

# Living soils, fungal composting and health

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## Short or full version

I recently publicised my work on creating living soil using fungal composting which honestly I thought was a bit of a niche interest which would not get much response. Well I was wrong - it seems there are a lot of people who have got the message that health starts in the soil and are seriously interested in improving their soils by recycling so I am in the process of preparing documentation on the system.

I have written this document in two parts. The long version analyses how our health is being compromised by the food industry and my plans to establish a community project so people can balance their diet with fresh home grown fruit and vegetables.

If, as I hope, you may be interested sharing your expertise by participating in this community project you really need to read the long version and understand my ideas on how the project is organised.

If all you want to learn a bit more about my fungal composting system then all you need to do is email me at [colinaustin@bigpond.com](mailto:colinaustin@bigpond.com) and I will send you the documentation as it is prepared. This is totally free but there are some conditions to protect the integrity of the system (as explained in the long version).

The information is supplied on the basis that it is for your private non-commercial use only and the information will be treated as confidential e.g. not shared or publicised. However I encourage you to suggest to your friends and contacts that they contact me so their name is on the mailing list. This way they will receive the latest and most accurate information on the system and will avoid the problem that happened with Wicking Beds where false information became widely spread.

## Short version

The food we eat has a dramatic effect on our health. In the modern food system mega corporations heavily promote highly processed food full of sugars, fats and salt yet low in essential vitamins and minerals. This is a serious issue leading to the world's greatest health crisis resulting from the metabolic crisis, overweight, diabetes, heart attacks, strokes and cancer etc.

The mega food corporations have large funds and excessive political influence so we cannot expect Governments to reverse this in the short term.

However Wicking Beds allow virtually anyone to balance their diet with fresh and nutritious home grown fruit and vegetables. Community action is proposed to where experienced growers can spread the word and provide support and training for people who have little experience in growing their own food.

Living soil with the essential minerals and nutrients is needed to realise the health benefits, a component of the proposed community action is to 'grow' the soil based on a system developed from studying the process of natural soil formation from volcanic lava.

## Full version

### Preface

The aim is to create community action to *grow* living soil so we can all enjoy the health benefits of good food.

I want you to read this stuff - it's about protecting you, your family and friends health by balancing your diet with the right food. When you read this I hope to be enjoying a glass of wine to celebrate my 76 birthday, at my age there is not much I can do as an isolated individual - particularly against the might of the processed food industry but I hope to convince enough people to start a social movement for healthier food.

To make it a bit more interesting I am going to tell it as a story with some pretty unsavoury characters but hope you can hang in to get the key points.

When my kids were young I used to climb into bed and tell them a story. It's pretty difficult to think of a new story every night so they helped me by giving me a list of things they wanted in their stories - bad witches, little kids, exploding mushrooms (which with hind sight seems highly appropriate).



Did you know that mushroom actually explode? They wait for the right conditions then fire off little missiles containing spores - that's why we get the fairy rings. But look at how much greener the grass is inside the ring - that's because the fungi are so efficient at extracting nutrients which they pass onto the grass.

I am sorry this story will be a bit light on bad witches with pointy hats riding on broom sticks, but I hope the con men in bespoke suits driving Lamborghinis make an acceptable alternative.

### Once upon a time

All the best kids' stories start with *once upon a time* so here goes.

When I was a kid the oldies would yarn away saying things weren't as good as in the olden days.



This is rubbish - I was trained as an engineer and when I first started working in factories many years ago it was horrible - long dirty and hard work. Now with the computer revolution factories are automated so people work at terminals programming automated machines which produce goods at a totally phenomenal rate. We are better off, better fed and better in most ways.

But there are some very big BUTS particularly about food which I get particularly steamed up about

## Let's start by going to wildest Africa



In 1978 Melbourne suffered massive dust storms losing billions of tonnes of prime top soil. I decided to set up a research project to find a way of generating top soil - this taught me a lot about soil and water.

I was asked to Ethiopia to see if I could find some way of providing sustenance food in times of drought. My Ethiopian trip was the birth of wicking beds - dead simple - dig a trench - line with plastic - fill with weeds (to provide nutrients) - back fill and you have a cheap and effective water storage system with plants living in nutrient rich compost tea.



But I was naive, in my ignorance I assumed that people were starving as a result of natural causes like draught and desertification - only a bit true. War is the biggest cause of starvations and the second is the land grab by wealthy western agribusiness which use their power to buy up the best land to provide luxury products (such as coffee and chocolate) for us wealthy people leaving the locals to try and survive on the poorest land.

(I once bought a book just called Chocolate for \$1 from a jumble sale - amazing read if you can find a copy - kids are used as slave labour to grow the beans but cannot afford a chocky bar for themselves).

## Xiulan's diabetes

Then my wife - Xiulan - was diagnosed with diabetes. She was a respected surgeon - a gynaecologist. She has delivered many thousands of babies amongst other operations for both male and females. She once offered me the chop on the kitchen table - I am not sure whether she was cross with me or just joking - but I declined.



But it did set me wondering - how could a healthy Chinese lady - who had eaten Chinese food all her life without any health problems - come to Australia and develop diabetes so quickly.

So with the help of my good friend Mr. Google I started to study diet, health and diabetes. At first I thought this would be simple - just study the research and select the right food - but it was far from simple with so many contrary opinions even among the genuinely qualified experts. But search hard enough and long enough and a clear consensus emerges - the diet must be balanced with enough fresh fruit and vegetables with the essential minerals, fibre and nutrients.

Then there was an armada of quacks offering quick fixes - very clever promotion with an abundance of smart young people pretending to be doctors in white jackets with stethoscopes hanging around their necks - a sure sign of a quack - so easy to avoid.

But then the came the exploding volcano.

## Suits in Lamborghinis

This story is a bit short on evil witches on broom sticks - instead we have to make do with Suits in Lamborghinis.



We may know of an old auntie who smoked until she died at the age of 93 but there is really no issue that smoking is bad for health. The tactics used by the tobacco industry are now very well known, attacking genuine researchers, paying for opposing research, arguing the case for *not proven* just to delay and confuse the process. It worked delaying effective action for years.

The same tactics worked for the anti climate change brigade and is now endemic in the food industry. In fact the tobacco industry - realising that the tobacco industry is inevitably in decline - has invested heavily in the food processing industry and is using the same tactics of confusion and delay.

## Sugar - worse than tobacco

No one is forcing you to smoke, if you want to kill yourself by smoking its fine by me - just don't blow your smoke over me. But food is different; we can't just say I am going to stop eating. Some 80% of the food on supermarket shelves contains added sugar which is as bad as tobacco.



Sugar is soluble and rapidly enters the blood stream, our bodies release insulin to counter this excess sugar which is converted into fats and stored in our livers or around our vital organs (fat tums for men, big bums for ladies). Insulin enters the blood stream like a fire engine with all its bells going, we overcompensate so the excess sugar is soon converted into fat and stored leaving the blood actually **low** in sugars.

Such concentrated sugar never occurs in nature so our bodies have not evolved to cope with these sugar bursts.

We actually need some sugar for our energy - our bodies sense the low sugar level and inject hormones into our blood stream so we feel hungry and crave more sweet sugary food (or carbohydrates which are just as bad). Our hormones have evolved to protect us from starvation so we are soon tucking away into more sugar laced food and the cycle is repeated.



The more sugar we eat the more we want to eat yet more sugar, this is addiction - it may not sound as bad as tobacco but it's actually worse - it affects far more people (anyone who eats processed food) and can end up with having your limbs chopped off with diabetes, dying from a heart attack or being paralysed with a stroke.

You may find it hard to believe that the executives managing these giant food companies would be so heartless to be killing or maiming the population just for the sake of profits. Surely they would have a bit of humanity inside there flash suits.

But life is never simple so we have to go on to the next part of the story and work out how it is that these well paid executive should be so uncaring about their customers.

## Supersizing

This bit of the story is really fascinating and I will illustrate by telling the story of supersizing.

I am not on the payroll of McDonalds (in fact no one pays me anything for my food battle) but I actually feel a bit sorry for Maccers over supersizing.



I am not defending them or their likes and there is no doubt that they and their cohorts are inflicting chronic damage to our food system.

It is their market power which is causing massive destruction of our soils which are only kept producing by massive application of artificial fertilisers which is wiping out the natural soil biology (have no doubt the key to a healthy body is healthy soil) - the evolution of resistant weeds and pests - the use of anti-biotics which is leading to strains of resistant bacteria which could kill you or me when we next go to hospital. These are crimes against humanity so why should I leap to McDonalds defence?

Because it shows how these terrible things happen?

Supersizing was an invention of one smart arsed accountant who saw that the actual cost of the food in a fast food restaurant was only a small proportion of the total costs so they could double the portion size but only charge 50% more and make tons of money as everyone loves a bargain.

This idea caught on with the other fast fooders but to their credit McDonald resisted on the basis that there job was to supply low cost food to the less affluent. Bravo for Maccers.

But they were caught out by the dead cat or silo effect - the curse of our modern complex society.

## Dead cats, over the wall, silos

No person or company is an island in today's world of commerce - there is a long chain.

The financial institutions hold trillions of dollars from pension funds etc. which provide the capital for these mega corporations. They see their job as making as much money as possible for their investors - sounds reasonable - at least in principle. So they put the squeeze on Maccers basically telling them to get into supersizing and make as much money as possible so.



As companies have got larger and have adopted complex technology they have become more departmentalised. One department may not necessarily cooperate with other departments. In my days as an engineer my favourite term was dead cat engineering - a more colourful version of over the wall engineering where one group of engineers would work on one particular part then throw it over the wall to the next department. Each department may be doing the best job according to their job description but the net results could be pretty grim.

Economists don't seem to like my dead cat term so they now call this the silo effect.



This system failure is a far too common feature of our complex modern society.

Large companies tend not to be innovative, it is much cheaper to go and buy out a small company that is innovative and so they keep on getting bigger. If this helps them establish a pseudo monopoly so much the better.



The food industry is the world's largest industry with just a handful of companies (forget all those different packets in the supermarket - that's what the smart guys call branding where one company packages almost identical product in different boxes to maximise sales).

This may give us cheap food but the health effects on modern societies is scary - obesity, diabetes, heart attacks, strokes, cancer are all aggravated by this bad diet.



One of the most amazing revelations was an advert by Woolworths poking fun at people who grow their own food instead of using their own brand processed food. While hurriedly withdrawn it showed exactly how they think. <https://www.youtube.com/watch?v=sbqSvxi2weA>

## **Mum, Dad the kids and sabre toothed tigers**

Profit may be the name of the game overriding customer's health - but how does this happen in a modern society which we would like to think is effectively controlled by our Governments?

Let me tell you how - this is the really important bit of the story.



reason.

We have evolved over millions of years to be an intrinsically tribal animal. If dad goes out by himself onto the plains to catch an antelope for dinner and happens to come across a sabre toothed tiger the score is sabre toothed tiger 1 dad 0. Protection may be the obvious reason why we formed into tribes, but often the obvious reason is often not the true

## **Kids take a long time to grow up**

The true reason is that it takes a long time (much longer than any other animal) for our kids to reach maturity. So we formed tribes to protect and care for the kids while they matured. A feature of human tribes is that the tribe itself will look after kids if Dad has a non-beneficial encounter with a Sabre toothed tiger. (Sorry I forgot I was telling a story not writing a technical paper correction 'eaten by a sabre toothed tiger').



Tribes would not only look after their own kids but also kids from other tribes - kids and child bearing women became valuable prizes in fights with other tribe.

For the best part of a million years being part of a tribe was the only way to survive and breed. No wonder it is such an ingrained instinct in us. (I expect any day an announcement that they have found a bit of the brain that controls the tribal instinct.)

## Birth of nations

But they don't call us homo sapiens for nothing. We worked out that a system with tribes fighting and killing the men and capturing women and kids was not all that smart. We needed a better way and developed the concept of nations which largely stopped inter-tribal fighting (but led to conflict between nations).

But the idea of nations only goes back a few thousand years - nothing in comparison with our lives as tribal creature. Being a tribal creature is built into our genes.

Try and understand the horrors of the 7 o'clock news - it is largely explained by tribal conflict. One of the horrors of this modern tribal warfare is refugees - parents who know they are doomed - death if they stay - nearly as bad if they try to escape - but instinct tells them that if they let their kids go that some friendly tribe will care for them. Such is the power of the tribal instinct.

## Corporations are just a collection of tribes



But large companies are really nothing more than a collection of tribes. There may be a lot of evil in the processed food business, toxic and addictive sugars, chemicals destroying our soil, anti-biotics making us exposed to resistant bacteria. Are all the people that work for these companies evil? No! Companies are collection of tribes and people are tribal creatures and have ingrained genes to follow and support their local tribe inside the giant company.

Our nature is to do what is best for our local tribe in the short term - not consider the overall effect on society as a whole.

Most people who work for large corporations are decent people - but it just takes one or two evil heads of tribes within the corporation for the whole corporation to behave in an evil way.

Traditionally society have relied on their Governments to protect themselves from the evils that arise from this myopic thinking but with the growth of the mega corporations this is becoming ever more difficult - particularly as the multi nationals seem able to operate above the law of individual countries .

Solving this myopia is one of the great challenges of our modern technology based society.

## Knight in shining armour or Silly old bugger?



This is supposed to be a fun story not some prediction of Armageddon. If I could I would invent some dashing Knight charging out of the forest to save the people - unfortunately Knights in shining armour are not on the agenda in this story.

So imagine an old man with a white beard sitting in a rocking chair. Pretend it's me asking myself what I can do about this.

By time you have reached my age you will have learned an important lessons - do what you can even if it not the total solution.

So I made up a mental list of what I can and can't do. Give up chocolate? Definitely NO! Put that top of the list of cant's. Start a social campaign against the food giants with lots of

street marches - put that in the list of cant's - I am a bit of a hermit. The list of cant's is filling up - better start looking at the can do's.

Well as I often joke - I was born and Hitler declared war and tried to starve us into submission so I have been involved with home grown food for a life time.

I have been researching how to regenerate soil for years and know how critical water is to soil regeneration? In years gone by wasn't I a world expert in computational fluid flow with my company earning hundreds of millions of dollars of export earnings for Australia, didn't I write up lots of software to predict how water moves through the soil - getting warmer? Didn't I pioneer Wicking Beds and didn't they go feral on the internet? Getting real warm now!

## Knowhow and community action

What I do have is expertise in soil, water, nutrients, Wicking and Sponge beds.



So maybe what I can start a community movement in which I teach people how to grow really good soil so they can grow their own fruit and vegetables which will make them healthy.

How can community action fight the might of the mega corporations? We can't, at least not directly, but we can still win by sneaking behind them with smart community action.



This has already started with Wicking Beds. Believe me community action can be incredibly effective. When I came back from Ethiopia I wrote a few articles and posted details of Wicking Beds on my web. The results were simply astonishing, other web and social media sites picked up the message and now Wicking Beds are universal.

OK I admit that this just happened - it was not some master plan of mine. People found Wicking Beds useful and told their friends and it just went feral.

But Wicking Beds have not been an immediate success story - when I first started developing Wicking Beds the expert gardeners told me they would never work because the water would go stagnant and putrid. This did not put me off - my life has revolved around technology and innovation - which in practise means a string of failures with the occasional success.

I was lucky enough to spot that computers would revolutionise engineering design - and that was in the days of punch cards.

That was one of my successes which gave me what every innovators dreams of - enough money so I did not have to go round trying to convince myopic bureaucrats to finance my experiments. If they failed (which they usually did) I could simply say it is my money and if I want to waste it on my stupid ideas that is my business and no one else's.



My work in Ethiopia was a voluntary social activity. The personal experience of seeing people starving has had a major impact on my life. I have had lots of stupid ideas in my life but I was never been that stupid that I thought I could go to Ethiopia and earn a fortune from starving people where the rich were earning a dollar a day.



So I never thought about protecting any intellectual property legally - I just wanted people to share in the knowledge and eat better. I was very happy to see Wicking Beds going feral.

But I learned an important lesson about what happens if you just scattering ideas to the wind and letting them spread of their own accord - and that is the degradation of ideas.

## **Corruption of information and Nutritional value**

There were two parts to my original Wicking Beds. The first was having a water storage system - this has really caught on and is what most people think about with Wicking Beds.

But the second part - providing nutrition - was missed when they went feral.

Farmers in poor countries simply cannot afford commercial fertilisers - and the chemical fertilisers in common use can be decidedly destructive of the essential soil biology.



Most food plants are not very effective at extracting nutrients from the soil. In the wild state they generally grow in companion with other more aggressive plants. In any case nowadays most food plants have been genetically selected to grow very fast in conjunction with fertilisers but perform very badly without the addition of fertilisers. The green revolution has been an absolute bonanza for the more affluent farmers but has been devastating for the poor who cannot afford fertilisers.

By contrast plants we normally call weeds are extremely effective at extracting nutrient from the soil - that's why they grow so fast and are such a pain. They may be indigestible to us but soil biology can break them down to provide nutrients for our food plants.

This was my solution to providing nutrients in Africa for poor farmers. This appears to have been totally missed in the feral promotion of Wicking Beds.

## **The dead cat and recycling**



Now you could turn round to me and say don't worry, I can just nip down to the local store and buy all the bags of fertiliser I need - no problems.

I would turn round and say this is typical dead cat or silo thinking - it may be good for you but is it good overall. We are consuming mountains of food - typically grown using chemical fertilisers. Already we are running low in some chemicals like phosphorous. We need to act sustainably.

## **Lack of nutrients in modern foods**

Plants get their energy and most of their bulk by photosynthesis using the energy of the sun to break down water and carbon dioxide to form carbohydrates and sugars. Photosynthesis provides the energy in food.

It requires some minerals from the soil - nitrate or ammonia, sulphate, phosphate, iron, magnesium, and potassium are required in substantial amounts. Smaller amounts of such elements as manganese, copper, and chlorine are also required.

Healthy plants can be grown if these minerals are readily available in the soil. However we are animals - not plants - and we required larger amounts of some elements than plants do

and some elements which the plant has no need of at all. Fortunately the plant will absorb these minerals if they are in solution in the soil.

There is a world of difference between plants that are healthy and plants that will make us healthy.

In the world of the dead cat or silos - supermarkets need to display plants that look healthy so we will buy them. There is no incentive for them to offer plants that will make us healthy.



Poor people in Africa may be starving simply because there is not enough food but in the affluent West we have a different form of starvation, food which is ram packed full of energy typically - in the form of sugars or carbohydrates - but lacking the essential vitamins and minerals for our health.

Our bodies are not that dumb, in fact one of the most interesting areas of research in diet and health is how our hormones make us feel hungry or full. These hormones are controlled by the type and quality of the food we eat. Sugars and carbohydrates make us feel hungrier. The opposite occurs with nutrient rich fruit and vegetables - they make us feel full - so we stop eating.

The greatest health problem of our time is people stuffing themselves because they feel hungry when they are actually full of sugars and carbohydrates.

### **Are Wicking Beds the white Knight in shining armour?**



Wicking beds have many technical advantages, they use less water (by limiting evaporation and leakage of water passed the root zone) they prevent loss of nutrient by leakage along with the water and they require a lot less maintenance.



But the overriding advantage is that they enable almost anyone, people living in apartments with limited space or who have limited time or skills to grow fruit and vegetables which will balance their diet and make them healthy.



There is another issue which even at my age turns me on. Currently some 40% of the food grown is wasted from farm gate to table. This contains a staggering quantity of nutrients some of which are already in short supply and irreplaceable. If civilisation is to survive we simply cannot afford this waste. Of course we can just leave this problem to our grandkids but mine are pretty cute so I don't really want to dump this in their laps.

I would very much like to see this community revolution happen - but how? The answer in principle is simple - by using the power of modern communication and letting the message go feral.

### **Hold the press Joe - we have a problem**

There is a saying that the difference between a wise man and a fool is that they both make mistakes but the wise man learns from them.



When Wicking Beds first went feral there was no system of ensuring that the message being sent out was in fact the correct message - in reality there was a lot of misinformation - some people tried Wicking Beds and they simply failed - for example by going putrid. More important others had some success in growing plants but never benefited from the full health benefits that come from having a soil with the minerals and nutrient readily available to the plants and specifically tuned to the needs of Wicking Beds.

Wicking Bed are about healthy people from healthy soil.

False information is worse than no information.

### What can be done about poor information?

Patents and the law of Intellectual Property are geared to providing the owner with essentially monopoly control over the technology. But they set up a monopoly and restrict the use of that technology. Big companies love monopolies (or pseudo monopolies which dodge the fair trading legislation).

This is exactly the opposite of what I want. I want people to use and benefit from this technology - I see this as a communal project.

There are many cases where people want to participate in a communal project - but still want their intellectual property right respected as the pioneer of their technology and if the technology is commercialised expect to receive some rewards.



The system of Creative Common was developed by Lawrence Lessig to resolve this. People working in the public domain can share information but still have their intellectual property respected.

You may have seen on my previous publications

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Another benefit of community based technology is that people with specialist knowledge can cooperate by sharing information.

This is particularly true with Wicking Beds. I may have pioneered the concept of Wicking Beds but many other people have cooperated in the refining the concept into a working system.



I have talked about the dead cat or silo effect where people live and work in their own specialist area without thinking about the system as a whole (holistic thinking). Diet and health is an area riddled with dead cat or silo thinking. There are many highly competent medical researchers and practitioners studying the link between diet and health - some actually talk about cooking and food preparation but there is hardly any discussion on how the food is grown or the soil in which it is grown.



Yet there are other specialist who have an in depth knowledge of gardening and soils while other specialise in other important areas such as medicinal herbs.

There is yet one more issue - that stuff called money. I actually want people to set up business to exploit the technology and am more than happy if they make money from their businesses. To date I have spent a significant amount of my money and time developing and promoting Wicking Beds and offering a free advisory service with no financial reward.

I don't want to over dramatize the situation but people are suffering poor health or dying from the **profit above anything** of the mega corporations who spend billions of dollars in false advertising and public relations.

To counter there misinformation (euphemism for lying that snack bars are healthy when stoked with fats and sugars) we need an effective community project - and even community projects need some money to be effective.

There is yet one more issue - I am good at maths and statistics and can easily see that I will soon be enjoying the same status as John Cleese's dead parrot. For this I have developed what will be my very last innovation - the Wicking Coffin.

I would rather like to think that my work on soils, water, nutrients and Wicking Beds would continue long after the decomposition of my body in my Wicking Coffin.

Incorporating a financial system into this community action will facilitate other people continuing my work.

## **This is my plan for WickiMix™ and creative commons**

I will continue to develop and document the technology of growing soils - specifically aimed at Wicking Beds(WickiMix™) although of course this soil can be used in any growing system such as sponge beds of conventional gardening beds.

I will produce two sets of documentation.



The first will give an overview of the system - this is pretty easy as it is based on how nature creates soil - but speeded up a bit.



You can see this for yourself by looking at how a lava flow is converted to some of the best soil. The only snag in following nature is you may have to wait a while for a volcano to pop up in your back garden. You may have to be awfully patient.

All I have done is taken this perfectly natural process and speeded it up a bit (I say a bit - but really from 10,000 years to 1 year).

The overview will be in the public domain under the Creative Commons system. I will put it on my web and under the Creative Commons system people can copy and use this essentially as they wish for private use provided they quote the original source.

The second documentation will be an operating manual with adequate details so people can effectively grow their own soil.

I want to make sure the detailed information is properly managed to avoid people with better promotional but lower technical skills don't spread misleading information. Also I am just one of many people working on soil and nutrients so there are lots of other good ideas floating around which don't get promoted. By acting as a central source of information the total technology can be co-ordinated and distributed.

I will not be putting up the full details on my web - instead I will email the manual to anyone interested in using this technology but with certain conditions.

They can use this information to set up their own soil growing system for their own private non-commercial use.

I am encouraging people to tell their friends about the system but rather than copy the documentation or give people the specifics give them my email address and request a copy directly.



I am encouraging people to set up their own businesses producing WickiMix™ but they will be expected to pay a 5% royalty plus maintain confidentiality.

Anyone requesting a copy of the documentation automatically agrees with acceptance of these conditions.

I am hoping and expecting that many people will see ways of improving the system or can provide extra knowledge. I hope that they can forward these ideas to me so I can improve the system and share with other people. This sharing of information is one of the key advantages of a communal project.

If you are happy with this system and would like to be on the mailing list for the technical documents as I write them please contact me directly at [colinaustin@bigpond.com](mailto:colinaustin@bigpond.com)