Illustration *Youngchae Lee*

Cultivating indigenous microorganisms may sound like the work of biologists rather than gardeners, but Korean natural farming is more about muddy hands than white lab coats. Laura Morrison finds out why UK growers are unlocking its secrets

Kimchi, sourdough starter, sauerkraut… given the current vogue for fermentation, you may well have one of these quietly fizzing away in a jar right now. But what about IMO-4, WS-CA, FPJ or OHN? These unguessable acronyms are the kefirs and kombuchas of Korean natural farming (KNF), a method that harnesses beneficial microbial life in soil to grow resilient and flourishing plants – and it's gaining popularity around the world.

KNF harnesses beneficial microbial life in soil to grow resilient and flourishing plants

Developed in South Korea in the 1960s by natural farming researcher Dr Cho Han Kyu, KNF centres around indigenous microorganisms, or IMOs. These naturally occurring bacteria, fungi and yeasts perform a gazillion minute tasks in the soil, balancing nutrients, removing pollutants, protecting plants from disease and aiding plant growth.

You might already be familiar with the various microbial inputs available in the form of liquid feeds or powders, such as the much-lauded mycorrhizal fungi. These off-the shelf products are essentially probiotics for your garden instead of your gut, and they do often have a positive effect – it's just not necessarily a long-term one. The microbial populations stay put and interact for a while, giving your plants a boost, but they can struggle to colonise and multiply, and therefore need to be reapplied. This lack of longevity is down to the fact that the microorganisms were likely collected from a very different environment to that of your own garden, and they're just not as happy in your soil.

This is where the 'indigenous' part of these alternative microorganisms comes into play. Practitioners of KNF collect IMOs from a nearby 'ancient' site that's particularly microbe-rich, such as a forest. These microorganisms will already be hardwired and long-adapted to thrive in the local environment, so are more likely to stick around and continue to multiply.

David O'Carroll of Ballagh Micro Farm in Devon has been practising KNF for eight years and teaching it for four. On his tours and workshops, he asks visitors to consider: 'What feeds a forest?' Forests are brilliant examples of self-sufficient ecosystems and have long been an inspiration to natural growers. In KNF, the idea is to emulate a lively forest floor. 'You're bringing in these ancient microorganisms that have been feeding the forest for centuries, and using them to teach the microorganisms in your soil to act like they do,' David explains.

Collecting IMOs is half the fun: the traditional KNF method involves filling a wooden box with steamed white rice and leaving it in a spot that shows signs of rich microbial life, such as among leaf litter in an ancient forest. Eventually, microbial populations will colonise the rice in the form of a visible white hyphae (the vegetative part of fungus, collectively known as mycelium). Nature reserves, national parks, arboretums and moorland are also potentially great sites for varied local microbial populations.

Essentially, any nearby place that hasn't been developed or cultivated in recent years – the older the better. As David says, 'If you're out and about and spot a 300-year-old tree, that'd be a great place to start.'

Acknowledging that not everyone has the time to monitor a box of rice in a pile of leaves, David has come up with a simpler method of IMO collection – he calls it his 'Britney Spears' to the traditional 'Tchaikovsky' method. Instead of setting up on location, it just involves collecting hyphae-rich leaf litter from the local site (the full instructions are opposite).

David's microbe shortcut is a great route into the world of KNF, but there's a lot more to get your teeth into. As well as three further stages of IMO collection, there's fermented plant and fruit juices (FPJ, FJP), ingenious ways to use brown rice vinegar (BRV), calcium feeds (WS-CA) and Oriental Herb Nutrient (OHN). The enthusiasm for this knowledge is growing, with practitioners from Hawaii to Hounslow picking up tips from YouTube, Facebook groups and from the guides and experiments of people in the KNF community.

At No Diggity Gardens, a community composting, food growing and educating site in Birmingham, Nev Portas is slowly adapting KNF techniques into his no-dig, natural approach. For Nev and many other gardeners it's the cyclical nature of KNF that appeals. 'KNF is about using what you have around you,' he says. 'I don't use anything that's not local, not even natural fertilisers like seaweed – if I can't make it from what I can find locally, then I don't use it. I started by making microbial solutions [using David's method], and using it as a soil drench. We're now also making LAB.'

LAB, short for lactobacillus, is bacteria that brings soil back into balance – it's 'soil emergency services', as David describes it. It can suppress disease and aid decomposition of plant matter. Nev and the volunteers at No Diggity also use it to keep their beehives and chicken coops disease-free, and to compost more efficiently – it helps break down meat and dairy.

The idea is to emulate a lively forest floor

'There's all this activity and life in the soil. But in previously cultivated soil, there's often a large percentage of pathogens [disease-producing microorganisms] that don't create good growing conditions,' says Nev. 'If you can tip the balance toward good microorganisms, things will generally start looking after themselves.'

KNF may seem daunting, but the passion of these early adopters is infectious, and it's gathering pace. It seems that once you've mastered some of the basics, KNF can offer powerful ways of creating a garden or plot that truly thrives and is on the road to a self-serving ecosystem. 'You don't look at a forest and ask, "Where's the farmer?"' says David. 'It has learned how to look after itself.'

GROW YOUR OWN BACTERIA

David's guide to making LAB

Wash white rice and hold onto the milky water.

Put the water into a jar (discard any excess) and leave uncovered.

In 24-72 hours a skin will form on the surface of the water and the starch will settle to the bottom.

In a bowl or jar, combine 1 part of this water (without the starch residue at the bottom) with 10 parts milk. Cover with a breathable lid (such as kitchen paper secured with a rubber band) and store in a warm, dark place for 2-3 days.

The mixture will separate into curds and whey. Once this happens, extract the curds from the whey by pouring through a fine sieve into a bowl. (You could also keep back the curds to make cheese!)

Weigh your whey. Place it in a jar and add an equal part of brown sugar – this stabilises the LAB and stops it from fermenting further.

Close the jar with a breathable lid. Store in a cool place.

To use, dilute in water at a ratio of 1:1000 (for example, 1ml of LAB to 1 litre water). Water onto the soil or spray directly onto plant leaves.

DIY IMO

The 'Britney Spears' solution

- A lidded water-butt or similar filled with rainwater placed in a sunny spot
- 1 tbsp sea salt
- 2 handfuls of boiled potatoes
- 2 handfuls of collected leaf litter with visible white threads of mycelium
- Mesh bags (or old socks)

Dissolve the sea salt in a little hot water and add it to the rainwater.

Place the potatoes and leaf mould into mesh bags (or socks) and hold them under the rainwater. Knead well so that the contents dissolve and the water turns milky.

Secure the bags over the edge of the barrel so that they are hanging in the water and close the lid.

Microbes will feed on the simple starch and begin to multiply. You'll know this is happening when bubbles rise and form a foam on the surface. Cultivation will take 48 hours minimum, but timings will vary depending on how warm your barrel gets. Keep a close eye on it, as you don't want the solution to over-ferment.

Once the entire surface is covered with bubbles, you've reached 'peak foam', and cultivation is complete.

Use immediately. Dilute in clean water at a ratio of 1 part microbe solution to 30 parts water. Water onto the soil before rainfall and the microbes will penetrate deep into the earth. It can also be sprayed directly onto plants as a pesticide. b