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ENVIRONMENTAL SUSTAINABILITY

A School of Health Sciences Newsletter



Growing and burying algae in the Sahara: the latest solution for the climate crisis

Out in the Sahara Desert, in one of the most inhospitable environments imaginable, a natural solution to the climate crisis is growing – and at a rapid rate.

London-based startup Brilliant Planet has leased 6,100 hectares of land outside the remote coastal town of Akhfenir in southern Morocco, wedged between the Atlantic Ocean to the north and the Sahara to the south. And it's using it to cultivate algae. Algae absorbs atmospheric carbon dioxide and emits oxygen via photosynthesis, and has been doing so since before the first land plants ever existed. Brilliant Planet's CEO Adam Taylor says the company has developed a way to grow algae at exponential rates starting in a beaker in a lab and ending in 12,000-square-meter pools of locally-sourced seawater. Taylor says the process mimics a natural algae bloom, and a test tube of algae can multiply to fill 16 of these giant pools – the equivalent of 77 Olympic-sized swimming pools – in just 30 days. The algae is extracted from the water then pumped up a 10-story tower and sprayed into the desert air. In the roughly 30 seconds it takes to reach the ground, hot air dries the biomass out, leaving hypersaline algae flakes which can be collected and shallow buried, sequestering their carbon for thousands of years, the company claims.

Full article [here](#).



This issue:

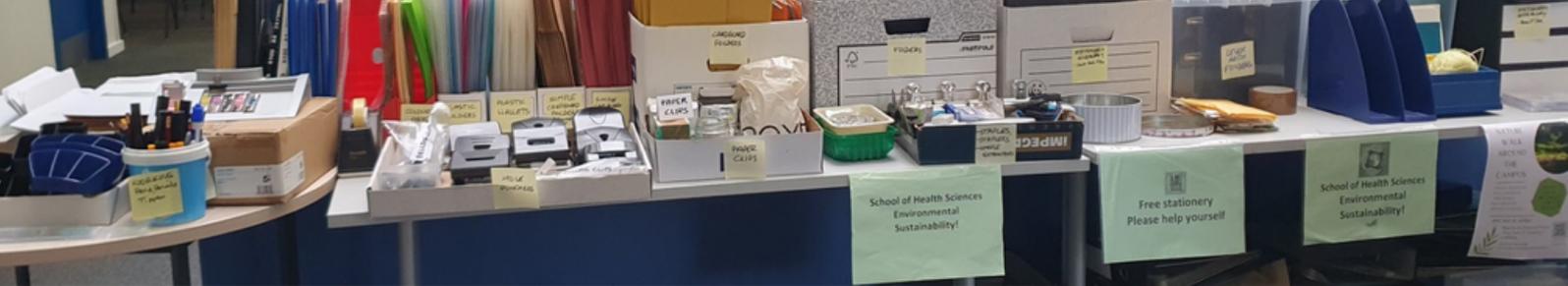
Algae in the Sahara
PAGE 01

SHS ES
Welcome Week Stall
PAGE 02

How To Make Soil
Fertile
PAGE 04

Watch, read, listen
PAGE 08

Upcoming Events
PAGE 09



SHS ES Welcome Week Stall 2023

BY HARRIET BICKLEY

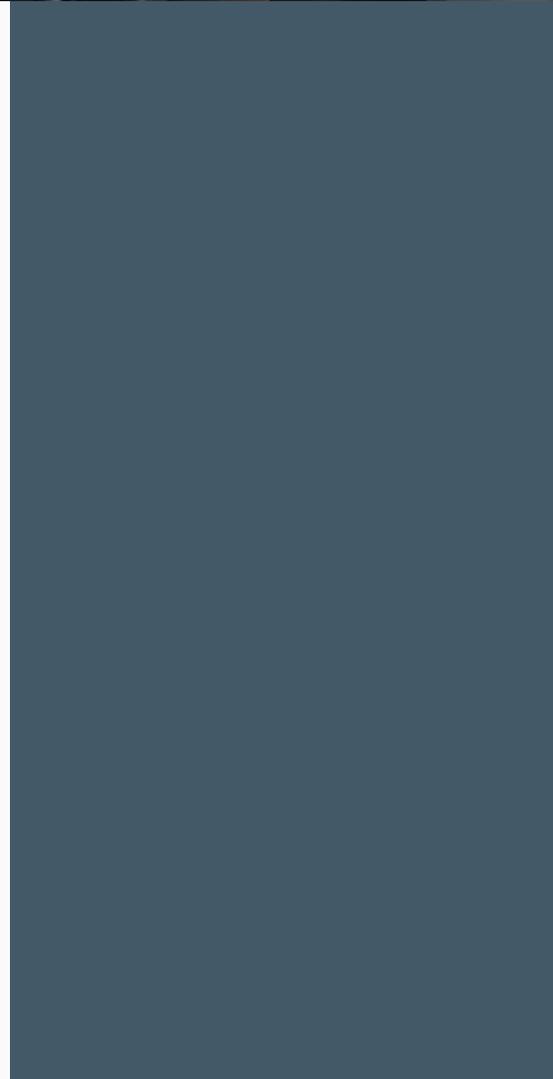
In Welcome Week we held a School of Health Sciences Environmental Sustainability Stall, handing out free stationery and plants. We gave away 18 big boxes worth of good quality, reused or new surplus stationery, 75 houseplants and 45 kitchen herb pots, collectively saving students a conservative estimate of over £1,500 and staff at least £400! Staff offices and stationery cupboards are tidier now too!



The kitchen herbs came with tips on how to use them, and we displayed posters explaining how house plants are beneficial to our health. We gave out dozens of compostable caddy bags for people to use at home, along with instructions for people living in Manchester local authority area about where to reorder free bags, caddies and recycle bins:

https://www.manchester.gov.uk/info/200084/bins_rubbish_and_recycling/6217/order_a_bin_box_or_recycling_bag

We achieved another 86 downloads of the recently updated eco-guide 'Easy Eco for All' (<https://documents.manchester.ac.uk/display.aspx?DocID=44432>), which signposts students and staff to resources on and off campus to help them live, work and study in Manchester in a more eco-conscious way. We additionally displayed a poster for the campus-based student-run refill and recycling shop Want not Waste (<https://www.facebook.com/wantnotwastemcr>).





SHS ES Welcome Week Stall 2023

BY HARRIET BICKLEY

Many thanks to everyone (Harriet Bickley, Sally Freeman, Judy Ormrod, Josam Szmyt, Brad O'Donovan, Jimmy Burns, Phil Stones, Nic Worthington, Leanne Heathcote, Alexandra Prodan, Julie Butterworth, Tora Jordyn, Sandra Flynn, Sarah Steeg, Samantha Franklin and Sammy Platt) who donated plants, stationery, muscle-power, logistics, advertising, ideas and/or time to make the SHS Environmental Sustainability Welcome Week stall a success.



Many grateful students visited us and filled up their bags, so we hopefully enhanced the student experience whilst promoting the core University values of environmental sustainability and social responsibility. We received many positive comments on surplus resources being rehomed in an eco-conscious and cost-effective manner from staff including favourable comments from Professor Andy Brass, Head of the School of Health Sciences, and a big thank you from Maggy Fostier, the Environmental Sustainability lead for the Faculty of Biology, Medicine and Health. We hope to run a similarly popular event next September.

Watch this space!





How To Make Soil Fertile

BY [HARVEY USSERY](#)

Grow an amazing garden by learning how to make soil fertile naturally. Use these organic and natural methods to make a healthy garden from common soil and figure out how to enrich poor soil.

1. Add Organic Matter

For the best soil, sources of organic matter should be as diverse as possible.

Add manures for nitrogen. All livestock manures can be valuable additions to soil — their nutrients are readily available to soil organisms and plants. In fact, manures make a greater contribution to soil aggregation than composts, which have already mostly decomposed.

You should apply manure with care. Although pathogens are less likely to be found in manures from homesteads and small farms than those from large confinement livestock operations, you should allow three months between application and harvest of root crops or leafy vegetables such as lettuce and spinach to guard against contamination. (Tall crops such as corn and trellised tomatoes shouldn't be prone to contamination.)

However, because some nutrients from manures are so readily available, they are more likely to leach out of the soil (where they're needed) into groundwater and streams (where they're pollutants). Also, if manures are overused, they can provide excess amounts of some nutrients, especially phosphorus. Because of this, it may be best to restrict fresh manures to heavy feeding, fast-growing crops like corn, and process additional manure by composting.





How To Make Soil Fertile

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2. Try composting.

Composting is a means of recycling almost any organic wastes. It reduces the bulk of organic materials, stabilizes their more volatile and soluble nutrients, and speeds up the formation of soil humus.

Regular applications of modest amounts of compost — one-quarter inch per season — will provide slow-release nutrients, which will dramatically improve your soil's water retention and help suppress disease. Classic composting is relatively simple, but it can be labor intensive if you try to do it on a large scale. The older I get, the more interested I am in an easier alternative.

One is "sheet composting." In classic composting, you build tall piles in bins, alternating layers of fresh, high-nitrogen "greens," such as grass clippings, with high-carbon, difficult to break down "browns," such as dry leaves. Instead, you can keep these two compost materials separate, and apply them in two layers directly to the garden bed. The moist, volatile, high-nitrogen "greens" go down first, in direct contact with the soil and the microbial populations ready to feed on them, while the drier, coarser, high-carbon "browns" are used as a cover to keep the first layer from drying out or losing its more volatile elements to the atmosphere.

The second alternative is vermicomposting: using earthworms to convert nutrient-dense materials, such as manures, food wastes and green crop residues, into forms usable by plants.

Earthworm castings are a major part of my fertility program. I started vermicomposting with a 3-by-4 foot worm bin. Then last year, I converted the center of my greenhouse to a 4-by-40 foot series of bins, 16 inches deep. My worms process horse manure by the pickup load from a neighbor. Not only do the worm castings feed plant roots, they carry a huge load of beneficial microbes that boost the soil organism community.





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3. Plant cover crops.

Growing cover crops is perhaps the most valuable strategy we can adopt to feed our soil, build up its fertility and improve its structure with each passing season. Freshly killed cover crops provide readily available nutrients for our soil microbe friends and hence for food crop plants. Plus, the channels opened up by the decaying roots of cover crops permit oxygen and water to penetrate the soil.

Legumes (clovers, alfalfa, beans and peas) are especially valuable cover crops, because they fix nitrogen from the atmosphere into forms available to crop plants. Mixes of different cover crops are often beneficial. For example, in mixes of grasses and clovers, the grasses add a large amount of biomass and improve soil structure because of the size and complexity of their root systems, and the legumes add nitrogen to help break down the relatively carbon-rich grass roots quickly.

Try to work cover crops into your cropping plans with the same deliberation that you bring to food crops. The easy way to do so is to maintain two separate garden spaces: Plant one to food crops and one to cover crops, then alternate the two crops in the following year. But most gardeners cannot devote that much space to such a strategy, so effective cover cropping must be fitted into a unified garden plan, a concept that in practice can get fiendishly complex. Gardeners who like jigsaw puzzles will love the challenges. There are cover crops that work best for each of the four seasons, and for almost any cropping strategy.





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4. “Mine” soil nutrients with deep rooted plants.

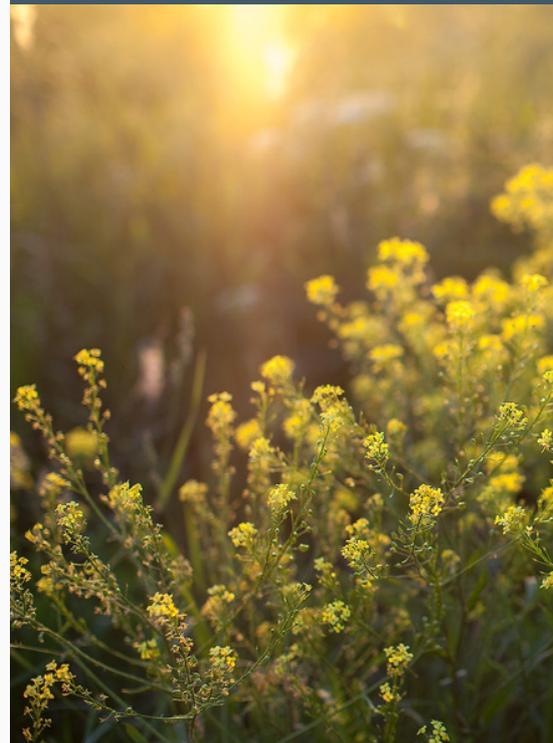
The organic materials we add to our soil supply most of the minerals healthy crops need. In addition, we plant “fertility patches” to grow a lot of our own mineral supplements.

These fertility patches include plants that function as “dynamic accumulators.” That is, their roots grow deep, and “mine” mineral reserves from the deeper layers of subsoil, where it has weathered out of the parent rock. The roots of comfrey, for instance, can grow 8 to 10 feet into the subsoil. Stinging nettle is another extremely useful dynamic accumulator. Both nettle and comfrey, in addition to high mineral content, are high in nitrogen. They make excellent additions to a compost heap or can be used as mulches.

A final thought about fertility patches: Many gardeners are a bit paranoid about “weeds,” but some weeds are deep rooted, and can be used like comfrey as dynamic accumulators to bring minerals up from the deep subsoil. An example is yellow dock (*Rumex crispus*). Why not allow some yellow dock to grow here and there, in edges and corners where it is not in the way? When the plants start to make seed heads, cut them off just above the crown to prevent huge numbers of seeds from blowing loose in the garden, then use the plants in mulches or composts.

Read more [here](#).

Will you try any of these? Let us know if you do and what results you’ve had by emailing: alexandra.prodan@manchester.ac.uk and you can be featured in the next edition!





WATCH

The Need to GROW

In a race against the end of farmable soil, three individuals fight for change in the industry of agricultural food production, calling for a revolution.

The Need to Grow delivers alarming evidence on the importance of healthy soil — revealing not only the potential of localized food production working with nature, but our opportunity as individuals to help regenerate our planet’s dying soils and participate in the restoration of the Earth.

Watch [here](#) or on Prime Video.

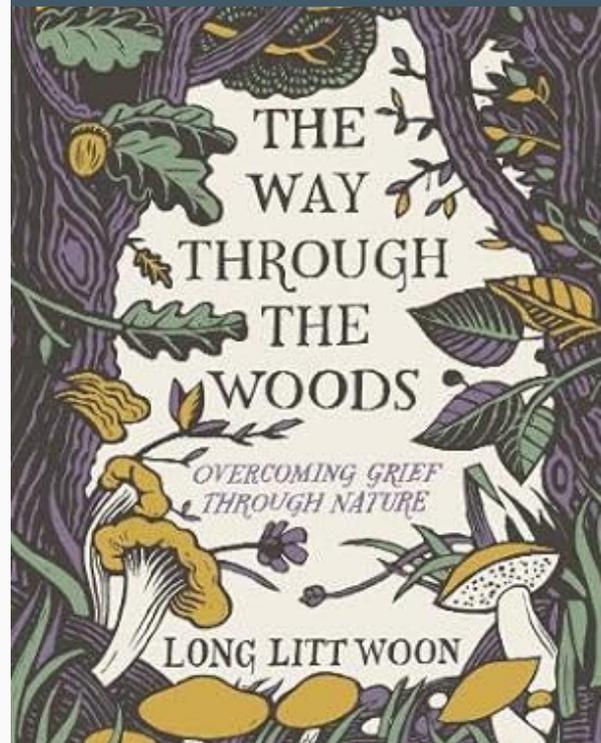


READ

The Way Through the Woods: overcoming grief through nature by Long Litt Woon

One woman’s journey to overcome grief by delving into nature.

After losing her husband of 32 years, Long Litt Woon is utterly bereft. For a time, she is disoriented, aimless, lost. It is only when she wanders deep into the woods and attunes herself to Nature’s chorus that she learns how the wild might restore us to hope, and to life after death.





Events

the Whitworth

Natural Cultural Health Service
The Whitworth

A range of nature-based activities at varying times. The Natural and Cultural Health Service (NCHS) is a programme of outdoor activities that promote good physical and mental wellbeing. From Meditating in Nature to Gardening for good health (GROW), at the Whitworth they have something for everyone, every week.

Get involved [here](#).

Concerning Climate Change
Manchester Museum



Retrofitting Our Homes (8 November, 5.30-7pm)

A large proportion of UK homes and commercial buildings are in need of low carbon refurbishment to improve energy efficiency. Could a street-by-street campaign to insulate homes and businesses help to reduce demand and stem soaring energy costs? Jonathan Atkinson of Carbon Co-op and People Powered Retrofit describes how their co-operative initiative will create jobs, tackle climate change and add to the comfort of homes in Greater Manchester.

Powering the Future (13 December, 5.30-7pm)

What can be done to encourage homeowners, schools, businesses and landlords to install solar panels and other forms of renewable electricity generation? Can the National Grid cope? Helen Seagrave (Community Energy Manager, Electricity North West) will explain 'smart grids' and what benefits there could be for individuals and communities to generate their own electricity and export any excess to the grid.

Sign up [here](#).