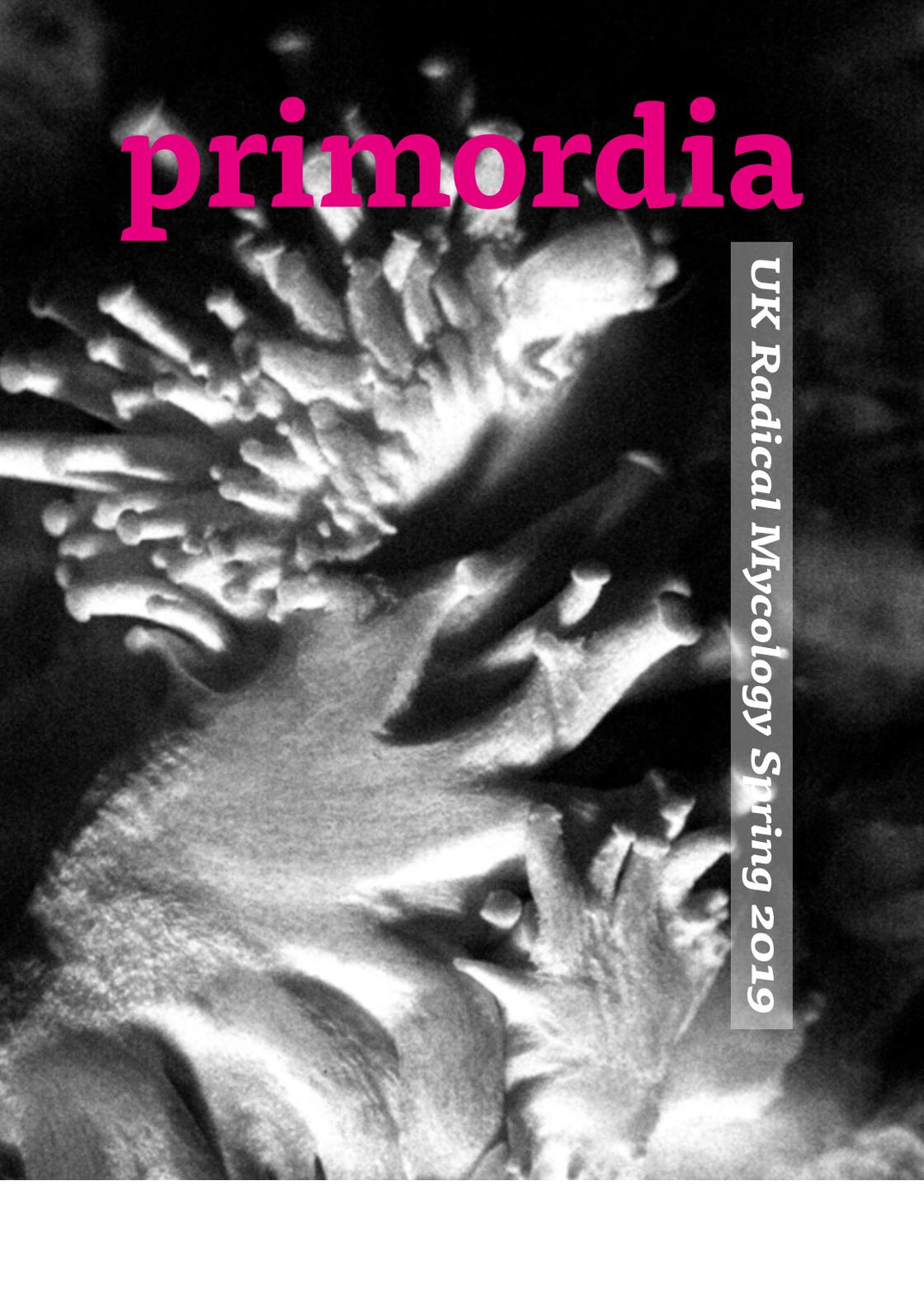


primordia

A black and white scanning electron micrograph (SEM) showing a dense cluster of mushroom primordia. The structures are highly textured, with many small, rounded, and elongated forms protruding from a larger, more irregular mass. The lighting creates strong highlights and deep shadows, emphasizing the three-dimensional nature of the biological structures.

UK Radical Mycology Spring 2019

Inoculation

Radical Mycology Gathering 1
Saturday 28th November 2018
Hulme Community Garden Centre,
Manchester, as part of the exhibition:
The Ground Beneath Your Feet
Castlefield Gallery, Manchester

Spawn Run

Radical Mycology Gathering 1.5
Saturday 19th January 2019
Callis Community Gardens,
Hebden Bridge

Primordia

Radical Mycology Gathering 2
Saturday 16th February 2019
The Bluecoat, Liverpool
as part of Jade Montserrat's
exhibition *Instituting Care*

Fruit body

Mushroom Volunteer Period
18th - 31st March 2019
Coed Talyan, Carmarthenshire
Help inoculate logs & learn
about growing mushrooms.
Board & accommodation
provided; 1 week minimum stay
info@agroecology.co.uk
www.agroecology.co.uk

Sporulation

Mycogeneration: Fungal Convergence
5th & 6th October 2019
Coed Talyan, Carmarthenshire
A gathering for mycophiles
info@mycogeneration.co.uk
<http://agroecology.co.uk/mycogeneration-fungal-convergence/>

What is Radical Mycology UK?

Radical Mycology is a grassroots movement and social philosophy originating in the work of Peter McCoy in the United States and based on accessibly teaching the importance of working with fungi for personal, societal, and ecological resilience. And in doing so, to build relationships amongst humans and fungi for the benefit of larger communities and the world. Radical Mycology is based on the belief that the highly resilient life-cycles of fungi and their interactions in nature serve as powerful learning tools for how humans can best relate to each other and steward the world they live in.

The use of the word “radical” to describe our approach to the science and culture of mycology is based on several factors. *First*, we see the use of fungal species for environmental betterment as a visceral recognition of the intrinsic, sacred value of every living thing. *Second*, we are working to shift perceptions about mycology as a fringe subject to something central to all life processes and solutions to global issues. *Third*, the word “radical” comes from the Latin “radix” which itself means “root.” Many of the applications of mycology and the lessons that can be learned from their biology literally get to the root of global problems. Issues such as food shortages, water purity, soil fertility, pollution reduction, and democratic organisation can all be addressed and informed through directed work with fungi.

This is the first publication of a UK Radical Mycology network.

We do not believe that fungal remediation or the creation of a more mushroom literate society is the sole solution to such problems. The true solution to these issues comes from eliminating the conditions that enable them to exist. We do not believe that mushrooms alone can save the world. We support a diversity of tactics in addressing any given challenge. That said, we do believe that the fungi are powerful allies in the struggle to help restore the planet from the social and ecological challenges that it faces. We see the cultivation and application of fungi as a solution-based approach to countering the destructive practices of governments and industries that should be used in conjunction with more front-line tactics such as projects to educate and increase awareness, direct action campaigns, and even legislation reform.

In doing so, Radical Mycology can offer a cultural re-imagining of our relations to each and the environment to the emergent forms of organisation we now need to counter the devastation wrought from our decaying civilisation.

Those that partner with the fungi shall prevail.

Mutual aid and mycorrhizae

Progress has stopped making sense (but there is still neighbourliness)

Being a piece of work on/of mushrooms, mycorrhizae and mutual aid made for the exhibition *The Ground Beneath Your Feet* at Castlefield Gallery, Manchester.

16th November 2018 to 3rd February 2019

95% of plants exist in a mycorrhizal (fungusroot) association with fungi, exchanging carbohydrates for water, minerals and security and communications services. Without mycorrhizal fungi, no forests; in fact it's doubtful that life would ever have made it onto dry land. On the other hand, only 2% of fungal species exist in these symbiotic relationships with plants – we need them more than they need us.

I had big plans for this work.

I wanted to make a mycorrhizal system in an art gallery. It can't really be done – mycorrhizal systems take years to develop, like villages. It takes more than just the presence of plants and mycorrhizal fungi in the same location. Fortunately I realised this reasonably quickly.

I wanted to look at mutual aid – what it is (an exchange of assistance where both parties benefit), where it is in nature (everywhere, including in our stomachs), where it is in the specifically human domain.

I wanted to talk to lots of soil scientists and mycologists. I only managed to talk to three.

One of them told me about a diagram, part of a study to see which community was most stable after drought – the soil bacteria community or the soil fungus community. Not that it was a competition, but the fungus won.

I liked the diagram. I liked how it was all straight lines and angles, in complete contrast to anything you find in the soil. I liked its clarity.

I thought about human mutual aid and Ursula le Guin. I love Ursula and always try to bring her into my work. I thought about recreating the town of Sinshan with different types of fungus.

It didn't work.

Mutual aid comes in many forms – Brownies, litter picking, shovelling snow off your neighbour's drive - and systems. The system I knew best was the Climate Camps that took place from 2006 to 2010 in England, and at various dates globally. They were a mixture of protest camp, summer school and ecovillage, self-organised on squatted land, with a huge input of energy and time. Different working groups organised power, food, process, plumbing, lawyers...

I used different mushrooms – edible, medicinal – to map Climate Camp onto soil ecology. Yellow oysters played the part of the plant community – and of the camp kitchen. An ash sapling inoculated with morel spawn played the part of photosynthesis – and of power. The following diagram and table give more info.

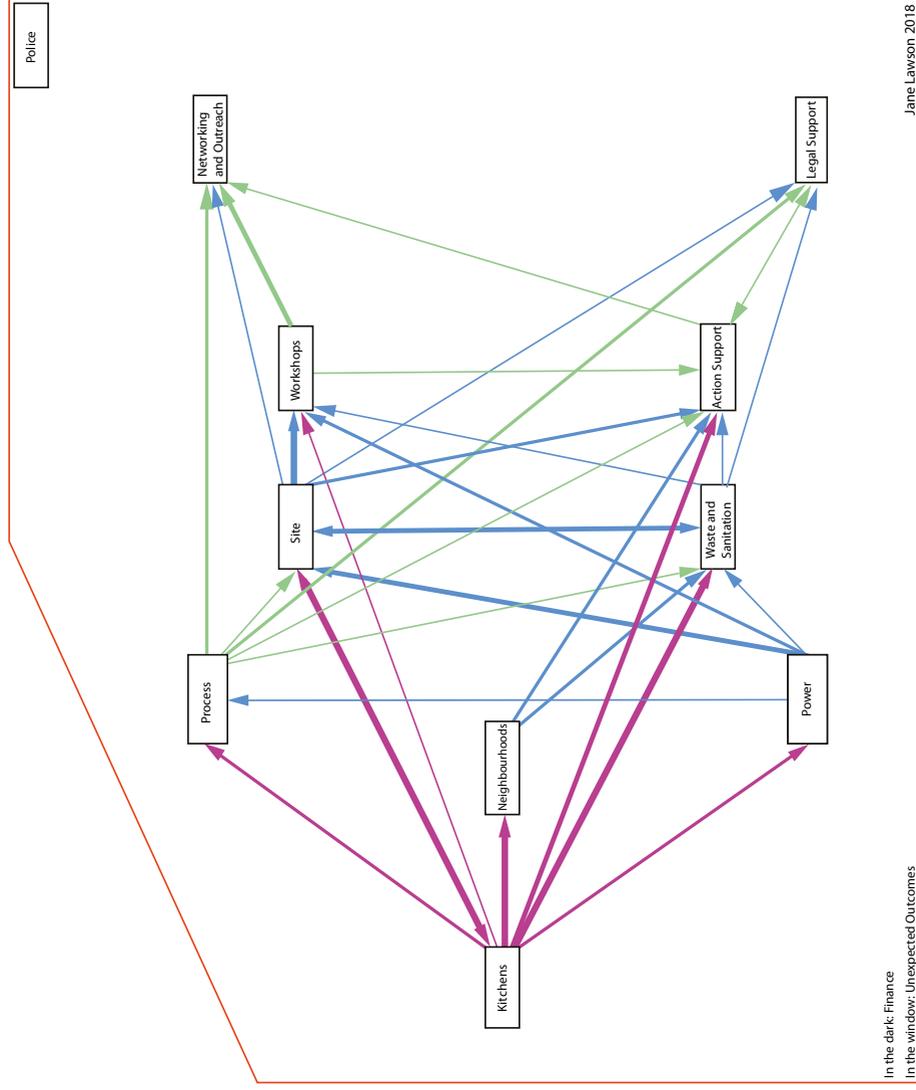
It's noticeable how many of the paragraphs in this short piece about mutual aid start with "I".

I had fungus to help me.

Jane

Progress has stopped making sense (but there is still neighbourliness)

- ash sapling
- beech microchip
- found objects
- gaffer tape
- gravel
- mycelium
- reused MDF
- seeds
- straw
- stencil card
- undoubtedly other things that I have forgotten



In the dark: Finance
In the window: Unexpected Outcomes

Progress has stopped making sense (but there is still neighbourliness)

Being an attempt to understand examples of mutual aid in nature, in particular the mycorrhizal associations that 90% of plants form with fungi; and an attempt to gain a greater understanding of the soil ecology of which mycorrhizal fungus is a part by mapping it onto one a human mutual aid system, the UK Climate Camps that took place from 2006 to 2010.

NO.	SOIL	MUSHROOM/PLANT	CLIMATE CAMP	FUNCTION
1	Plant community	Yellow Oyster	Kitchen	Co-ordinates food distribution. Provides meals. Helping in the kitchen is a way to get involved on site
2	Small creature community	Grey Oyster	Neighbourhoods	Provide a base for people, and ways to connect
3	Soil Moisture	White Oyster	Process	Provides the decision-making infrastructure for the camps, enabling them to function logistically and politically
4	Photosynthesis	Morel + ash	Power	Converts sunlight to energy
5	Fungal community	Shaggy inkcap	Site	Provides physical infrastructure of camp. Site meetings bring people together and are conduits for information
6	Bacterial community	Lion's Mane	Waste/Sanitation	Organises and removes waste products
7	nirS+nirK	Bean	Workshops	Provide multiple kinds of information, structure for days, reasons for people to come
8	nosZ+nosZII	Sweetcorn	Action support	Provides training for people to do actions – key rationale of camp
9	Carbon dioxide	Reishi	Outreach + Networking	Puts info into world, draws people in, makes people aware of camp's agenda and politics
10	Nitrous oxide	White oyster on right wing propaganda	Legal support	Provides info for people doing actions, training for legal observers, legal co-ordination afterwards; massively increases possibility and effectiveness of direct action
11	Herbicide	Air filter	Police	Repress and control elements considered by state and corporations to be a risk to public order and safety
12	Phosphorus	Panellus stipticus	Finance	Finds money, which makes many things possible; monitors spending

Spawn for yellow and white oysters, morel, lion's mane and reishi from Adrian Ogden at <https://www.gourmetmushrooms.co.uk>
 Spawn for pink oyster and Panellus stipticus from <http://mushroombox.co.uk>
 Spawn for grey oyster and shaggy inkcap from Ann Miller at <http://annforfungi.co.uk>

Gathering 2: Primordia Saturday 16th Feb, 2019 at The Bluecoat, Liverpool, as part of Jade Montserrat's exhibition Instituting_Care

This work was developed with the support of an a-n professional development bursary which paid for mentoring from Feral Practice. More info about the work can be found at <https://www.a-n.co.uk/blogs/mycorrhiza-mutual-aid-and-radical-mycology/>

Radical mycology gathering 1

Inoculation *Radical Mycology Gathering 1* / Saturday 28th November 2018

Hulme Community Garden Centre, Manchester

as part of *The Ground Beneath Your Feet*, Castlefield Gallery, Manchester

I made a piece of work about neighbourliness for an exhibition. And so part of the work was bringing people together.

I hoped it would start something; but you never know.

Castlefield Gallery brought the budget. James Scrivens brought the knowledge and background about (Radical) Mycology. We brought ourselves to Hulme Community Garden Centre (go there – they have a café, plants and a cat). Alex brought knowledge about soil ecology and remote sensing (technological rather than mystic); Miranda, Sophie and Leonie brought tales of Callis Community Gardens and the Underground Mushroom Club; Marc brought an exercise to draw out people’s skills and knowledge; Colin brought his knowledge of mushrooms in the wild; I brought an account of mycoremediation – the use of fungus to clean up toxins; Kirsty brought us nutritional tips, including putting mushrooms in the sun to create Vitamin D; and everyone brought attention and interest.

James showed us how to make spawn from spawn. We mixed layers of low-sporing oyster mushroom spawn supplied by Ann Miller (see end for contact info) in damp plain cardboard, rolled it up, and put it in a plastic bag. If placed in a dark place with a consistent temperature, the spawn grows and increases then after a couple of weeks, it can be mixed with pasteurised or sterilised cut straw and placed in another plastic bag with air holes where it will grow mushrooms.

But the gathering wasn’t only to grow mushrooms, it was to grow a network – to spread the spores of mushroom love and knowledge. Its first fruit was the UK Radical Mycology Facebook page, and then the Spawn Run gathering at Callis in January 2019. And then this zine. And more fruit to come.

Those that partner with fungi will change.

Jane



Radical mycology gathering 1.5

Spawn Run *Radical Mycology Gathering 1.5* / Saturday 19th January 2019
Callis Community Gardens, Hebden Bridge

This was a day of community, art, storytelling, practical learning and sharing on a deep-winter day infused with mycelial magic.

Around 20 of us got together and began by ceremonially lighting the campfire using a King Alfred's Cake mushroom. On a walk around Callis Community Gardens we met, and shared knowledge about, winter fungi including Scarlet Elf Cups and Birch Polypore, then gathered for a log inoculation workshop led by local growers, Rooting and Fruiting.

The group created a community resource of shitake and oyster mushroom logs. A lunch of mushroom soup was shared around the fire along with stories about our fungi-related projects. Katherine welcomed us aboard her Unspeakable Arts floating gallery to view magical mushroom art, some of which used artist's bracket mushroom as the canvas.

The day was a collaborative effort, brought together by members of the Underground Mushroom Club. The club has eight members and meets in Hebden Bridge. We spend the evening together, share a mushroom-themed meal, talk about a particular mushroom or aspect of mycology, and perhaps make something together, such as a mushroom medicine or a piece of art. It's been really good in terms of learning and building a mycelial community of fellow mushroom lovers in the area.

If you want to create your own club, we would advise to start with a small group to make finding dates to meet, and meeting places, easier. Also, picking a theme for each meeting gives it focus- because there is so much you could talk about and we can easily get carried away!

Sophie, Leonie & Katherine



Exciting mushroom stuff

A symbiotic story from the sphere of science...

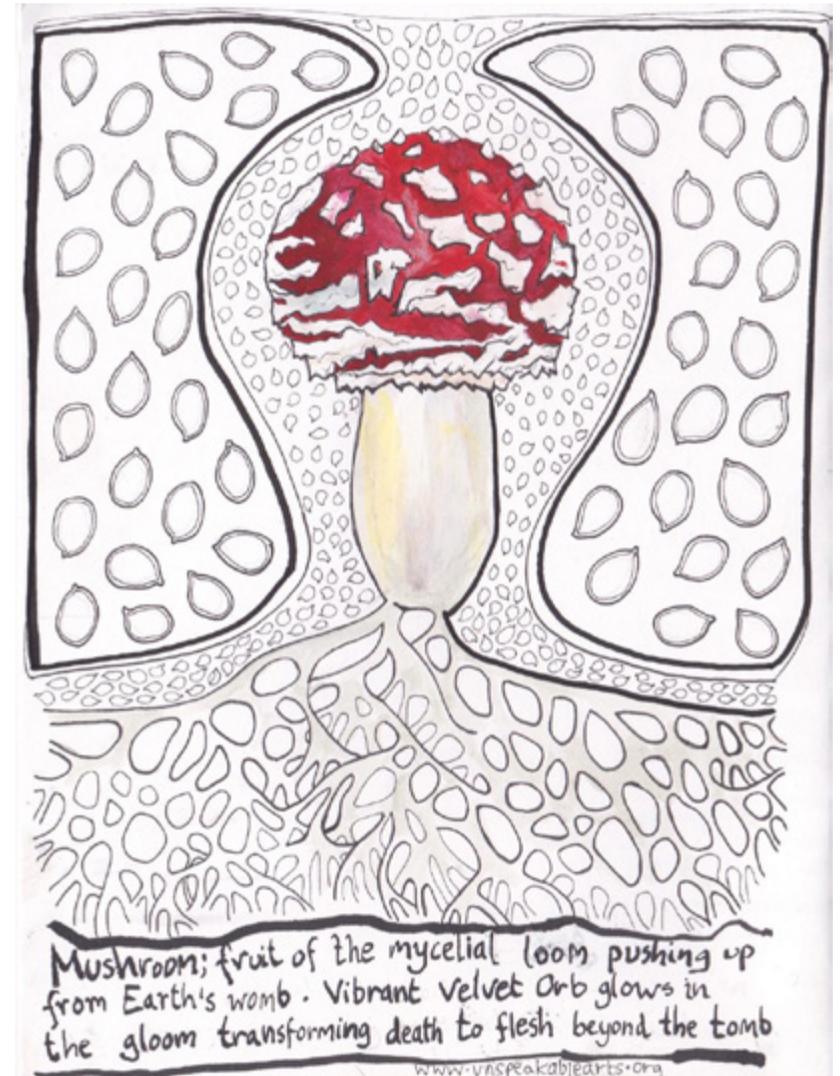
The complex and intricate relationships forged with other organisms are some of the most fascinating things about fungi. Researchers at the Smithsonian Institution, Washington, have been investigating one of the oldest mycological symbioses; between farming 'attine' ants and their carefully tended fungi gardens.

The entomologists believe that ants took the fungi inside their nests around 35 million years ago, when the climate began to change and dry out their humid South American rainforest homes. Inside the nests, the fungi can stay moist and provide a reliable source of nutrients to the ant colony. Colonies become very attached to their particular crop of fungi; they reject new strains when researchers try to introduce them to the nest, and young females take a piece of their 'home' fungus with them when they set out to begin a new colony. This has been going on for long enough that the ants have created new domesticated species of fungi, which are no longer able to breed with wild species or survive outside the nest.

Or was it the other way around? Mycologists observing the same miniature systems may well conclude that it was in fact the fungi who domesticated the ants. The nest is kept meticulously free of parasites and pests that pose a threat to the fungi, and the vegetable matter that the ants spend all day foraging for is exclusively to feed their fungal lodgers. Most importantly, since the fungi moved in the ants have lost the ability to create some of their own amino acids, being too much in the habit of sourcing them from the fungus. This means that they too are unable to survive on their own.

Whichever way around, both the fungi and the ants flourish from the symbiosis. What's more, their little agricultural system has been operating in harmony for millions of years. Perhaps humans – relatively inexperienced farmers, with only 12,000 years under our belt – could learn something from these old experts.

Alex



Katherine www.unspeakablearts.org

A Beginner's Guide to Growing Oyster Mushrooms

Materials (supplier websites listed at the back)

Small filter bag – for this amount, I use size 10T from Ann Miller. You can also make your own by taking a plastic bag, piercing holes in it and covering the holes with micropore; however this increases your chances of contamination

Spawn – available from Ann Miller or, in larger quantities, Gourmet Medicinal Mushrooms (nb when using sawdust spawn you need to double the quantity of spawn)

Straw – available from Ann Miller

Equipment

Kettle

Hand sanitiser

For a beginner, I'd recommend using 50g of grain spawn with 300g straw. When you're more experienced, you can increase the amount of straw to 500g.

1. Pasteurisation

Put about 300g straw into the filter bag and pour boiling water over it. You want the straw to be wet through but not swimming. Tie the bag loosely closed and leave to cool down.

Once the straw is warm rather than hot (this can take several hours), drain the excess water out – I do this by putting it upside down on a clothes drying rack. Again, leave it for several hours or overnight.

The aim is to kill off any mould etc in the straw, and also any seeds – otherwise they will germinate, and the oyster mushroom mycelium can't grow on living plants.

2. Inoculation

If you have to squeeze the straw really hard to get any drops of water, then it's drained enough. It should now be room temperature or cooler. You can now add the spawn. At this stage you want to keep things as sterile as possible, to avoid introducing contaminants.

Make sure your hands are clean, ideally with an alcohol-based steriliser, although I've used just hot water and soa many times. Break up the spawn – you can do this with it still in its bag, to minimise the risk of contamination. Then mix it into the straw, as evenly distributed as possible and compact as possible.

3. Spawn run

Tape the bag shut and place somewhere with a fairly constant temperature, ideally dark. After two or three weeks it should be a firm whitish block of mycelium.

4. Shock

When the straw is fully myceliated it needs a cold shock. I usually put my bag outside for a couple of days, but you can also put it in a bucket of cold water.

After a couple of days, put it somewhere light. Cut some slits in the bag – you can either do this where the mycelium looks nice and thick, or just at regular intervals a few cm apart. Spray with a fine mist to maintain moisture levels.

5. Pins / Primordia / Fruit

After a week or so, you should start to see lots of tiny "pins" (the primordia, the initial emergence of the mushroom), some of which will grow into full size mushrooms. If necessary, cut more slits where the pins have formed, so that they are not trapped behind plastic.

It usually takes less than five days for the pins to develop into mushrooms. Once the cap margin starts to unfurl, pull the mushroom off the substrate and eat it. Fried in butter is especially delicious.

Resource list

Suzanne Simard's Ted talk on mycorrhizal systems

https://www.ted.com/talks/suzanne_simard_how_trees_talk_to_each_other/

A Mushroom Revolution Takes Root in the Middle East and Africa

<https://www.ozy.com/fast-forward/a-mushroom-revolution-takes-root-in-the-middle-east-and-africa/85714>

From making biofuels to eating up harmful plastics, fungi could help us build a greener planet

<https://www.theguardian.com/technology/2018/sep/16/the-five-magic-mushrooms-biofuels-eating-plastic-fungi-help-build-greener-planet>

Ann Miller

<http://www.annforfungi.co.uk/shop/>

Fungus Conservation Trust

www.abfg.org

Fungus guru Paul Stamets' company **Fungi Perfecti**

<https://fungi.com>

and his classic Ted talk Six Ways Mushrooms Can Save the World

https://www.ted.com/talks/paul_stamets_on_6_ways_mushrooms_can_save_the_world?language=en

Gourmet Woodland Mushrooms

<https://www.gourmetmushrooms.co.uk>

Mycogeneration

<http://www.mycogeneration.co.uk>

North West Fungus Group – it's ace

<https://northwestfungusgroup.com> and

<https://www.facebook.com/groups/NorthWestFungusGroup/>

Radical Mycology

<https://radicalmycology.com>

Rooting and Fruiting

<http://www.rootingandfruiting.co.uk>

UK Radical Mycology

<https://www.facebook.com/radicalmycologyuk> (page)

<https://www.facebook.com/groups/324015708419159> (group)



I am learning how to make pigment from the oyster mushrooms that I grew as a result of the Mycorrhizal Gathering so I can use it to paint the oyster mushrooms. Here are the very first results.

Lauren