne in 1983 with amazing pictures shown on news broadcasts across the country as it happened. A combination of drought and poor land management had left Victoria's farming soils exposed and vulnerable, and when conditions became windy, soils were picked up and carried, causing a dust storm. Melbourne was covered in an alarming dust cloud, made up of two million tonnes of soil. The cost of replacing the nutrients alone in that soil was estimated at around \$4 million.

Since forming in 1989 the Victorian Landcare movement has worked hard to improve soil cover, structure and health to avoid a repeat of this dust storm and to improve farming practices across the state. The Landcare model for co-operative, sustainable agriculture and natural resource management has since inspired communities across Australia and around the world.

The problem of soil erosion

A study in the Hunter Valley of NSW in the late 1980s showed the disastrous results of not looking after our soil. A team of scientists examined a typical vineyard over a period of 16 years to measure the amount of soil being lost. They found that for every bottle of wine produced during that time, a kilogram of soil disappeared. If erosion continued at that rate there would be no soil left for vines to grow in, within one human lifespan.

Soil erosion has other effects too. According to the 1996 State of the Environment Report, erosion contributes to pollution of our waterways. Sediments of soil carried by water change the nature of wetlands and streams. Sediment can fill waterholes that were once drought refuges for plants and animals, and interfere with fish feeding habits. Sediment also carries nitrogen, phosphorous, organic matter and possibly pesticides and bacteria, adding to our water quality challenges. Excessive sediment reduces the storage capacity of reservoirs and adds substantially to the cost of water treatment.

What some Landcare groups are doing

The Mullengandra Landcare Group near Albury in NSW is dealing with erosion on a massive scale. The Mullengandra Creek flows into the Murray River

and has some of the most serious gully erosion in the entire Murray catchment, adding a huge load of silt to the river.

Back in 1995 the Mullengandra Landcare Group was part of the Angry Anderson Landcare Challenge, a project that aimed to plant one million trees in one week in the Murray Catchment to help such problems. You may remember seeing the one-hour television programme about the project on the Nine Network's 'A Current Affair' special.

The Mullengandra project aimed to stop serious gully erosion and involved earthworks and fencing as well as tree planting. Members and volunteers planted around 100,000 new trees, erected fences to keep animals out of sensitive sites and did earthworks to improve the management and flow of water.

Seven years on, the project has been a huge success, with most of the original seedlings surviving and thriving. The gully erosion has been halted where the plantings took place and the group is moving on to even more ambitious projects to help keep its soil in place.

What you can do - simple steps to improving soil health:

Know your soils! Check soils across your property – with the use of a soil testing kit, which is available from your local rural supplier or agronomist.

Dig a pit and check the depth, colour, smell, feel and structure of your soils and find out more about them by looking up soils websites and guides.

Talk to a soils expert – contact a Catchment Management Officer to find a local or regional soils expert.

Check if there is a soil map for your region that can help in better understanding your soils.

Join a Landcare group or project that aims to improve soils through trialling practices to improve soil health (eg no till and conservation farming).

Keep soils covered as much as possible throughout the year to reduce their exposure to damaging winds and the movement of water across your landscape.

Use a piezometer to identify your water table depth at various points on your property.

Release dung beetles to help bury dung (recycling nutrients on-farm), improve soil structure and reduce nutrient runoff and loss to waterways.

Erosion from urban areas and gardens is a common Landcare problem. Soil can wash or blow away from garden beds, bare patches of land and building sites. It often enters the stormwater system and badly silts local waterways, taking other pollutants like fertilizers with it.

Most gardeners are lucky enough to be able to replace small amounts of soil that are washed away from the garden by rain. But knowing that soil is a non-renewable resource is a good incentive to look after it even better.

The key is to protect your soil from being eroded by wind or water, and the way to do this is to keep it covered.

Protecting your soil

Keep soil covered. Wherever your land is, keep it as evenly covered as possible. Ground covering plants, whether they are pasture plants, native groundcovers or crops, hold soil in place against the impact of rain and wind.

Try not to overload your garden beds with topsoil. Instead, mulch beds well and build barriers to stop soil washing away into the stormwater system and clogging up rivers and creeks.

Minimise the amount of hard surfaces such as concrete paths, which speed the rate of water flowing across the land.

Use mulch to protect the soil and to provide other benefits for plant growth and soil health.

Control pets that can disturb vegetation and if necessary fence off areas of your backyard.

Water your garden with a gentle spray or drip irrigation at the roots to avoid forcing soil out of garden beds.

More information on soils

For more information on soils, visit the resources section of LandcareOnline, or visit the following link:

[Australian Bureau of Statistics \(ABS\)](#)

The Australian Bureau of Statistics is Australia's official statistical organisation. The ABS assists and encourages informed decision-making, research and discussion within governments and the community, by providing a high quality, objective and responsive national statistical service. Follow the link for interesting statistics on soils and agriculture.

Contact: ABS National Information and Referral Service. Tel: 1300 135 070

Email: client.services@abs.gov.au

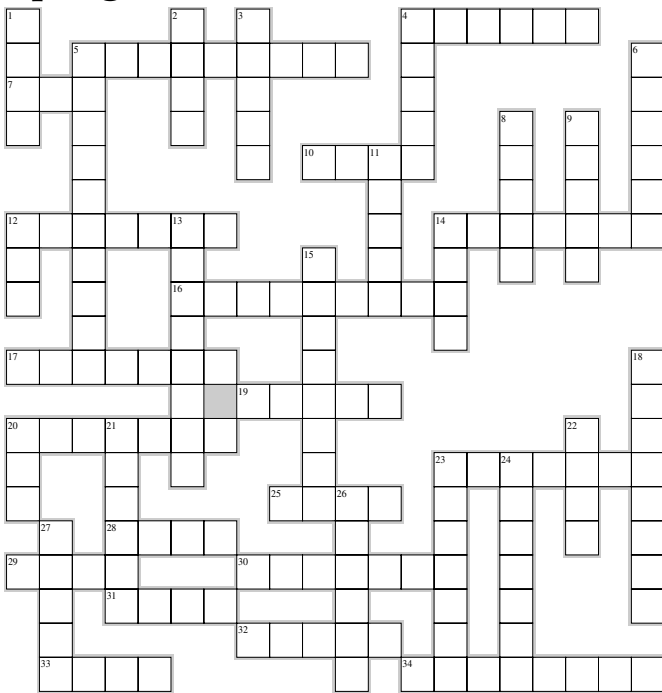
THIS ARTICLE FROM: landcareonline.com

"Never doubt that a small group of thoughtful, committed people can change the world. Indeed, it is the only thing that ever has."

MARGARET MEAD

Willunga Hillsface Landcare Group will hold its Annual General Meeting at the Community, Sustainability & Environment Expo at 11 a.m. on Sunday, 9th October. A Regreen the Range report will be given. All welcome.

Spring Crossword



EclipseCrossword.com

CLUES: Across

4. female ovule-bearing part of a flower
5. natural insecticide
7. strong-scented perennial herb with grey-green bitter-tasting leaves
10. *salvia officinalis*
12. erect biennial herb with edible root
14. adds organic matter and humus to soil
16. herb with aromatic leaves and seed resembling parsley
17. pungent bulbous plants
19. Yellow oval fruit with juicy acidic flesh
20. Aromatic herb with flat or crinkly leaves
23. important component of most plants, humans & animals
25. plant that's not wanted
28. precipitation
29. white crystalline oxide raises pH
30. pretty yellow weed
31. insect affecting leaf growth
32. Dwarf annual cultivated for its aromatic seeds
33. edible large slender white bulb
34. herb with clusters of small daisy flowers; relieves pain

Down

1. vegetable with mucilaginous green pods
2. leguminous plant grown for edible seeds and pods
3. aromatic perennial, leaves used as seasoning
4. Dried plum
5. prostrate perennial mint with small lilac-blue flowers
6. annual, often grown for a spicy salad
8. elongated soft-bodied animal
9. aromatic flavourful vegetable
11. inedible fruit with hard rind
12. partially opened flower
13. Cylindrical green fruit with thin green rind
14. annual cereal grass bearing kernels on large ears
15. dried flowers used as calming tea
18. perennial herb with silver/grey leaves, repels some insects
20. edible legume
21. perennial herb in oxalis family

Regreen The Range Report

The Landcare group is currently investing quite a deal of resources, through funding provided by the AMLR NRM Board, in tackling some of the issues currently facing some of the remnant vegetation on the Willunga escarpment. The remnant vegetation faces a number of issues that threaten the integrity of the vegetation, namely woody weed invasion. Invasion by woody weeds can reduce the biodiversity of the vegetation by limiting the recruitment of native plants and some woody weeds can increase the intensity of fires due to their increased flammability. A number of potentially serious woody weeds such as Gorse and Boneseed have been found on a number of properties on the hillsface and these plants have the potential to be highly invasive and persistent if they are allowed to occupy the remnant vegetation. Gorse, a weed of National Significance, is a major concern as this plant has the potential to cover large areas of farmland making it unusable, as is the case along the Paris Creek Rd. It also is a very aggressive invader of remnant vegetation with large areas of bushland in Conservation Parks on the Southern Fleurieu Peninsula having major problems with this plant.

Nationally, Gorse invades over 23 million hectares and has made unusable over 1 million hectares of land. It has a potential range of over 87 million hectares. Gorse can impose a large financial burden on the community by reducing the carrying capacity of farming land, and consuming large amounts of public funding in eradicating this pest plant. If this plant is left unchecked to invade our remnant vegetation it will severely degrade what little we have left on the hillsface.

This time of year is a good time to find this plant within our remnant vegetation. It is flowering now and it is quite easy to spot with its bright yellow pea-type flowers. The plant has the ability to grow to 7m but is more commonly about 1.5-2m tall. It is multi-stemmed from ground level with new stems being soft and hairy and hardening with age. It is an extremely prickly plant and has the ability to grow in extreme shade and can tolerate strong competition from other plants.

If landholders in the district that have remnant vegetation on their properties find this plant they should contact the Landcare group and inform them of its location. The group have resources available to eradicate this plant. This is not a plant we want to take hold in the district and degrade what little remnant vegetation we have left.

WAYNE LAWRENCE

Down clues continued

22. Aromatic herb with seeds used as seasoning
23. Brassica grown for their edible leaves
24. often eaten in salads
26. Insect with elongated body and a pair of large pincers at the rear
27. kills caterpillars without hurting birds

Transforming sewage waste to biofuel with the Q Microbe

A microbe has been found that can break down anything that contains cellulose and turn it into ethanol.

In 1996, Thomas Warnick was exploring the Quabbin Reservoir in Belchertown, Massachusetts, when he came across a tiny microbe with a big name — *Clostridium phytofermentans*.

Warnick, a microbiology research assistant at the University of Massachusetts Amherst, was sent to the reservoir to find micro-organisms that could break down plant cellulose. His boss, Susan Leschine, had searched areas as diverse as Brazil, France and Hawaii for these organisms, but she'd never seen anything quite like what Warnick brought back. The "Q microbe," as it came to be known, is no ordinary bug. It can ingest—and produce ethanol from—virtually anything that contains cellulose, including human and animal sewage waste.

So Qteros, the company Leschine founded to exploit the microbe's abilities commercially, struck up a partnership with Applied CleanTech (ACT), an Israeli firm that generates alternative energy from wastewater solids. ACT's sewage-recycling system transforms solids into "recyllose." It turns out the Q microbe has a sweet tooth for recyllose, converting the cotton-like substance into ethanol for use in cars.

Jeff Hausthor, Qteros' lead researcher, imagines a uniquely local market for this new biofuel. Obviously, waste materials are a burden to farms and municipalities, both financially and ecologically. But by putting the Q microbe to work, small-scale ethanol plants situated around sewage processing plants could become a reality.

DAN SCHANK | MARCH 2010 ISSUE
www.odemagazine.com

June 28, 2011

The United States Patent and Trademark Office issued US Patent 7,943,363 B2 covering genetic constructs of *Clostridium phytofermentans*. This patent is significant as it provides intellectual property protection for genomic development and the use of gene combinations in *Clostridium phytofermentans* and other micro-organisms to enhance an organism's innate ability to hydrolyze biomass and improve the efficiency and yield of ethanol produced by an organism.

Much more information on the biofuel topic is available at: www.biofuelsdigest.com

Democracy is the greatest system yet devised by man; but it has its weaknesses and its dangers. So far from lessening the responsibilities of the individual, it magnifies them.

ROBERT MENZIES, FORMER PRIME MINISTER OF AUSTRALIA.



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

18 High Street, Willunga. Phone: 8556 4188

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

Community, Sustainability & Environment Expo

to be held on

Saturday 8th & Sunday 9th October

in the **Willunga High School**
Main Road, Willunga

(and various locations around the Willunga community) and is set to attract people from much further afield.

Hours: 10am to 4pm both days

FREE ENTRY

Snake awareness workshop, face painting and other children's activities, animal and reptile display, bush walks in Aldinga scrub, dusk walks at Tatachilla Eco-classroom, hands-on compost heap making demo, Arts Eco Village community garden tour, back yards for wildlife.

There's also a children's programme, Music on Saturday by The Heather Frahn Ensemble, Willi Kallinderis, Dig Woods and Minority Tradition. Then on Sunday, The Wandering Minstrels, Loren Kate, Kylie Kain and Comic Flower plus a great range of speakers too numerous to list here.

If you would like more information, please contact us via email:

expo_willungaenviro@westnet.com.au

or Ashleigh Pitman (Centre Manager)

0407 137261

or Janine Anninos (Project Officer)

0419 838631

This event is sponsored by





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.

If you prefer to receive your copy in PDF format (via email) please let me know at this address: viza05@westnet.com.au.

- President:** John Campbell 8556 2916
- Chairperson:** Kate Parkin 8556 2024
- Treasurer:** Margaret Morris..... 8556 2535
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