

Opinion & Analysis

High time agriculture got back to its healthy roots



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Permaculture offers one vision of a future where human ingenuity and adaptability will allow us to survive, and indeed thrive, in the age after oil

IF YOU go down to the woods today, prepare to be surprised. A new movement is taking root that in a low-key way challenges almost everything we think we know about agriculture and our relationship with food. Last week's column asked: how can we feed ourselves without ready access to the fossil fuels upon which conventional agriculture depends utterly? It wasn't meant to be a rhetorical question.

The basis of all agriculture is soil. Healthy soil positively teems with life, including earthworms, fungi and essential bacteria. Mature topsoil is the product of hundreds, even thousands of years of slow growth, decay and decomposition. Within human timescales, soil is essentially a non-renewable resource.

The plough has shaped human history even more profoundly than the sword. Where for 10,000 years we depended on a delicate balance of nutrients to maintain the soil upon which our civilisations stood, the energy revolution and industrial farming in the last century saw us throw away that rule book.

Sticking a plough into the earth and turning over the sod is the basis of most agriculture. While this gives the farmer easy access to the soil for tilling and planting, the price is the destruction over time of virtually all the rich life of the soil. What's left is essentially a largely lifeless brown sponge of clay, into which crops are planted, then chemical fertilisers, pesticides, fungicides, herbicides and even artificial irrigation are added. This process is massively energy-intensive. Once exposed, soils are vulnerable to erosion.

Even worse, they also release billions of tons of planet-warming CO₂ annually.

Our hopelessly unsustainable industrialised agriculture requires the input of up to 10 calories of fossil energy for every single food calorie produced. We are, in a very real sense, eating oil.

But how else can we put food on the table? A system known as no-till farming is now used on a fifth of US farmlands. It dramatically reduces soil damage and erosion, as well as needing a lot less fuel. The downside is that no-till machinery is costly, and the system depends heavily on herbicides to control weeds. No-till is a modest step away from unsustainable agriculture.

Organic farming and gardening is further down the road to sustainable food production. There is another step again, and this is known as permaculture – short for permanent or perennial agriculture.

Pioneered in the 1970s, permaculture is only now entering the environmental mainstream. Courses in permaculture are sprouting up around Ireland. Growing up on a farm makes you just a little sceptical about “alternative” food production, but I decided to suspend my disbelief and join 16 other rookies on a weekend introductory course earlier this month in Cloughjordan, Co Tipperary.

Where modern agriculture uses mechanised brawn to subdue the soil and extract food, we were shown how permaculture is about brain power; this involves observing and working with nature, with the aim of making the least possible

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change for the greatest effect.

Left to its own devices, Ireland would quickly revert to its natural woodland state. Much effort in farming goes in to stifling this impulse. Nobody tends a hedgerow, yet it is by far the most biodiverse part of the Irish landscape.

The premise of permaculture is radical yet simple: nature needs no lessons in producing plenty; permaculture works by nudging the natural systems to favour plants and foods we find palatable. Collaboration replaces conquest in a method also known as forest gardening. In natural systems, nothing is wasted. Our teacher Graham Strouts introduced us to the term “humanure” which is the process of recycling human wastes back into production. A toxin is converted to a safe, useful fertiliser – an illustration of the maxim that the problem is often itself the solution.

So far, so good, but can a forest garden seriously produce enough food using zero artificial inputs to compete with a regular

farm? English expert Martin Crawford reckons a forest garden could achieve about twice the productivity per acre of a typical acre of arable farmland, though there's little scope for cereals in this system.

Setting up a forest garden takes time, know-how and close observation, but once it's established, it virtually runs itself. Apart from being ultra-low energy, it's far less work than organic. Harvesting the fruits, vegetables, nuts, berries and other elements of the edible landscape is probably the most time-consuming chore.

Within the forest garden, everything plays its part. Gorse helps fix nitrogen, bracken collects potash; birds cycle phosphates through the system. Ducks dine on slugs while other pests are dealt with by encouraging beneficial insects. What makes an acre of forest garden so productive is that unlike conventional land, food grows upwards, in vertical layers, not just horizontally.

Most of us would also like some dairy and meat in our diet; forest gardens can accommodate pens for farm animals; instead of grass, their main fodder would be willow, ash and lime tree leaves.

Clearly, permaculture is no magic replacement for a century of industrial farming, but with Ireland's low population density and dependence on imported fossil fuels, it offers one vision of a future where human ingenuity and adaptability allows us to survive, and indeed thrive, in the age after oil.

When leaving Cloughjordan, I bought an apple in a local shop. Its sticker read: Chile.