

Permaculture Cairns December Newsletter

EMPOWERING COMMUNITIES WITH SUSTAINABLE SOLUTIONS



Care for the Earth, Care for people, Share the excess

Permaculture Cairns Incorporated

Web Site: www.permaculturecairns.org.au

INVITATION

SOCIAL NIGHT and ANNUAL GENERAL MEETING

Tuesday 15th December 2015 6pm for 6.30pm start

Venue: West Cairns Bowls Club in Gatton Street Manunda.

After the meeting there will be finger food, cash bar for refreshments and a chance to try your skills at bare foot bowls.

Bring some money for drinks and the raffle

All welcome, Members free, non-members \$20

If you have thoughts of being on the Committee or can help out at events, such as at our big Permaculture Expo Day in May, please contact a committee member.

We would love you to become involved, it is a great way to meet people and to make new friends, while being involved in a noteworthy cause. And it is fun.

URGENT !!!!!!! For catering purposes please RSVP by Friday 11th December by calling 4054 6324 – leave a message if not answered by a real person.

Permaculture Principle No. 12

Creatively use and respond to change

“Vision is not seeing things as they are but as they will be”

We can have a positive impact on inevitable change by carefully observing, and then intervening at the right time.

The butterfly is a positive symbol of transformative change in nature, from its previous life as a caterpillar. The proverb “vision is not seeing things as they are but as they will be” reminds us that understanding change is much more than a linear projection.

OTHER LOCAL WORKSHOPS AND EVENTS

L.E.T.S. December Calendar

TABLELAND LETS - Relocalising all of Far North Queensland
LETS is a Community Trading System which uses “Bartles” for trading.

MALANDA - Saturday 12th 10 – 12 noon. Malanda Trade in the Park. Eacham Memorial Park, opposite the post office. Bring along morning tea to share, something to trade and display your wares. There is a shelter, so it's an all weather event. Event Host: Katrin 40966755

YUNGABURRA – Thursday 17th December From 5pm RED SHEDS Christmas party @ that retro café. (NON LETS EVENT). Everyone Welcome. Bring something Festive to share for dinner and alcoholic drinks if you desire. Refreshments can be purchased from the cafe... Further info 4095 2340

RAVENSHOE CHRISTMAS TRADE – Saturday 19th December 12 - 2pm Trade afternoon Youth Shed, Ravenshoe Community Centre, 3 Bolton Street. Following Community Gardens gathering - come and check it out. Child friendly event. Bring something to trade and some lunch to share. Event host: Kathy 40977864

YUNGABURRA – Sunday 20th December – 12 – 2pm - that retro cafe trade afternoon, Red Shed Shops. This event is immediately after the Yungaburra Market. Bring along something to trade a rug to display your wares. Retro is extending so there will plenty of space. 100% Bartles for drinks from the menu. (You will need cash for lunch and drinks from the display fridge).
Event Host: Melitta 40952340

CAIRNS CITY - Sunday 27th 12- 2pm - Lafew Teahouse, 33 Sheridan Street, Cairns. Bring along a friend and something to trade Event Host: Lorna 44205903

Happy New Year

MALANDA - Saturday 9th 10 – 12 noon. Malanda trade in the Park. Eacham Memorial Park, opposite the post office. Bring along morning tea to share, something to trade and display your wares. There is a shelter, so it's an all weather event. Event Host: Katrin - 40966755

YUNGABURRA – Friday 15th January 6 – 9pm Curry Night and Trade – that retro cafe, 20 Eacham Road, Yungaburra Bring your favourite curry dish to share, something to trade, a friend or family. Child friendly event. Chai available for 100% Bartles. Come join an evening of trade and companionship. Event Host: Melitta 40952340

RAVENSHOE - Saturday 16th January 12 - 2pm Trade afternoon Youth Shed, Ravenshoe Community Centre, 3 Bolton Street. Following Community Gardens gathering - come and check it out. Child friendly event. Bring something to trade and some lunch to share. Event host: Kathy 40977864

MALANDA - Sunday 17th 2 till 4pm Trade Afternoon at Mary & Mathieu's place, bring a plate to share for afternoon tea and something to trade. 7 Cleminson Close, Malanda. Event host: Mary 40966651

YUNGABURRA - Saturday 23rd January - 12 - 2pm - that retro cafe trade afternoon, Red Shed Shops. This event is immediately after the Yungaburra Market. Bring along something to trade a rug to display your wares. Retro is extending so there will plenty of space. 100% Bartles for drinks from the menu. (You will need cash for lunch and drinks from the display fridge). Event Host: Melitta 40952340

CAIRNS CITY - Sunday 31st January 12- 2pm - Lafew Teahouse, 33 Sheridan Street, Cairns. Bring along a friend and something to trade. Event Host: Lorna 44205903

What to bring to Trade Events where not specified above: food & drinks for yourself or to share, or money and/or Bartles at some venues, friends, Trading Record Sheet and pen, any goods you wish to trade, table/rug to display them upon is often useful, your own chair at some venues, promotional material of any services you are offering if applicable, \$20 to join LETS if you are not yet a member.

tablelandlets@gmail.com - 4096 6972 - www.tablelandlets.org - www.communityexchange.net.au

NEWS & INFORMATION FROM HOME AND AROUND THE WORLD

Climate change: carbon emissions projected to fall in 2015, Global Carbon Project report finds

From News Corp Australia Network December 8th 2015

NEW research shows the international effort to slash carbon emissions is finally seeing some reward.

As world leaders thrash out climate targets in Paris, a team of scientists behind the Global Carbon Project this morning published their latest annual carbon budget, which concludes the world's emissions are projected to fall by 0.6 per cent in 2015.

This figure may look insignificant, but when considering there has been an average annual increase of 2.4 per cent in the past decade as well as a dramatic swelling of 90 per cent since 1970, this drop is a momentous break in the rapid growth seen in recent years.

The promising 2015 forecast comes on the back of a strong slowing in global emissions from fossil fuels in 2014, rising by just 0.6 per cent.

CSIRO scientist Dr Pep Canadell, who is executive director of the [Global Carbon Project](#), said this was the first time that a stalling in emissions growth, as seen in the last two years, had occurred alongside a strong global economy.

“(In the past) every single slowdown or plateau in emissions has coincided with a global or regional financial crisis,” Dr Canadell said.

But that’s not to say we can all give ourselves a big pat on the back. Because the cause for the current fall is in fact China’s massive decline in carbon emissions stemming from a large shift away from coal consumption, Dr Canadell said, together with stunted economic growth.

“Let’s just make it very clear, the reason we have this global slowdown is not because of the globe, it’s because of China. China did something remarkable,” he said of the world’s largest emitter.

In the past decade, Chinese carbon emissions rose on average by 6.7 per year-on-year. This slowed to 1.2 per cent in 2014, and this year emissions are expected to extraordinarily fall by nearly four per cent.

Dr Canadell said this would be a wake-up call for Australia’s mining industry, which has relied on coal exports to China to fuel the country’s energy needs.



Coal exports ... China’s move away from coal consumption is bad news for Australia’s mining operations.
Picture: AFP/William West *Source: AFP*

Researchers estimate that more than half of China’s growth in energy consumption is now coming from non-fossil fuel sources, with more uptake in hydro and nuclear power.

“This is not a random event. China’s government has made very clear they need to peak their coal consumption and get rid of the dirtiest coal because of pollution,” Dr Canadell said.

He cautioned that it was too soon to say if the planet’s carbon emissions had turned a corner as result of the projected 0.6 global decrease, believing more climbs were likely in the future unless all countries pledged to take stronger action against climate change.

He warned that current levels of emissions, whether stable or seeing small declines, were still on track to trigger a 2C global temperature hike from pre-industrial levels within 30 years.

This research comes as the final week of the [United Nations COP 21 climate summit in Paris](#) gathers pace, with hopes of locking in a legally binding, universal agreement to keep global warming below 2C.

Steady declines are being seen around the world — including Australia — but not fast enough. Dr Canadell said all nations needed to be more ambitious and ramp up their emissions targets.

The Intergovernmental Panel on Climate Change has previously stated that to keep warming under the 2C threshold, emissions in 2050 would need to be 40 to 70 per cent lower than in 2010.

Australia emitted over one per cent, or 0.38 billion tonnes, of the world's total carbon emissions from fossil fuels in 2014, making it the 14th largest contributor.

Together, the top four polluters accounted for almost 60 per cent of the world's emissions. These included China, which emitted 9.7 billion tonnes, followed by the USA (5.6 billion), the European Union (3.4 billion) and India (2.6 billion).

The USA is expected to see a small decline in emissions in 2015 after rises in the two previous years, while the European Union should see another fall — a result that has been consistent for two decades.

Dr Canadell said India's carbon future was of concern, stressing that they would be a critical recipient of any collective financial allocations made at COP 21 in Paris to help emerging economies stem their greenhouse gas emissions.

"They're responsible for seven per cent of CO2 emissions but this level is the same as where China was in 1990," he said.

"(They have an) incredible volume potential for growth and it's simply our next frontier for trying to bring global CO2 emissions to (turn around)."

Twitter: [@sophie](#) sophie.aubrey@news.com.au

From the CSIRO

1st December 2015

AUSTRALIAN START-UP TURNS SUPERFOOD INTO SUPERBUG FIGHTER

Australian start-up Kayban has developed the world's first anti-microbial healthcare range made from organic flaxseed oil following a collaboration with CSIRO.

The company hopes the range of topical lotions and washes, called Bio3 Guardian, will provide the main revenue stream to take the innovation to the global healthcare market.

According to independent tests, the products are fast-acting and effective at killing golden staph (*Staphylococcus aureus*), a prevalent superbug that led to 1621 hospital-acquired infection cases in 2013-14.

Flaxseed oil contains alpha-linolenic acid, an omega-3 fatty acid with known anti-microbial properties.

With the support of a Victorian Government Innovation and Technology Voucher, Kayban and CSIRO developed the method for extracting the crucial alpha-linolenic acid from organic flaxseed.

"The challenge was to come up with a cost-effective manufacturing technology that consistently produced excellent quality, highly enriched alpha-linolenic acid," CSIRO organic chemist, Dr Peter Duggan said.

"What we've achieved is a smarter, more efficient process that's been pivotal in Kayban's journey to commercialising a unique saleable product."

The technology has been transferred to Melbourne-based CSIRO spin out, Boron Molecular, to extract the flaxseed component for Kayban on a multi-kilogram scale.

Kayban will then work with another local manufacturer to formulate the end product.

"It's hugely rewarding that this research collaboration has led to new business and growth opportunities for three Australian SMEs.

"Here at CSIRO, we take pride in our role as a key player assisting local SMEs and manufacturers to bring their high technology products to the market," Dr Duggan said.

Kayban Director, Frank Palermo, said Bio3 Guardian was a better way for preventing the spread of infection.

"Our products contain a unique antimicrobial formula that uses natural flaxseed oil properties, instead of ethanol, to kill bad bacteria while leaving essential good bacteria intact," Mr Palermo said.

"It's a moisturising, all-natural alternative to ethanol-based products that can cause skin to dry and crack upon repeated use and increase chances of developing conditions like dermatitis.

"That's going to benefit nurses, doctors and patients in hospitals and aged care homes who regularly need to use sanitisers and disinfectants to maintain hygiene or care for wounds."

Read more about [Bio3 Guardian](#) and other [health products](#) CSIRO's helped develop.

From Nutri Tech Solutions Newsletter

Author: Graeme Sait

Nutrition Gardening® – Reclaiming Responsibility for Your Own Health – Part 1

24 November 2015

I have long maintained that the vegetable garden is the **ultimate wellness tool**. Science is increasingly recognising that food is truly our greatest medicine. There is no food more valuable than chemical-free food, grown in healthy soils and harvested when ripened naturally, immediately before it graces your plate.

Freshly harvested fruit and vegetables feature antioxidants, vitamins and protective phytonutrients encased in a supportive matrix that ensures maximum health benefits. When we dumb down nutrition with supplements, there is no comparison to the real stuff. No nutrient is an island and Nature recognises that. She provides hosts of co-factors in fresh food to maximise the benefits of everything. You may be wondering why supermarket vegetables don't usually deliver the protective punch of the homegrown. Here are some of the reasons:

Lamenting Lost Nutrition

We are what we eat and what we eat comes from soils that are a shadow of their former selves. We have mercilessly removed the minerals from our food-producing soils with extractive agriculture, whilst decimating the organisms that help deliver those minerals. We have then processed more nutrients out of this food or picked it early and stored it long enough to further deplete its goodness. Numerous studies have confirmed this decline. In fact, nutritionists now claim that our food contains just 20% of the nutrition found in the food consumed by our grandparents when they were children. A recent WHO study could not find a degenerative disease that did not have a nutrition link.

The massive explosion in sales of supplements in recent decades is testament to our mass recognition that something is missing. Our food is not what it used to be and neither is our health. The answer is to adopt **Nutrition Gardening®**. This home garden solution, however, offers more than just a tool to counter lost nutrition. It has other profound benefits ranging from forgotten food flavours to mental wellbeing, as well as an invaluable contribution to planetary health.

Mastering Taste

The flood of TV foodie programs reflects an unprecedented flavour awakening. In a rebellion against the increasingly bland, we are discovering our inner chefs and seeking to colour one of our most pleasurable pastimes. However, the spice secrets and creative combinations pale in comparison to the pleasures to be discovered in nutrient-dense food, freshly harvested. The heirloom tomato and the crisp Russian kale can add more depth to your dish than the cleverest of Master Chef tips.

Peace in the Soil

We are here to experience as much peace and happiness as is possible in our short lifetimes. However, somewhere in our relentless quest for the "material", we have lost sight of the "real". Stress and fear are the opposites of peace and happiness, yet they reign supreme in many lives.

The home garden can be the solution to this misguided mismanagement of our primary purpose. The sun on the shoulders, the sweat on the brow and the sweet smell of healthy soil is where peace resides. The gardeners amongst us will understand this equation and there is now some science to help explain what we intuitively knew.

From an aromatherapeutic point of view, the smell of a healthy soil ranks somewhere near freshly baked bread and freshly ground coffee – but there is more. Recently, a soil bacteria called ***Mycobacterium vaccae*** was found to stimulate production of the "feel good" hormone, serotonin. It is a lack of this hormone that lies behind most depression. The organism must be ingested to create this wonderful effect, so don't be afraid to get dirty.

Important caution: Soil eating is not advised if you use chemicals in your garden – heaven forbid such pollution of sacred space!

The Planetary Priority

These gardening gains extend beyond your increased mental and physical wellbeing. They also include a profoundly important contribution to **planetary health**. We are in the midst of an unparalleled climate crisis that threatens our very existence. Many are seeking to contribute, but there is scant understanding of how one can make a difference. It is important to realise that turning off your lights or commissioning solar panels are less important than **tending your own patch** and building the humus levels in your soil. An increase of just 1% organic matter in our soils can reverse global warming. Here's how it works:

There are the same number of carbon molecules on the planet that have always been here. You can't make more, so it is all about where they are stored. Carbon is either stored in the soil as humus, in all

living things (including animals and plants), or in the atmosphere, as carbon dioxide. It constantly moves between these three places as part of the **carbon cycle**. On a global level, over the past decades of extractive agriculture, we have lost two thirds of our humus (down from 5% average organic matter to less than 1.5%). That carbon is now in the atmosphere as CO₂, thickening the blanket of greenhouse gases, trapping more heat and warming our climate.

When we build humus in our soil, we are effectively sequestering carbon from the atmosphere and addressing this problem. **Compost** is part of the solution, as it offers a double bonus. You have stabilised carbon in the compost as humus, but when you introduce this inoculum of diverse soil workers, you trigger much more humus production. However, you must also provide the minerals and soil conditioners that support humus-building microorganisms and this will be discussed in detail in next week's blog.

Clean Food for Your Family

I walked behind a professional couple at a local farmers' market recently and overheard their conversation. One asked the other "why do so many stalls have signs saying '**chemical free**'?". I was amazed at the naivety of the question but the answer floored me! "It's because they are not applying liquid fertilisers", was the innocent reply.

Many people are simply not aware of the grim realities of modern food production. Potatoes, our favourite vegetable, are sprayed with fungicides and pesticides a dozen times before they are chipped and fried. The last of these applied contaminants is of most concern. The vast majority of conventional potato producers kill off their crop with a herbicide called Paraquat (one of the nastiest of the nasty). They claim that the transference of the chemical to the tuber is minor at this late stage of the crop cycle, but nutrient foliar sprays can still boost spud size at this stage, which obviously involves transference.

There are two things we were not told about when we embarked on the "chemical experiment" in food production. We were not made aware of a phenomenon called "**bioaccumulation**", or a likely byproduct called "**the cocktail effect**". Our liver is our principle detox tool and this overworked organ is equipped to manage any natural contaminant. However, this principle guardian has no answer for many man-made chemicals so, recognising that they may not be good, the liver ships them off to our fat cells to limit their liability. Here, they accumulate and can become something of a time bomb. It is no different with livestock, hence the common caution about consuming the fat of animals reared in intensive confinement.

The "**cocktail effect**" refers to the impact of unresearched combinations when we eat something like a tomato, which may have residues of multiple chemicals. Tomatoes are typically sprayed with three fungicides and three pesticides every three days, from the time they are planted until the time they are pushed over. We may have determined that the minimum residues of each chemical did not kill a lab rat over a three-month trial period, but there is no research about their combined effect. In one rare U.S. study involving 100 combinations of ten chemicals, three new Class 3 carcinogens were discovered. This means that some permutations of the cocktail were proven to give cancer to animals, but it is less ethical to prove this with humans.

Grow Your Own Health

At this point, you are possibly rethinking your food choices and perhaps considering organic alternatives. However, this option is considerably more expensive and still does not guarantee nutrient density, flavour or shelf-life. "**Organic by neglect**" is common in an industry so dominated by what you cannot do, that it tacitly supports doing nothing at all. The answer to this quandary is to **grow your own nutrition**. Do it with minerals, microbes and humates and become a proud Nutrition Gardener®, supporting yourself, your family and your planet.

The Whispering World of Plants: "The Wood Wide Web"

by [Chris Rhodes](#), originally published by [Energy Balance](#) | NOV 20, 2015



Beech is ectomycorrhizal. "Grib skov" by Malene Thyssen - Own work. Licensed under CC BY-SA 3.0 via Commons

The notion that plants can "talk" to one another was, until relatively recently, dismissed as fantasy, but the reality of inter-plant communication is now becoming an accepted part of mainstream science. Although plants, by definition, being "planted" in the ground, cannot move *per se*, they are able to [send signals to one another, by means of volatile organic compounds](#), and it is thought that not only can a plant communicate with other plants, it may also engage in a "[soliloquy](#)" by communicating between different parts of itself. Although this mere fact is fascinating enough, it appears that plants may both send out chemical messengers as airborne species that other plants can receive, and send messages to one another via a network of connections within the soil, provided by the fungal networks known as the "[mycorrhizal mycelium](#)". This has been described as a kind of below ground "[internet](#)" which is appropriately termed "[The Wood Wide Web](#)".

It is quite well documented that if a [plant is attacked by an insect or fungal pest](#), it can signal to its neighbours, so that they release compounds that repel the pests directly, or attract other organisms that are antagonistic to them. While the airborne action of such messenger compounds is established, the idea that one plant can warn another that it is in danger via a common (shared) [mycelial network \(CMN\)](#) is rather more novel. According to a [recent study](#): "Key roles in facilitating nutrient transport and redistribution" are played by the CMN, but they can also "facilitate defense against insect herbivores and foliar necrotrophic fungi by acting as conduits for interplant signaling."

This is a beautiful illustration of the interconnectedness of natural systems, and it has been proposed that there are dominant "Mother Trees", which act as hubs for the mutual connection of all the trees that grow in a forest. This connection is thought to function to some degree through the mycorrhizal mycelium, which lives in and around the tree roots, and serves as a conduit for the transport of carbohydrates, nutrients and water between the trees, via the **fungal hyphae**. The mother trees serve to "feed" the younger ones, and without them, most of the seedlings would not survive. Recent research has shown that **without mother trees, attempts to regenerate forests often fail**, and when a mother tree is felled, the **survival rate of seedlings tends to be dramatically reduced**. As a tree dies, it may also **deliver resources to neighbours of different species**, feeding them, and contributing to the overall biodiversity and resilience of the forest ecosystem.

The implications of inter-plant communication via fungal networks are potentially far reaching. For example, forest management (harvesting) practices should involve **preserving the Mother Trees to nurture new growth**. In agriculture, too, practices that leave the mycorrhizal (mycelial) network intact, are thought to aid the absorption of water and nutrients from the soil, and to improve the ability of plants to resist pathogens. Hence the practices of heavy and deep ploughing, which breaks-up the mycelial networks, **have been called into question**.

Not everything that is transmitted between plants is beneficial to an individual plant, since **toxins may also be transported via mycelial networks**. The influence of one plant to influence (usually restrict) the growth of another is termed **allelopathy**, and functions via chemical messengers, e.g. the production of **juglone** by walnut trees, which was found to reduce the weight of tomato seedlings **by about one third**. The whole system is integrated, holistic and complex, and a new area of research has emerged which aims to understand inter-plant communication **at the molecular level**. It appears that plants may use a form of "language", in which different molecules act as "words", although the precise nature of the dialogue has yet to be deciphered.

In a study of the action of a parasitic plant (dodder) with two host plants, Arabidopsis and tomatoes, it has been found that **messenger RNA (mRNA) is transferred between the two species on a massive scale**. Since RNA acts as a translator of information from the DNA of an organism, it is possible that the parasitic plant may be giving orders to its "victim", to weaken its defenses, BUT the host might also be delivering a masochistic response. The question arises of whether information can be similarly transmitted between other organisms within the soil food web, i.e. earthworms, bacteria, nematodes and other microbes, along with the plant roots, and their associated mycorrhizal fungi. **These organisms are, collectively, the vanguard for the recycling of nutrients in the soil, which enhances the growth of plants.**

To seek an understanding of the complex communications and interactions that take place between the soil food web organisms, at the molecular level, may be a worthy aim, since the soil contains perhaps **one quarter of all the biodiversity on Earth**. Until this is achieved, however, and in any case, it is clear that by supporting this hidden biodiversity below the ground, the more visible biodiversity above the ground is further buttressed. Practical actions to **preserve and build the soil** are paramount to a viable future, and their implementation should not be delayed

Now here is an APP that will cost you only \$9.99US – it has the full instructions on how to build the most sustainable tiny house in the world

From EARTHSHIP BIOTECTURE Newsletter
Earthship.com

Earthship Biotecture has been working on development of the Simple Survival concept and design for several years. We have developed a forty page set of construction drawings that have sold for \$1,000 to many people all over the world. They have been able to successfully build their own Simple Survival Earthships using these drawings. They been built in Argentina, Germany, Philippines, USA, New Zealand and the Simple Survival systems have been used on many other countries.

This APP is aimed at bringing all of the Simple Survival information together including the full set of construction drawings, materials, operations, costs, components, photographs, systems diagrams and more to guide anyone in the world toward simple sustainable living. It is, in fact, the most sustainable tiny house in the world. We want everyone to be able to afford this so we have made this APP available for \$9.99 USD all over the world.

It is our christmas present to the world. Give it to someone you love. Look for this APP in your APP store for iPhone users and Google Play for Android users. It will be available around December 12, 2015.

About Earthship Biotecture

Earthship Biotecture is based in Taos, New Mexico, and has been providing humans with the tools necessary to sustain themselves and the planet for over 45 years. By using carbon-zero technology in building plans and integrating all systems with food production, our designs are the first truly sustainable, independent models on the market today. We able to construct comfortable units in any climate made primarily out of natural and recycled materials.

Earthship **construction drawings** are designed to meet standard building code requirements so you can get a permit no matter where you are. **Earthship Biotecture is beyond LEED Architecture. Earthships are green buildings that meet standard building codes.** EarthshipBiotecture is based on the work of principal architect, **Michael Reynolds**. (see: media resume)

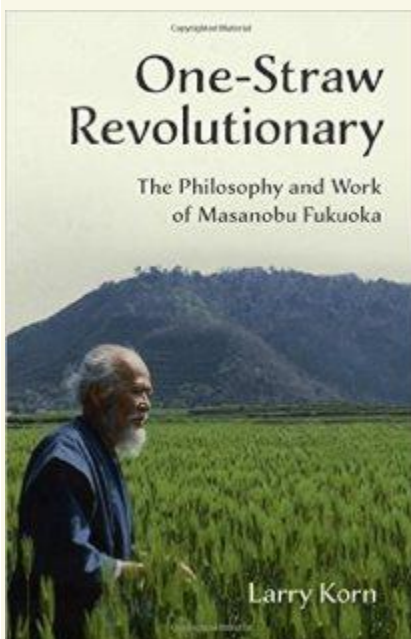
Life and Work of Masanobu Fukuoka

From the Resilience Newsletter

In this episode I have the great pleasure of connecting with **Larry Korn** from Oregon, USA. In addition to being a student of the late Masanobu Fukuoka (1913-2008) he's an educator, consultant, editor and author in the fields of permaculture, natural farming, sustainable landscaping and local food production. Larry recently published a book titled *One-Straw Revolutionary* where he goes into the life and work of Masanobu Fukuoka, who initiated the *natural farming movement*. Larry spent several years together with Masanobu Fukuoka at his farm in Japan back in the 70's, and he helped translate Fukuoka's seminal book *The One-Straw Revolution* (1975). In our conversation we explore Fukuoka's work with a special emphasis on the underlying ideas, values or mental models that drive the natural farming method. We also explore some of the reasons why this "philosophy of life" could be of benefit to the world community, and not only with reference to farming and food production. Feel free to take part in our dialogue by leaving a comment below the summary.

Learning to see the world *as it is*

I explain to Larry that it was my Swedish aikido teacher **Jorma Lyly** who pointed me to the work of Masanobu Fukuoka. There seems to be many parallels between natural farming and the practice in this Japanese martial art. Larry is not surprised and comments that 90% of what Fukuoka stands for is strictly speaking the grand old spiritual perspective found throughout Asia, the ways in which artists, poets, mystics and ordinary people have come to see the world and their place therein. It's all about seeing the world as an *indivisible whole* where everything is interconnected and perfect – *as it is*. This is a very different approach to life than what is commonly found in the Western world, where the mindset is largely focused around the notion of an individual self that is *set apart* from the rest of the world. Such a worldview creates the false notion that we are disconnected from the whole, a perspective that has far reaching consequences in regards to how we organize our societies. The goal of many Asian arts is therefore to end this separation and move towards a more unified view of the world. Natural farming can be placed in the same category.



Living together with Masanobu Fukuoka

Given that Larry stayed with Fukuoka at his farm for two years I ask him what it was that inspired him the most? The remarkable thing, he says, was that all Fukuoka really talked about and did was farming – the *practice* was farming! There was no required reading or planned program for his stay. The only thing they did was farm and they got to know every square inch of Fukuoka's orchard.

What is natural farming?

So what is natural farming? Larry gives some background on Fukuoka's life and work and explains how he grew up in a typical farming village on the island of Shikoku. Later on he became a plant pathologist working in the customs department. One day, through a flash of insight, he came to see how nature was in fact perfect and unified, and that every part of nature was already expressing itself as best it could. He understood that any attempt at improving that which is already perfect would only cause disharmony and problems. In fact, the less human beings interfered with nature the better, a view which he tried to convey to his colleagues. However, they had a hard time grasping this idea since the mode of thinking at the time was all about making progress through technical innovation and manipulation of nature. He therefore decided to go back to his farm and make a physical example in accordance with his view. He looked closely at many of the typical agricultural practices, such as making compost, ploughing and weed control, and tried to figure out if these practices were in fact necessary. In stead of thinking "what if I try this or what if I try that", he would rather think "what if I *didn't* try this or *didn't* do that". Remarkably, after some years of "doing nothing" he had comparable or even higher yields than his neighboring farms. Moreover, his fields and soil were improving year by year while his neighbors fields were in fact decaying through the use of chemicals etc. He therefore decided to let nature show the way and take human decision-making out of the picture.

Doing nothing and provoking the Western mindset

I point out that this way of thinking and seeing the world is probably highly provocative to a Western mindset. Larry agrees and explains how our values and thinking has been molded by modern society. Talking of modern, Larry is actually referring to the last 10 000 years, from the point in history when people for some reason decided that we were more important than other species. It was as if human beings no longer had any limits in regards to what they could do towards nature. Fukuoka's thinking was very different and more in line with the mindset of the indigenous people of the world.

The art of living one's philosophy

I explain to Larry that the title of this show – Levevei™ – is a Norwegian word that could be translated as vocation or livelihood, but it also has the connotation of "way of life". The aim of the show is to explore different approaches to personal, relational and societal transformation, while also investigating the various connections between these three dimensions. Looking back at all the interviews I've done there seems to be at least one red thread, namely, that there is a connection between the personal and the collective. For instance, our engagements in life, on a societal level, are highly dependent on our personal values and worldviews. My sense is that Fukuoka was the kind of person that really lived his philosophy, and where his *doing*, *being* and *thinking* were all connected. Larry agrees and reflects back that this understanding goes to the heart of the natural farming method. Fukuoka's farm became an extension of himself and when the farm improved and became whole again, so did he! His way of thinking "inside" was transformed in accordance with the wholesome changes taking place "out there", to the point where he came to realize his "original mind" (as in Zen). Larry explains this state of mind as "no mind", where the experience of "you" no longer

is present. Instead one has a direct and unfiltered experience of reality. This, again, might challenge the individualistic and self-centered mindset of Western cultures, but when realized such a state of (no)mind will be highly rewarding, and usher forth wonderful feelings of connection, wonder and joy.

The cultivation of human beings

In Fukuoka's book *The One-Straw Revolution* there is a point which is often quoted, namely that *the goal of natural farming is not the cultivation of plants, but the cultivation and perfection of human beings*. Larry asks me if this understanding resonates with my aikido practice, and the views of my teacher, and it becomes very clear to me that the connections are numerous. Larry explains further how natural farming is only possible if you become a natural person yourself! Larry also explains that the natural farming method presupposes that you become a steward for the land. Instead of asking "what can the land do for me" you ask "what can I do to serve the land". This also implies establishing an intimate relationship with nature and being able to support the flow of life, rather than intervening or manipulating nature to fit a preconceived idea, or trying to impose one's will upon nature.



Book by Masanobu Fukuoka

Why do we collectively create unwanted outcomes?

I reflect back to Larry that I find it strange *how* and *why* human beings, both personally and collectively, seem to go against what is natural. It looks like we've created a society that fosters many of the opposite values and outcomes than what would be the case if natural farming or natural living was the "modus operandi". Why do we collectively create something which is not good for us? Larry's first response is that we at some point in history thought we were like Gods, and again, that we saw no natural limits to our behavior. Our minds and hearts were instilled with certain ideas that would subsequently shape our way of thinking and acting in the world. Luckily we can apply the natural farming method on the human mind as well, and investigate which ideas have been "put in there" by our culture. Many ideas seem to pop up all the time, in the same way that weeds and unwanted agricultural consequences proliferate when we apply our modern technologies to farming. Again and again we can practice "taking away" or "doing less", and through such a practice support the natural unfolding of our minds and society at large. Larry gives a detailed description on how this could apply to many arenas in our life, the essence being that there is great freedom inherent in the natural way of farming and living.

Challenging modern agriculture

So what is the impact of Fukuoka's teaching amongst farming communities around the world? Is it possible to convince conventional farmers that this might be a feasible way of approaching the production of food? Larry admits that it does seem like an impossible task, also because we need to understand that it's not possible to just apply the method from one day to the next, and expect to get the same yields. Nature will need its time to find back to its natural sustainable state, and it will imply a transitional period where we'll see some years of decline in the overall food production. Fukuoka's estimate was around 20% before the soil would gradually become whole again and yields would go back up. The problem is that in our growth-oriented society a drop of 10 or 20% in production for several years is not economically viable. At the same time it's clear to many of us that we're steadily approaching a global agricultural collapse. At some point there *has to be* a transition, or we'll end up with a natural environment that no longer can sustain human civilization as we know it.

The underlying mental models of natural farming

I ask Larry to clarify the underlying mental models that can be found in the natural farming method and he explains by pointing to the ways in which human beings for 150,000 years lived in a natural relationship with the earth. We might think that these cultures were primitive, but he claims they were in fact highly sophisticated. In many ways they had lives that were more secure than ours, and they didn't trash the place! After all, they did survive for thousands of generations which may be proof that they did something right? How many generations will "modern man" survive? If we were to pull out a piece of wisdom from our ancestral roots it could be that they never did anything towards nature that would inhibit or destroy its ability to keep providing what human beings need to survive. The source of abundance had to be kept intact. Another understanding or value that was key to this day and age was a general sense of gratitude towards life and nature. In his biography about Fukuoka's life and work Larry made it clear that natural farming is correspondent to indigenous cultures, and the modern day remnants of these cultures that are spread across the globe. One of the most common responses that Larry receives from people who have read *The One-Straw Revolution* is that people experience the ideas as familiar, as if they're lying dormant in our subconscious. This does call for hope even though the ideas are buried beneath many layers of cultural conditioning.

The sadness of losing touch with ourselves

I reflect back to Larry the sadness I feel when hearing him describe how we at some point in history lost touch with ourselves and the natural way of life. Larry recalls his daughter's reaction when he told her about this, when she was just a child, and her response was: "*gosh Daddy, that's really too bad*" – needless to say, a huge understatement. Again, the major issue here is that human beings are acting as if they have no limits: "*I can do what I want, I can consume what I want*". However, we *do* have limits, both physically and biologically, given that we're intrinsically connected to our finite planet. The native people around the world taught their children about these limits so it became a natural part of their way of life. In the modern culture we implicitly and explicitly teach the opposite.

Signs of hope

Larry comments that he does see signs of improvement and growing awareness regarding the issues we've been discussing. There are more and more people looking into alternative ways of producing food, and there is a growing awareness in regards to the detrimental side effects of chemical pesticides and genetically modified crops. The place where natural farming has caught on the most is in fact rural India and South East Asia. In these areas a lot of people are still living on small independent farms, a context which is well suited

for natural farming. Larry makes it clear that if we're to succeed with the transition into a more sustainable society many more people have to go back to the countryside and become food producers themselves. Also, the reason why natural farming has caught on in Asia is probably because they see the world and life primarily as an expression of Spirit, and secondly as something material or physical. In the West it's the other way around, we primarily orient ourselves and our lives in reference to reality as something material. This difference reflects itself in the questions Larry receives by email. Most people ask simple and practical farming questions, "how to do this" and "how to do that", while a better approach would be to ask questions regarding the underlying philosophy and value-base that *inspire* that which is practical and concrete.

(48:55) A natural path towards the realization of cosmic consciousness

I again reflect back to Larry what seems to be the essence or main point of what we've been exploring, namely that there is a specific (but still universal) worldview underlying the natural farming method, a worldview that sees no separation between self and other, and where there is a fundamental spiritual outlook in regards to life in general. Larry agrees, but comments that Fukuoka didn't like the word "spiritual", in fact, he didn't like words in general because they arise from the intellect and can separate people from the actual experience the word is pointing to. That which is pointed to as spiritual is just a feeling – which arises by itself – and you don't really need a special practice or understanding to experience it! At the same time *doing something*, on a regular basis, might support the natural unfolding and realization of who we really are. The martial arts, and many of the traditional Asian arts such as **Noe theater**, pottery and flower arrangement, and subsequently natural farming, all have this in common, namely that they point towards "cosmic consciousness", the universal experience of our non-separateness with all that there is.

From CSIRO news release 10th December 2015

TECH TRANSFER CATALYST FOR CHEMICAL MANUFACTURING INNOVATION

The commercialisation of a range of Australian technologies will be rapidly accelerated, thanks to a new technology transfer agreement between CSIRO and Melbourne-based fine chemical manufacturer Boron Molecular.

Under the agreement Boron Molecular, which is a CSIRO spin-out, will be able to access and license CSIRO technologies, while drawing on the science agency's research and development expertise.

The manufacturer will then develop these technologies into commercial products that can be scaled, mass-produced and marketed globally, with CSIRO receiving a royalty on all sales.

According to CSIRO research scientist Dr John Tsanaktsidis, the agreement will simplify the commercialisation process and allow the two organisations to more rapidly bring home-grown products to market.

"This agreement will allow CSIRO and Boron Molecular to come together and

commercialise high-end products and processes in a much more seamless way," Dr Tsanaktsidis said.

Technologies that fall under the agreement are wide-ranging, including polymers used in the biomedical industry and specialist fine chemicals for polymer manufacture.

According to Boron Molecular Director Zoran Manev, the two organisations have complementary skills and capabilities that will benefit Australian industry.

"By applying our specialist chemical manufacturing expertise to CSIRO's portfolio of technologies we'll be able to deliver products to industry far more quickly, completing the value chain," Mr Manev said.

"We'll be developing products that can be used for a range of applications, from electronics and specialist polymers, to key components for boronic acid building blocks used in the pharmaceutical industry."

Dr Tsanaktsidis said the deal was an example of how research and business could work together to boost Australia's innovation in high-end chemical manufacturing.

"By closing the gap between industry and the science and research sector, we have the potential to revitalise Australia's chemical manufacturing industry," he said.

"Ultimately it's collaborations like this that will lead to the creation of new jobs, new infrastructure and increased capacity for export."

The agreement builds on a strong track-record of cooperation between the two organisations, which started when Boron Molecular was spun out from CSIRO in 2001.

More recently, the organisations signed a licensing agreement which gave Boron Molecular the right to mass-manufacture and sell RAFT chain transfer agents to the global polymer industry.

From the CSIRO

Why foods that make you fart are a good thing

By [Sarah Keenihan](#) 23rd November 2015

Although renowned for creating delight in children, farts are not considered the best way to make friends and influence people. But there is an upside: the production of gas means that your body is hosting the right kinds of bacteria. To encourage these 'good' bugs – known as our microbiome – we need to eat fibre.

"Fermentable components of dietary fibre have a critical role in feeding the gut microbiome," said Dr Trevor Lockett, Head of the Gut Health and Nutrition Group at [CSIRO Food and Nutrition](#).

"This part of fibre is fermented mostly to short chain fatty acids, a process which creates gas."

Fermentation is a chemical process that breaks down carbohydrates in fibre: bacteria do it in our bowels to create food for themselves. Molecules that improve the health of their host – that's you – are also produced. Dr Lockett presented an update on his group's latest research at 'Bugs, Bowels and Beyond', the 2015 National Scientific Conference of the Australian Society for Medical Research held in Adelaide, South Australia last week.

He focused in particular on recent findings describing how different dietary components influence the microbiome, and determine their production of not just gas, but also molecules that are beneficial in the large intestine.

"For example, we know now that bacteria living in the large intestine produce a short chain fatty acid known as butyrate, which can reduce inflammation by stimulating regulatory immune cells," he said.

"We're now seeking to expand some of this work to see if we can improve inflammatory bowel disease."

The component in food that manages to make it through digestive processes in the stomach and small intestine to feed the microbiome in the large intestine is known as resistant starch.

You can improve the proportion of resistant starch in your diet by eating unrefined whole grains, pulses and legumes, unripe bananas and cooked and cooled foods such as potatoes, pasta and rice. Dr Lockett explained that in addition to conducting fundamental research, scientists at the CSIRO work across the fields of nutrition and agriculture for product development.

"As our understanding of the beneficial components of dietary fibre has improved, we've been able to inform colleagues who are growing grains for cereal purposes," he explained.

"If we can include and enrich resistant starch in marketable grains, perhaps we can drive health benefits."

Dr Lockett's CSIRO colleague Dr Bianca Benassi-Evans – who is based in the South Australian Health and Medical Research Institute (SAHMRI) building – has recently trialed two non-genetically modified barley grains to determine their impact on bowel health. Comparing the two candidate CSIRO barley grains against regular barley and puffed rice as breakfast meals in a sample of 20 adults, she found both to have desirable features.

"Our grains increased the acidity in stool samples, and increased bowel production of butyrate, a short chain fatty acid," she said.

"Both of these outcomes are biomarkers of good bowel health."

Additional studies are currently taking place, through which Dr Benassi-Evans hopes these grains may end up in your cereal aisle.

"What you choose in that supermarket can have dramatic effects on gut health," she said.

Which breakfast products make you fart is a question you'll have to determine yourself.

CSIRO Food and Nutrition in South Australia has laboratories and clinical consulting facilities at SAHMRI and The University of Adelaide.

This article was originally published on The Lead.

We're kneading our way to bread that lowers cholesterol

From CSIRO Blog

By [Virginia Tressider](#) 1st July 2015



That's how we (bread) roll: a cholesterol absorbing bread could have incredible health benefits for the community.

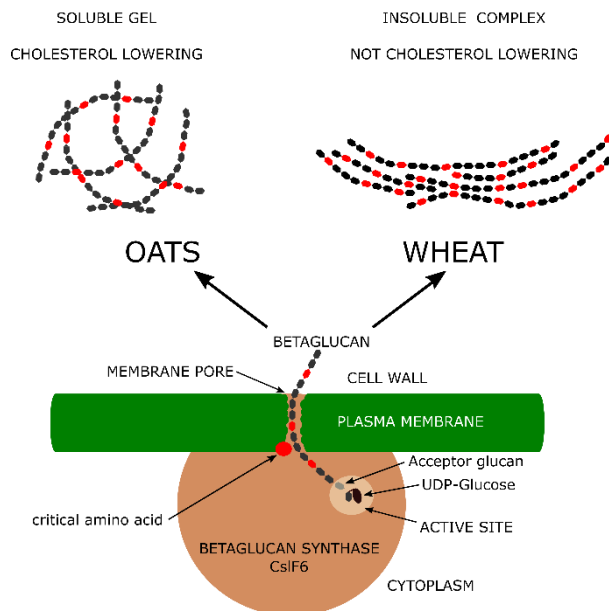
If we were to tell you that you could lower your cholesterol and your risk of heart disease – by eating bread, would you be up for it?

It sounds too good to be true, doesn't it? But maybe it isn't. We're trying to make it possible using gene technology and plant breeding techniques to develop new superior wheat varieties.

Why is cholesterol such an issue? Cholesterol is an essential type of fat that is carried in the blood. It's vital to healthy cell function and hormone regulation, among other things, but too much of it in our bloodstream can be a bad thing – damaging our arteries and leading to heart disease. In fact, [the World Health Organisation has estimated that raised cholesterol is estimated to cause 2.6 million deaths annually.](#)

It's no wonder our scientists have been researching foods to help lower the prevalence of cholesterol related illnesses in the community. And it looks like we're on to something.

We know that barley and oat grains contain high levels of a soluble fibre called betaglucan (1-3, 1-4 betaglucan), which can reduce cholesterol reabsorption in the gut. This leads to healthier blood cholesterol levels, lowering the risk of heart disease. Unfortunately, wheat (which is one of the most commonly consumed grains in the world) has low levels of betaglucan and it has a slightly different structure to the oat and barley betaglucan, which makes it insoluble.



Betaglucan is made by an enzyme that sits in the membrane at the surface of the plant cell. This enzyme links activated glucose sugars from within the cell and pushes the growing betaglucan polymer chain through a pore in the membrane into the cell wall surrounding the cell. Click on the image for an animated version of the diagram, by Lisa Jobling.

So at the moment, it's not possible to get cholesterol-lowering benefits from breads unless they have added barley or oat flour. This affects the taste and texture of the bread, which is why people generally prefer bread that's made wholly from wheat flour. What we want is a bread that maximises the health benefits without sacrificing the flavour and texture that consumers want.

We now know why betaglucan in barley and oats is soluble but in wheat it's not – and it's to do with tiny differences between the enzymes that work in barley and oats compared with the one working in wheat to create the betaglucan. In ground breaking [research just published](#), we've discovered that just one amino acid (the building blocks of enzymes) difference in the enzyme that forms betaglucan can change the structure and make it more soluble. By changing that one amino acid in the wheat enzyme we should be able to make wheat with more soluble betaglucan and cholesterol lowering properties.



The controlled wheat trial: This is where we are testing how the modified wheat grows.

In a proof of principle experiment, we used gene technology to take the gene that makes betaglucan in oats and expressed it in wheat grain. This showed we can simultaneously increase the amount of betaglucan and change its structure making it as soluble as barley betaglucan. We did this in trials using genetically modified plants, a great tool to gain knowledge. We're using them as a small-scale means to test what's possible and understand exactly what we need to look for when we get to the next stage which doesn't involve genetic modification.

The trial wheat plants were grown in a controlled field trial (approved by the Office of the Gene Technology Regulator) to get enough grain to evaluate the suitability for bread-making and potential health benefits such as lowering the level of cholesterol reabsorption. If this is successful, we plan to use conventional breeding techniques to develop a wheat for public consumption. This is more difficult and will take a while longer but we think it's possible.

If you'd like to know more about this research and the technical bits [check out our webpage](#) or be daring and go straight to the research on [Science Advances](#).

How the right diet can control diabetes and reduce its massive economic costs

July 15, 2015 6.21am AEST

From The Conversation Newsletter



Studies based on Mediterranean diet, combined with exercise, have proved groundbreaking in managing type 2 diabetes. from shutterstock.com

More than [350 million people worldwide](#) suffer from type 2 diabetes. The condition is already rampant in several Western countries and numbers are now rising fast in emerging economies, such as India and China. But the right kind of dietary changes could dramatically reduce the impact of the illness on both patients and economies.

Alongside the impact of the disease and its associated complications on the lives of patients and their families, diabetes' cost to health-care systems is huge. In Australia, for example, the total economic impact of type 2 diabetes is estimated at A\$10.3 billion, while [in the United States](#) it is likely to exceed US\$174 billion.

There are many ways to beat diabetes or reduce its impact; the key is [making changes to your diet](#) and lifestyle that you then follow for life. Indeed, lifestyle modification – eating a healthy diet and exercising regularly – is the cornerstone of any effective diabetes-management plan.

More than sugar

For decades now, the general recommendation has been for everyone to cultivate a high-unrefined-carbohydrate, low-fat diet. More recently, reducing sugar intake, even though it is one of the most popular carbohydrates, has been receiving a lot of attention. But a healthy eating plan for diabetes is *not* just about cutting out sugar. And scientific opinion is now turning in favour of lower carbohydrate diets – for everyone.

While excessive sugar will no doubt increase blood sugar levels, especially if you're having sweetened drinks, any source of carbohydrate will have the same effect. This includes anything that contains flour, rice or pasta, as well as fruit and potato.



Eating foods like this will only increase the risks of diabetes and its associated complications. [Josephine Stenudd/Flickr, CC BY](#)

Carbohydrate foods with a low glycaemic index (GI), such as oats and legumes, on the other hand, will dampen down the blood sugar response. That's why careful carbohydrate selection is now recommended for everyone, especially people who have type 2 diabetes.

[New data](#) from [high-quality nutrition research](#) now strongly suggests that restricting carbohydrates even further, while moderately increasing protein and unsaturated fat intake, may have further benefits for controlling type 2 diabetes and reducing the risk of complications.

What we did and found

Based on these ideas, our research teams have been studying the effects of a “Mediterranean” diet – which has low carbohydrate, high protein and includes a lot of vegetables, nuts, lean meats and healthy fats – in combination with an exercise plan. We wanted to see how much we could improve the health of people with type 2 diabetes.

We assigned 115 adults with type 2 diabetes to one of two weight-loss programs. One group followed a very low-carbohydrate and high-protein diet for 24 weeks. The other had a higher carbohydrate, but still low GI, diet.

Early results have been ground-breaking; [our diet is better](#) at improving diabetes control compared to traditional weight-loss diets. But its most striking benefit is that it reduces the amount of medication someone with diabetes has to take by half. This reduction was three times greater than for people who followed the lifestyle program that incorporates a traditional high-carbohydrate diet plan.

Our very low-carbohydrate diet also improved blood cholesterol profile by increasing the levels of good (HDL) cholesterol and decreasing triglyceride (blood fat) levels to a greater extent than the traditional high-carbohydrate, low-fat diet. Both diets achieved similar reductions in bad (LDL) cholesterol levels – often a concern with some low-carbohydrate diets.

There's more

Variation of blood glucose levels through the day is [emerging as a strong independent risk factor](#) for diabetes complications. In our study, the very low-carbohydrate diet was also more effective in reducing the number and levels of blood glucose variations over a 24-hour period.

In 2008-09, of the estimated A\$1,507 million spent on the health care of diabetes in Australia, [A\\$490 million was spent on diabetes-related medications](#). Our findings suggest that, by implementing a lifestyle program incorporating a healthy low-carbohydrate, high-protein, high-unsaturated-fat diet at a national level, the country could save up to A\$250 million annually through reductions in diabetes-related medication alone.

This does not even account for any additional cost savings that could be generated from the marked improvements in diabetes control and patients' well-being. It is these costs – related to the complications of diabetes and patients' ability to contribute to the economy – that account for most of the economic impact of type 2 diabetes.

Our research shows evidence from the latest nutrition science can guide dietary approaches to tackling one of the most serious global health challenges of this century.

Ten things you didn't know about fat

From The Conversation Newsletter

July 11, 2014 3.15pm AEST



Our understanding of fats – including which ones are actually good for us – is evolving. We know for example that red meat and meat products, cakes and biscuits, which are rich sources of saturated fatty acids, are associated with an increased number of cardiovascular deaths. Conversely, nuts, oily fish and milk products, which are high in saturated fats, are associated with lower risk.

There are four main types of fats in our foods: polyunsaturated, monounsaturated, saturated and trans fats. Each has different chemical and physical properties. Vegetable spreads and cooking oils – mainly rapeseed, sunflower, soybean and olive – usually contain the first two but relatively small amounts of saturated fat. But palm oil, which has a higher melting point and is now used in many products, is highly saturated.

Dietary advice, then, has moved away from the simplistic mantra that we should just eat less saturated fat, salt and sugar, towards a more discerning pattern that emphasises fruit, vegetables and low-fat dairy food, includes wholegrains, poultry, fish and nuts, and contains less red meat, sweets and sugar-containing beverages. But where do fats fit in? Here are ten things you may not know.

1. Fat is an energy food



Fully loaded. [Wilf Wilson](#), CC BY-NC-SA

Most of the energy in our diet comes from carbohydrates. But fat supplies between a quarter and two-fifths of an adult's energy intake and half for a newborn. In babies, a high fat intake promotes fat deposits which insulate against heat loss.

Adding fat to food can double its energy content. Removing fat, from products like meat and milk, can substantially reduce it. Fat provides 9kcal/g (kilocalories/gram) in energy compared with 3.75kcal/g, 4kcal/g and 7kcal/g for carbohydrates, protein and alcohol.

2. Less energy intake, bigger weight loss



pickings. [Lettuce leaf by Shutterstock](#)

Slim

Reducing energy intake rather than increasing physical activity is the most effective means of reducing body fat. This can be achieved by using lower fat versions of existing foods, trimming fat from meat and using oils sparingly. There is not much difference in fat content between grilled and fried meat. Restriction of energy intake also requires limiting the intake of carbohydrates and alcohol.

3. Where it is in the body matters



Great power, less responsibility. [Shawne Hoke](#), [CC BY-NC](#)

Excess accumulation of body fat is most harmful if it is in the abdominal cavity or liver and is causally linked to developing type 2 diabetes. The use of a waist measurement (more than 80cm for women 94cm for men) indicates central obesity and is useful for predicting risk of type 2 diabetes. Women have more subcutaneous fat stores than men, so men store this visceral fat around the mesenteric blood vessel in the abdomen. When energy stored in fat cells is released, the fat mobilisation process leads to fatty acids entering the bloodstream. Visceral fat is more rapidly mobilised than subcutaneous fat and can accumulate in the liver. Fat also accumulates in the liver if the intake of alcohol or sugar is high.

4. Body uses carbohydrate for fuel not fat



Chain of events. [Oskay](#), [CC BY](#)

Obesity results from the excess accumulation of dietary fat in the body. Very little fat is made in the body from carbohydrates (including sugar) or alcohol because they are used as fuel in

preference to fat. But if you have excess fuel on board you deposit it as fat because we have a limited capacity to store carbohydrates.

5. Women need fat for fertility



Gymnasts: known to suffer delayed puberty. [Gtmcknight](#), [CC BY-NC-SA](#)

Body fat plays an important role in female fertility. Between 20-30% of a healthy mature woman's body weight is fat – twice as much as men. If the level drops below about 18%, ovulation stops but if it raises to very high levels – typically about 50% of her weight – it also results in infertility. A hormone called leptin is secreted by adipose (fat) tissue into the blood in proportion to the amount of fat it stores. The brain detects the blood leptin signal and this promotes ovulation when the level is high enough.

6. Some fatty acids are essential

We need certain polyunsaturated fatty acids, aptly named essential fatty acids (linoleic and linolenic acids), in our diet for healthy skin. These also contribute to maintaining cardiovascular health as well as brain and visual function. We mainly get these from vegetable oils, nuts and oily fish.

7. We need fat to absorb some vitamins



Oiling digestion. [Chiot's run](#), [CC BY-NC](#)

About 30g of fat is required every day to promote the absorption of fat-soluble vitamins A, D, E and K, which we also get from fatty foods. Vegetable oils are an important source of vitamin E and oily fish is the best dietary source of vitamin D. Provitamins are substances that can be converted within the body into vitamins. And adding a little oil to green vegetables and carrots actually improves the absorption of carotene (pro-vitamin A).

8. Big scale effect on blood cholesterol

Bloodbath. [Peter Almay](#), [CC BY-NC-SA](#)

A population's average blood cholesterol level is a major determinant of coronary heart disease risk. Trials show the replacement of saturated fatty acids with polyunsaturated fatty acids lowers blood cholesterol and reduces the incidence of disease but not mortality. These days high cholesterol levels are more effectively treated with statins, but the public health goal is to reduce average cholesterol levels.

9. Not all saturated fat is bad



Saturation point. [Mandroid](#), [CC BY-SA](#)

Not all saturated fats increase blood cholesterol. The cholesterol raising effects are confined to lauric, myristic and palmitic acids (the latter is found in palm oil). These raise low-density lipoprotein cholesterol (LDL-C) in decreasing order of potency compared to carbohydrates (including all types of starches and sugars) or unsaturated fatty acids. It is generally more effective to lower cholesterol by replacing saturated fatty acids with oils rich in monounsaturated (olive, rapeseed) or polyunsaturated fatty acids (soybean, sunflower oil) than lowering carbohydrates. For example, replacing butter or lard with olive oil as your main source of fat can lower LDL-C by about 10%.

10. Saturated fat intake is stable

Food and nutrition policies have changed the food supply. In the UK, energy intakes of fat and saturated fatty acids respectively fell from 42% and 20% in the early 1970s to 35% and 12% by 2000, where they have remained since. Between 1987 and 2000, average blood cholesterol levels fell from 5.7mmol/L to 5.2mmol/L. Despite the continuing rise in obesity and diabetes, death from cardiovascular disease fell from 141 to 63/100,000 of the population between 1994-97 and 2009-11, owing mainly to better treatment and improvements in control of risk factors such as blood pressure, smoking and cholesterol.

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Pears, Pluto and 3D printed ribs: our prized posts for 2015

From CSIRO Blog

By [Nicholas Kachel](#) 27th November 2015



Our Parkes Radio Telescope has been busy in 2015.

Well, what a year for science it's been. There's been a seemingly non-stop procession of breakthroughs in astronomy, biology, biomedics and physics (to name but a few disciplines) that have left us in wonder and awe at our own place in the grand scheme of things. And here at Australia's leading science agency, we like to think we've been keeping a pretty good pace with the groundbreaking developments, being responsible for our own share of jaw droppers. Here's ten of our favourites from 2015:

Expanding our Horizons

We were over the moon (and then some) about being involved in the historic NASA New Horizons mission, involving the first ever flyby of Pluto and its close(ish) neighbours. We played an important part in the mission, with our Canberra Deep Space Communication Complex (CDSCC) relaying data from the satellite back to the central command in the US. CDSCC was one of the first places on Earth to receive the New

Horizons data in binary form (a massive cache of 1s and 0s), By the time it reached us, the radio signals were 20 billion times weaker than the power of a watch battery. But thanks to our giant CDSCC antenna dishes, we were able to capture and process the information before sending it on to NASA's mission scientists.

3D printers to the chest-cue

Our chest story of the year? A Spanish cancer patient received a 3D printed titanium sternum and rib cage designed and manufactured right here in Australia. Suffering from a chest wall sarcoma, the man needed his sternum and a portion of his rib cage replaced. This part of the chest is notoriously tricky to recreate with prosthetics, due to the complex geometry and design required for each patient. So the patient's surgical team turned to Melbourne-based medical device company Anatomics, who designed and manufactured the implant utilising our whiz bang Lab 22 printers. It was a wondrous display of the possibilities the world of 3D printing presents us.



Shout out to all the pears

Didn't this one set the internet off? We've been involved in a study with Horticulture Innovation Australia on the health benefits of pears. As well as finding pears are good for lowering cholesterol, relieving constipation and as an anti-inflammatory, it turns out they can also ward off hangovers and lower blood alcohol levels. As explained by Manny Noakes, our lead research on the project, *Nashi pears act on the key enzymes involved in alcohol metabolism, alcohol dehydrogenase (ADH) and aldehyde dehydrogenase (ALDH) to speed up alcohol metabolism and elimination or inhibition of alcohol absorption. In particular, reductions were seen in blood acetaldehyde levels, the toxic metabolic thought to be responsible for the hangover symptoms, with pear juice consumption.* In short, eat some Nashi (Asian) pears before you start drinking and you can reduce the size of your hangover the next day. Noice.

Swooping magpie myths

We can't really claim this as being new science, but our explainer piece on why magpies swoop (based on a study from Griffith and Deakin universities) and an entertaining video of some CSIRO employees testing out some home-made devices to protect themselves from a particularly vicious maggie, became an online sensation. So why do they swoop? Just like any good parent, magpies are engaging in what's known as brood defence. And what's the best way to keep them from swooping you? Well, you'll just have to check out the blog.

The truth is out there... in Parkes

We announced our Parkes Radio Telescope is going to join an international search for extraterrestrial intelligence, called Breakthrough Listen. It's not every day you get the likes of Stephen Hawking and Yuri Milner announce they're going alien hunting and that they want you to come along with them, so this one was kind of a big deal. In fact, it's the biggest scientific search ever undertaken for signs of intelligent life beyond earth, covering 10 times more of the sky than previous programs and scanning 5 times more of the

radio spectrum, 100 times faster. Just keep an eye out for ‘Contact 2’ – a tale of love and aliens, based in Parkes.

Tanks for the advice

A report into the correct maintenance of rainwater tanks might sound a little dry, but our blog on rainwater tanks was wildly popular read in 2015. It seems like the humble backyard tank is an important part of many Australian households, so tips on keeping it healthy and efficient had our audience thirsty for more. Our top tip? Clean your guttering out at least once every 3 months, people!

Telling tuna tales

When a recreational fisherman jagged a sizey Southern Bluefin Tuna (SBT) in the waters off South Australia earlier this year, he didn’t bet that his catch of the day would become a science celebrity. It turned out that ‘Bluey,’ as she came to be known, was actually one of the first ever juvenile tuna to be tagged as part of our study in to SBT stocks back in 1992. Now 20 years old, Bluey’s tag contained a wealth of data on her movements and has given our scientists an unprecedented look into the life of this important fish.



Bluey. 102kg and taller than Tom Cruise (in case you were wondering).

The smell of rain

This wasn’t a new story, but it was one that needed to be told again. ‘Petrichor’ is the word used to describe the smell of oncoming rain, and it was first named and scientifically described by two of our scientists, Joy Bear and Richard Thomas, back in the 1960s. By steam distilling rocks that had been exposed to warm, dry conditions in the open, they discovered a yellowish oil – trapped in rocks and soil but released by moisture – that was responsible for the smell. Unearthing these stories for a new audience is just one of the many pleasures we have here on the CSIRO blog, so we hope you enjoyed it.

Australia's average diet is well, pretty average

We did a survey of eating habits across the country, surveying over 40,000 people. We got a 'C'. Turns out Aussies are eating too many 'discretionary snacks' – i.e. Tim Tams, Paddle Pops and dark chocolate (we blame those Lindt 2 for 1 deals). While many people scored highly in categories such as water intake and the variety of foods consumed, the survey found there was certainly lots of room for improvement in other areas. Unless you lived in Coffs Harbour or Grafton, on the mid-north coast of NSW, that is. You guys nailed it.

A real knock-out story

After getting the green light from regulators for its sale in Europe and the UK, Australian healthcare company Medical Developments International's (MDI) is planning to take it was taking the emergency pain killer Pentrox – aka the 'green whistle' – to the rest of the world. The green whistle has been used for decades across Australia, being administered by nurses, paramedics, surf life savers and bringing immediate pain relief in a way that's safe and non-addictive. Together with MDI, we developed a new manufacturing process that they will use to increase their production of Pentrox by ten times and meet the anticipated demand of the European market. MDI has been granted initial regulatory approval to sell the product in the UK, France, Belgium and Ireland where Pentrox will meet a significant gap in the marketplace for a non-narcotic analgesic. There are more than 50 million accident and emergency hospital attendances each year in these countries alone and MDI has estimated that these markets for Pentrox are worth about \$100 million per year. That's a lot of green (whistles).

We can't wait to see what 2016 brings. [To keep up with all of our latest and greatest, make sure you sign up to our blog.](#)

THE BENEFITS OF BEING A FINANCIAL MEMBER OF PERMACULTURE CAIRNS

Eleven Monthly meetings, with information, movies/videos and presentations from informative and interesting guest speakers and members. Plant of the month, Tool of the Month, Tip of the Month, Book of the Month, Cuppa and nibbles and networking time

Discount on most Workshop Fees organised by Permaculture Cairns

Learn more skill by attending Workshops, Permibeas, Tours, information nights and events

Learn more about Permaculture Practices and Principles by attending Meetings, Workshops, Permibeas.

Access to tropical vegetable plants and seeds and other resources.

Monthly Newsletter with local info on workshops and events and Permaculture news from around the world

Networking with people of similar interests from other organisations in the area eg. Seed Saver Groups, Biodynamic Group, Local Exchange Trading System aka LETS, Community Garden Groups, Non-Government Organisations like Terrain and Northern Gulf Resource Management Group.

Receive email notices of Events/ Courses by Permaculture Cairns, other relevant businesses/organisations - not all of these notices will be in our newsletters if the news was received after the issue date.

Free access to our Library books on a wide range of Permaculture subjects

Continue learning about Permaculture through shared knowledge and experience

Learn how to live gently on this earth – Care for the Earth, Care for People and Share your excess plants, seeds, knowledge, produce and skills.

Meet and make new friends.

Hi All.

I wish you a Merry Christmas and a very happy, enjoyable, interesting and prosperous New Year. Be kind to each other and enjoy life, it is way too short. Don't waste it by doing something you hate.

After three and a half years I will be stepping down from the Presidency of Permaculture Cairns on the 15th December. It is time to hand over to the younger people with fresh ideas. But I will continue putting the newsletter together during 2016. Hope you find the newsletter interesting.

Cheers, Carol Laing, President and Newsletter Editor

Please **PRINT – SIGN – SCAN** and **RETURN** by email to
treasurer@permaculturecairns.org.au.



Permaculture Cairns

Membership Form 2015

One year's membership fee - 1 Jan – 31 Dec:

☐ Household membership \$30 ☐ Renewing Member ☐

Individual membership \$20 ☐ New Member ☐

Name(s) of all applicant(s) & DOB if under 18yrs:

.....
.....
.....

Postal Address:

..... Postcode:

Phone(s):

Email:

Signature:

Payment may be made at Meetings, at Cairns Penny or Online Direct Deposit to Permaculture Cairns A/c at Cairns Penny in Grafton Street. BSB704-966 A/c No. 100009440 please include your Surname as reference.

If you have a Permaculture Design Certificate could you please complete the following survey.

YOUR NAME:

Who was the Course Presenter:

When did you do the Course:

Where did you do the Course:

Permaculture Cairns Public Meetings - All Welcome Third Tuesday of month Feb to Nov (Second Tuesday Dec). Doors open 6pm, meeting starts at 6.30pm at: ARC Disability Centre, 92 Little Street, Manunda

Enquiries

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