



The Green Challenger

Official Newsletter
of the
Willunga Hillsface
Landcare Group

Willunga Hillsface Landcare Group

Working towards a healthy, vibrant and sustainable Willunga Basin

Winter 2016

‘CO₂ is food for plants!’ What will higher emissions mean for crop productivity?

*Life is woven out of air by light –
Jacob Moleschott*

Before starting to write this article, I asked my eight-year-old boy what he knew about how plants grow.

He answered: “Plants take food from the air and use the sun to grow”. He was pretty right: CO₂ is food for plants, though CO₂ is also a pollutant.

Having some CO₂ in the atmosphere can be a good thing, as it provides us with warmth through the greenhouse effect. At the same time it is the source of carbon for plants on Earth.

Laboratory studies have shown that having more CO₂ in the air will increase the rate of photosynthesis and growth for most temperate plants, if they have enough water and nutrients. This is called CO₂ fertilisation.

This is because photosynthesis in plants such as wheat, rice, and soybean is source limited. Quite simply, “source limited” means that at present concentrations of atmospheric CO₂ (approximately 380 parts-per-million), photosynthesis rates are running at about ¾ of full capacity.

The leaves of summer crops (such as maize and sorghum) work differently, and they are less responsive to

increases in atmospheric CO₂.

But in real life – “out in the field” – things can be dramatically different. There is much more to climate change effects than just CO₂ fertilisation. More on that in a moment.

Can one desire too much of a good thing?

Sometimes too much of a good thing can be a bad thing. This is particularly the case with greenhouse gases such as CO₂.

As levels of CO₂ increase in the atmosphere, air temperatures increase and global and regional climate patterns change. This has serious implications for the functioning of most biological systems.

Recent CO₂ atmospheric measurements indicate we are already overshooting safe climate targets, with important implications for our climate systems.

In Australia, evidence indicates feedback processes are likely to increase the frequency of El Niño events.

In Australia, El Niño events are linked with widespread droughts, heat waves, and bush fires. From 1902 to 2002 we had 24 El Niño events, of which 62% occurred after 1950. Between 1990 and 2002 there were six such events.

At this point I think we can all agree that CO₂ is both a food for plants, and a dangerous pollutant.

So what does this mean in terms of the potential for our planet to feed a growing population by 2050?

Does more CO₂ mean more to eat?

When we think about the growth of plants and how much they yield, CO₂ fertilisation and climate change will have different effects. There is also a difference between climate change impacts on crop yields and on the profitability of farm businesses.

One third of the world’s food is produced by determinate crops grown on smallholder farms in the developing world. Determinate crops are ones that bear their full yield at once. These are crops such as wheat, rice, maize and beans that die after a few months in the ground, after which their full yield is harvested.

The yield is a fraction of the total growth of the crop – from 0-50% – and depends on whether the crop faces serious water or heat stresses.

CO₂ fertilisation has a positive effect on crop growth. But climate change will affect both the fraction of the crop that is harvestable, and the total growth of the crop.

Continued on Page 4

Editorial

Here at last is the Winter edition of Green Challenger. I've run into a few health problems over the last few months which have upset my timing for this newsletter. Add to that the fact that my wife and I are regular square dancers which took us away to Buderim this year for the annual Convention. Approximately 800 dancers turned up for this convention, which was great.

We also extended our trip up to Bundaberg. There we took a boat out to Lady Musgrave Island and a glass bottom boat over the southern end of the Great Barrier Reef which was very interesting.

The weather was good in Queensland, but we encountered a lot of rain both on the way up and back. However, the thermal pools at Moree were really good.

Unfortunately the rain has been so good in some parts this year that it's been causing problems, but it makes a change from the more usual lack of rain.

The Murray is looking terrific at the moment, but when Judy read the adjacent verses to me I felt Bob's words were so 'right on' that I had to use them if possible, and bless him, he agreed.

Bob wrote these verses during a really bad drought which began in 1995 and continued Australia wide until late 2009. This brought about the Water Act 2007 and the Murray-Darling Basin Authority (MDBA) was established with all planning decisions made in the interest of the Basin as a whole. This won't please everyone, but it seems like a step in the right direction.

Letters, emails or feed-back 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.

Mighty Murray – R.I.P.

Laze along oh mighty Murray
For no longer can you hurry
As you push your precious
lifeline, through the driest land
on earth.

For they've blocked you and
they've dammed you
They've abused you and they've
dammed you
As three states carve up your
bounty to exploit your liquid
worth.

It's an old familiar story,
man defies the land for glory,
He has siphoned off the life-
blood of your cleansing alpine
snow.

One more slice of nature's
wonder is reshaped for greed
and plunder
So no longer can you cycle as the
seasons ebb and flow.

They submerge your sandy
beaches and your sparkling
tranquil reaches
And ignored the gasp and
choking, as your strangled red
gums died.

Like a skeleton plantation, arms
held high in remonstrance
Standing waist-deep mocking
progress, in a salty man-made
tide.

Do you worry mighty Murray as
you drown in saline slurry
How your power has been
harnessed to fulfil a master's
need?

For your innocence escaped you
when with locks, they trapped
and raped you
To manipulate your beauty and
accommodate their greed

And man bathes in exaltation as
he lauds his irrigation
While he's quick to count the
profit he is slow to count the
cost.

It's a leaky boat he's steering, on a
wave of over-clearing
For to fight the tide of nature is
to sink with all hands lost.

Not so mighty, mighty Murray,
failing health is causing worry
As you bravely struggle
downstream man attempts to
suck you dry.

Through neglect you're getting
sicker as the bureaucrats just
bicker

While the rhetoric flows freely it's
your flow we fear may die.

Sixteen hundred miles of wending
finds your painful journey
ending

Though your strength is all but
finished, you rejoice at nearing
home.

But you pull up, tired and jilted,
for your mouth is clogged and
silted

So no longer can you gambol in
the Southern Ocean's foam.

And the growing dune that bars
you, is the final straw that scars
you

Hear the breakers drown your
protests as you make a dying
plea.

And you stagnate in your stillness,
from your fatal man-made
illness

It's a crime once mighty Murray
— you've become an inland
sea.

*These verses reproduced with
permission from the publisher,
Bob Magor from his great little
book "Caravanning Bliss"...
and other verses.*

*Let's hope the river manage-
ment lessons have been learnt
and verses like these will not
need to be written again.*

YACCA: Youth And Community in Conservation Action

As per usual, winter has been a busy time for YACCA, with kids trekking through mud, hosting stalls at local festivals and exploring savannah woodlands.

YACCA started off our colder months with an annual visit to Stipiturus Conservation Park, outside of Mt. Compass, for their 'Swamp Fest' planting day. YACCA, along with some enthusiastic helpers, spent the day surveying the creeks running through the park to get an idea of the macro-invertebrate and frog population. We used this as an opportunity to educate younger kids about macro-invertebrates and frogs.

Everyone enjoyed teaching kids about the aquatic species we found, as YACCA believes it is important to educate the younger generations about the environment. We also really enjoyed splashing around in creeks and getting an opportunity to explore Stipiturus.

This winter YACCA also assisted the Willunga Trees For Life group in their annual planting day at the Wirra Reserve. We are very passionate about our local Wirra Creek and paired up with the Willunga Trees For Life group to revegetate the surrounding area. All up we helped plant 80 plants on the banks, with no one falling into the creek this year, an achievement we were all excited about.

In July we were also treated to a leadership training day at Monarto Zoo. We learnt how to work in a team while helping to create enclosures for the endangered Mallee Emu Wren. We also got a very special experience involving picking up Bison poop.

The Willunga Almond Blossom Festival was another event we were involved with. We used this opportunity to display all the cool things the environment has to offer. We had a great hands-on activity such as racing common garden snails and looking for macro-invertebrates in a mock pond. We also had Spiny

Leaf insects on display, a range of interesting seeds, leaves, skulls and feathers to look at, plus terrariums we had made on sale.

Some YACCA members also visited the Victor Harbour Whale Centre for a Hooded Plover workshop. Here we learnt about the vulnerable Hooded Plover and how we can help monitoring these little birds.

We are now looking forward to going to a four-day camp in Victoria at the Otway Ranges. Here we will get the chance to work with

the Quoll dogs who find scats and traces of this rare species.

We would like to thank everyone who have supported us and all the organisers of the events we have been able to participate in. We would also like to give a big thanks to everyone at the Willunga Environmental Centre. Its definitely been a great experience!

This article was proudly prepared and written by the members of YACCA: Jordynn, Lily and Grace.

Regreen the Range Report

The Landcare group have undertaken significant on-ground works across the range at a number of locations this season. The group have continued with the construction of grade control structures within the creek systems which flow from the escarpment and flow into the Aldinga Washpool. Six more controls were established in two creek systems bringing to a total of 12 structures built within four major creek systems. Already in the structures built last year significant amounts of sediment have been captured behind the walls, resulting in less sediment being deposited in the Washpool.

The structures which were installed this year have resulted in landholders immediately downstream being able to benefit in that they have been able to undertake works in the same creek system where currently erosion issues were having a negative impact on their property. By having the water upstream slowed significantly and released at a more constant flow rate, the works they can conduct within the creek system on their own property is made very much easier. The Landcare group will closely monitor the grade control structures into the future to assess the on-going benefits and to possibly revegetate within the sediment that is being deposited behind these structures.

The Landcare group is also con-

tinuing with the revegetation on the Willunga Hillsface. This year the group revegetated approximately another 30ha across three properties this Winter. One of the properties is located at Willunga south with the other two properties located at McLaren Flat. This season is looking very promising with good rainfall events occurring across the district during winter and a positive forecast for rainfall in early spring.

The property which the group revegetated in Willunga south is a significant area as it will establish connectivity with two large areas of revegetation. When this season's revegetation is established it will create continuous area of revegetation across the hillsface stretching from Sellicks Hill to Louds Hill Rd. This will provide significant benefit to fauna which currently utilize the revegetation, especially the bird populations. They will be able to move across the landscape without having to travel across open ground, providing them with protection from predation, and significantly more habitat to utilize.

The Landcare Group would like to take this opportunity to thank all of the landholders in the district that allow the group to undertake this important work. Without the landholders' support this project would not be able to succeed.

WAYNE LAWRENCE

Pulses: “Climate-smart” food of the future

Two events organized as part of the International Year of Pulses (IYP 2016) have called for increased efforts to scale up global production of pulses, such as beans, chickpeas, and lentils, due to their multiple benefits as nutrient-dense, soil improving and “climate-smart” crops. The International Conference on Pulses for Health, Nutrition and Sustainable Agriculture in Drylands (ICP 2016) took place from 18-20 April in Rabat, Morocco, while the Food and Agriculture Organization of the UN (FAO) hosted a seminar in Rome, Italy addressing the links between pulses and soils (the focus of international efforts in 2015), on 19 April 2016.

...the Rome seminar titled ‘Soils and pulses: symbiosis for life,’ focused on the reciprocal relationship between soils and pulses, and their contribution to the 2030 Agenda for Sustainable Development. With expert panelists and keynote speakers from intergovernmental agencies, research institutions and non-governmental organizations, the seminar specifically addressed how pulses can contribute to the second Sustainable Development Goal (SDG 2) (end hunger, achieve food security and improved nutrition, and promote sustainable agriculture) and SDG 15 (protect, restore and promote sustainable use of terrestrial ecosystems, sustainable manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss).

The discussions highlighted a variety of programmes working to improve the productivity of key pulse crops, enhance their contribution to sustainable intensification (producing more food with less natural resources), and expand pulses’ genetic diversity in order to boost plant resistance to diseases and pests. Other presentations highlighted the contribution of pulse production and consumption to sustainable rural development and livelihoods.

In a keynote address linking the

seminar with ICP 2016, Mahmoud Solh, Director-General of the International Centre for Agricultural Research in Dry Areas (ICARDA), noted that through their nitrogen-fixing properties, pulses significantly reduce the need for synthetic fertilizers by “millions of tons” globally. Highlighting pulses’ contribution to health and nutrition, he discussed a Sri Lankan project that provided iron-rich lentils to children, noting it revealed pulses’ “remarkable ef-

ficacy” in addressing malnutrition issues in developing countries.

...Michael Hage, FAO Representative in Morocco, underscored the important role that pulses will play in achieving the Zero Hunger goal by 2030 because of their nutrient-density, affordability and positive impact on soil.

Full story at: <http://nr.iisd.org/news/iyp-2016-events-promote-pulses-as-climate-smart-food-of-the-future/>

‘CO₂ is food for plants!’

Continued from Page 1

Heat, water and CO₂: it’s a complex package

Increased air temperatures are expected to expose crops to more very hot days. This will damage developing grains and reduce the harvestable yield.

Crops will need more water and will face water shortages more often. Increased temperatures mean the time from sowing to harvest will be shorter, so crops will grow less and have smaller yields.

Water is key in crop growth and production: 80% of the total agricultural land depends on rainfall. Changes in precipitation are likely to have fundamental impacts on food production.

Analyses of recent trends in global food production could be the best indicator of how climate change will affect global food production in future. One analysis shows that since 1980, higher CO₂ and climate change have had a slight positive effect on rice and soybean, and a negative effect on wheat and maize.

In Africa, maize is the main food staple. Researchers calculated that 1°C of global warming would reduce yields across the continent by 20% over 75% of the area if there is drought. Under optimal management, 1°C of warming would reduce maize yields by around 10% on 65%

of the area.

It’s not all bad news

The challenges are significant, but we should be able to feed 9 billion people by 2050. Over the last 50 years the increase in agricultural production fed an additional 4 billion people with only an 11% increase in land area.

In Brazil there has been sustainable intensification of broad acre agriculture. Vietnam has changed its regulations on land ownership. Malawi has introduced smart subsidies on agricultural inputs.

Nowadays Brazil is leading the world as a global net food exporter; smallholder farmers from Vietnam are increasingly accessing international markets; and Malawi, one of the poorest countries in the world, exports maize to neighbouring countries.

These are significant, if small, examples of how the right technologies and policies can generate incentives, opportunities and economic growth from agriculture, whatever our climate future holds.

So, is CO₂ just plant food? Or is it just a pollutant? As with all of these things, the answer is: “it depends”.

<https://theconversation.com/co-is-food-for-plants-what-will-higher-emissions-mean-for-crop-productivity-3071>

Killing weeds with light beams, not pesticides

At The Optimist Daily we are convinced that organic agriculture can feed the world in a healthy way. But on the way to that ultimate goal we may need some help from technology. Here's an example: The U.S. Air Force is experimenting with a device that removes weeds without the use of toxic herbicides. The "wand" zaps a concentrated beam of light and heat that kills the plants' leaves and roots.

When you think of military weapons, you tend to imagine things such as bullets and bombs. The Air Force is experimenting with a new tool for its arsenal: a wand that zaps a concentrated beam of light and heat.

No, this isn't Harry Potter, and the enemies aren't terrorists. The wand is called NatureZap, and it targets "unwanted vegetation"—aka weeds. Edwards Air Force Base in Southern California is testing the device as a way to remove weeds without the use of toxic herbicides.

The electric device uses a combination of heat and high-energy blue light to kill the plants' leaves and roots. Treated plants, according to manufacturer Global Neighbor, die in as little as three days. "We've had a pretty good success rate," said Jon Jackson, the company's president. "We get about a 70 to 80% die-back without regrowth." He said NatureZap is particularly effective on ragweed, dandelions, and crabgrass. The light penetrates about two inches into the soil, so it only affects targeted weeds and not the "good" plants around them.

Global Neighbor has received two rounds of funding, totaling nearly \$900,000, from the federal government's Small Business Innovation Research program to develop and test the NatureZap device.

Danny Reinke, principal scientist for the 412th Civil Engineering Group at Edwards Air Force Base—who developed the device with

Global Neighbor—told the Desert Wings newspaper that NatureZap may be useful in meeting the military's requirements to reduce its use of toxic chemicals under the Sikes Act, which helps protect endangered species on Department of Defense property. He's testing a battery-powered version of the device that reportedly can treat a softball field-size area between charges.

This is the second version of NatureZap. The company previously sold a similar device, also called Na-

*The seeds I sowed
for weeks unseen,
Have pushed up pigmy shoots of green;
So frail you'd think the tiniest stone
Would never let a glimpse be shown.
But no; a pebble near them lies,
At least a cherry stone in size,
Which that mere sprout has heaved away;
To bask in sunshine, see the day.*

WALTER DE LA MARE

tureZap, that only used heat to kill roots.

"We've graduated since then," said Jackson. "Even before we were with Edwards we spent a few years working with lasers and other things, trying to get ground penetration." The developers hit on the idea of light several years ago after they built a clear Plexiglas enclosure to see how their earlier device affected dandelion roots. "It turns out that's a stupid idea because as soon as you expose a root to light it dies," Jackson said.

Global Neighbor has worked with Central State University professor Cadance Lowell to test various versions of the gadget. Lowell said NatureZap definitely kills some plants, apparently by disrupting chloroplasts, the plant cells where photosynthesis takes place. It may cause other stress damage on the cellular level, the nature of which is still being investigated. So far Low-

ell's research, presented in February at the Weed Science Society of America's annual meeting, has shown that NatureZap is at least as effective on ragweed as glyphosate, the primary ingredient in Monsanto's Roundup. Deeper-rooted plants such as dandelions are harder to kill because the light can't penetrate the ground far enough. "You need to hit it a couple of times, but eventually you will kill it," she said.

Experts have shown interest in the device. "I think published studies would be the first step before any conclusions can be made about this technique," said Scott Hoffman Black, executive director of the Xerces Society for Invertebrate Conservation.

"If it truly works, I think it will be very successful because change cannot come quickly enough in the world of pest management," said Nathan Donley, a scientist at the Centre for Biological Diversity. "Most weed-killing chemicals in use today have been around for more than 50 years. Innovation is nonexistent in this realm."

Donley expressed pleasant surprise when he learned that the Air Force was testing NatureZap. "If the federal government can reduce its pesticide use, the money saved can be used to advance other conservation efforts," he said. "Pesticides aren't cheap, and a lot of costs of their use aren't paid up front. They're externalized to the community in terms of increased health care costs or environmental restoration."

Jackson said that's why he wanted to develop NatureZap in the first place. "Chemical applications have lasting damage," he said. Light and heat, on the other hand, can come and go with the press of a button, and that might have a lasting impact that won't leave a toxic legacy in its wake.

<http://www.takepart.com/article/2016/08/08/air-force-tries-killing-weeds-without-light-beams-not-pesticides>

Endangered earth: The secret battle to save our soils

We can't bury our heads in the sand any longer. More than a third of Earth's top layer is at risk. Is there hope for our planet's most

precious endangered species?

Find the places where farms give way to the California wilderness and you're sure to encounter an

endangered species. It is not aggressive, but it is omnivorous, devouring anything that happens to fall dead within its reach. And like most rare beasts, the extinction of *Abruptio durixeralfs* would have cascading impacts on the ecosystem around it.

Don't be misled by the name. This is neither animal nor plant nor microbe, but a subgroup of soils. Its members nonetheless slot into a classification system every bit as elaborate as that we use to categorise life forms. In the US alone, more than 20,000 soils have been catalogued. Many are facing extinction.

It may seem like madness to speak of soils going extinct, but more than a third of the world's top layer is endangered, according to the UN, which declared 2015 the International Year of Soils.

The news isn't good: we are losing soil at a rate of 30 soccer fields a minute. If we don't slow the decline, all farmable soil could be gone in 60 years. Given soil grows 95 per cent of our food, and sustains human life in other more surprising ways, that is a huge problem. "Many would argue soil degradation is the most critical environmental threat to humans," says Peter Groffman, who studies soil microbes at the Cary Institute of Ecosystem Studies in Millbrook, New York. Yet all is not – quite – lost.

Soils and Pulses: Symbiosis for life

On April 19, FAO, Bioversity International and the Permanent Representation of Italy to the UN jointly hosted the seminar "Soils and pulses: symbiosis for life". The event focussed on the reciprocal relationship between soils and pulses, while also discussing how the cultivation of pulses can help achieve the 2030 Agenda for Sustainable Development.

Soil is the basis for food, feed,

'Swagbot' prototype robot developed for graziers to herd and monitor stock

ABC Rural, By Joshua Becker

Farmers are excited to see the progress of a new robot that can manage livestock on large grazing properties.

The 'SwagBot' prototype can monitor and herd livestock as well as check on crops autonomously.

This comes as farmers are beginning to embrace the use of drones and robots in order to free up farming resources.

Salah Sukkarieh, Professor of Robotics at University of Sydney, said the initial trials have been successful.

"We've done a preliminary trial with farmers; we've done things such as being able to tow trailers, monitor animals from a distance, go through waterways," he said.

"Ultimately we want a robot that can monitor the farm continuously and more importantly look at animal welfare.

"Farmers want something that looks at the health of an animal from a distance and also keep an eye on animals at night.

"It will measure the temperature of an animal from a distance and be able to measure the walking activity of an animal, to see if something is going on."

Dr Sukkarieh said it was unlikely the robot would ever replace working dogs or people, and he hoped the final product would be priced similar to that of a cheap car or all terrain vehicle.

The initial trial in Newcastle, New South Wales worked to balance the need for a hardy build that was still able to manoeuvre difficult terrain.

"It is very nimble, we want it to go over undulating terrain, so we had to build a robot that could go over rocks and logs, and that posed the extra challenge," he said.

"In the next trial we'd like to ruggedise the unit but in doing that you lose a bit of the nimbleness."

There is scope to make the robot completely solar-powered and autonomous.

"Over the next year the idea is to go to complete autonomy mode," Dr Sukkarieh said.

"Which means a farmer will be able to grab their iPad, phone or whatever, with a map of their farm on there and click on a spot and the robot would be able to go there autonomously.

"We're also going to look at animal monitoring, in the final year we want to be able to get within 10 metres, so for example towing a hay bale to get closer to an animal to look at health.

"By then we'll be able to get a sense of whether this is the kind of thing that farmers will own or a contractor could bring in."

<http://www.abc.net.au/news/2016-08-03/robot-swagbot-prototype-developed-for-graziers/7685296>

fuel and fibre production and for services to ecosystems and human well-being. It is the reservoir for at least a quarter of global biodiversity, and therefore requires the same attention as above-ground biodiversity. Soils play a key role in the supply of clean water and resilience to floods and droughts.

The largest store of terrestrial carbon is in the soil so that its preservation may contribute to climate change adaptation and mitigation. The maintenance or enhancement of global soil resources is essential if humanity's need for food, water, and energy security is to be met.

"Soil anaemia also breeds human anaemia. Micronutrient deficiency in the soil results in micronutrient malnutrition in people, since crops grown on such soils tend to be deficient in the nutrients needed to fight hidden hunger. (...) Managing our soil and water resources in a sustainable and equitable manner needs a new political vision." M.S. SWAMINATHAN

The increasing degree and extent of soil degradation processes due to mismanagement and land use changes are threatening this resource and urgent action is needed to reverse this trend if we are to ensure the necessary food production for future generations, mitigation of climate change, provision of clean groundwater, and reduction of biodiversity loss.

<http://www.fao.org/globalsoil-partnership/information-resources/en/>

also...

World Soil Day champions an untapped resource to solve the climate crisis

Why World Soil Day? "Because soil is something to celebrate—and protect," Lara Bryant, Soil Health Fellow at NRDC, writes at the organization's Switchboard blog. "Healthy soil is the foundation for nutritious food, clean water, and sustainable agriculture," she writes.

"Soil is so much more powerful

than most of us realize," stated Diana Donlon, food and climate director at the Centre for Food Safety (CFS).

It's what CFS and many other organizations, farmers, and organic advocates have stressed. Here's why: as a report from CFS's Cool Foods Campaign released in April stated, "cultivated soils globally have lost 50-70 percent of their original carbon content." But atmospheric CO₂, which is fueling climate change, can be shifted into the soil where it's needed, providing numerous benefits.

Multiple factors have contributed to the problem, the report states: paving over land; converting grasslands to cropland; and agricultural practices that involve tillage and chemical inputs, which not only deprive soil of organic matter and rob it of the ability to store carbon but also contribute to flooding and erosion.

Healthy soils, in contrast, fed through organic agriculture practices, like polycultures, cover crops, and compost, give soil microbes the ability to store more CO₂. Not only that, the report states, healthy soil can better weather both drought and floods because its structure allows it to act like a sponge. And healthy soil means better crop yields.

And as environmental activist and author Vandana Shiva wrote this year, research by her organization Navdanya "has shown that organic farming has increased carbon absorption by 55 per cent. International studies show that with two tonne per hectare of soil organic carbon, we can remove 10 gigatonnes of carbon dioxide from the atmosphere, which can reduce atmospheric pollution to 350 parts per million."

The articles following also... are from

<http://www.commondreams.org/news/2015/12/04/world-soil-day-champions-untapped-resource-solve-climate-crisis>

Healing the Earth with Mushrooms

Digesting plastic and providing the basis for new biodegradable materials

...most of a mushroom's life actually exists underground as a network of stringy tendrils called mycelium.

Mycelia play a vital role in maintaining the balance of life and death in the ecosystem. But these humble fungi may also lead the way toward a healthier, more sustainable future for human civilization as well. One example comes from 2012, when researchers from Yale University discovered a mycelium strain in the Amazon rainforest that can digest plastic.

This has big potential, because for the past 70 years we have made and thrown away a lot of plastic. ... While a portion can be recycled (about 8%), its usefulness only lasts so long, and typical environmental mechanisms can't break down plastic's complex chemistry.

...This plastic-eating mycelium, *Pestalotiopsis microspora*, may help us chip away at our accumulation of non-biodegradable waste. Meanwhile, other mycelium strains can help us to break from conventional plastics altogether.

At Ecovative, ... researchers have developed cost-effective, mycelium-based products with significant advantages over their conventional counterparts.

...One of Ecovative's products, Myco Foam, is made entirely of fungus and plant material. ...In addition to reducing plastic waste, fungi have many other abilities. Some are used for food. ...Mushrooms also support our lives in big ways that we might not notice. They do Earth's dirty work. When plants and animals die, fungi help decompose the discarded bodies, completing the circle of life.

Sorry, very heavily edited. For full story, go to:

<http://www.theepochtimes.com/n3/2028294-healing-the-earth-with-mushrooms/>



Willunga Hillsface Landcare Group

P.O. Box 215, WILLUNGA, S.A. 5172

Meeting dates vary, but are usually held on Mondays monthly at 5 p.m. in the Willunga Hub, cnr. St. Peters Terrace, Willunga.

All members are welcome to attend these meetings.

If you would like to receive your copy in PDF format (via email) please let me know as this saves the group postage. This is my address: 2garfy94@gmail.com.

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- Chairperson: Kate Parkin8557 7624
- Treasurer: Margaret Morris.....8556 2535
- Secretary: Brad Smith.....0432 599 053
- Regreen the Range Manager:
Wayne Lawrence0423 283 043
- Publicity: Brian Visser8556 4292
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Paul McKenzie0429 095 314
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