

CAN ARABLE BE PERMACULTURAL?

How can Permaculture be squared with traditional farming systems? FEDERICO FILIPPI is working on it.

Permaculture, in theory and practice, is widely considered the antithesis of tillage, cultivation and indeed arable farming in general. Permaculturalists tend to promote no-dig horticulture, forest gardening and other perennial based systems, especially arboreal, as the main food producing activities for mankind. Hemenway, for example, sees agriculture as intrinsically unsustainable, both before and after the industrial revolution and regularly promotes a paradigmatic shift from “agriculture to permaculture”¹. Even those more sympathetic to traditional or organic farming, like Whitefield, pay relatively little attention to the two mainstays of traditional farming, at least in Europe: pasture and arable farming. Bell (1992) has only nine pages on agriculture and, apart from condemning tillage and promoting the Fukuoka/Bonfils methods for small scale grain growing, offers no clear account of how a country like the UK could feed itself without arable farming.

Grass and grains, until the industrial era, have always been the intertwined and co-dependent foundations of agriculture. Indeed, agriculture, (Latin *ager*: “field”), refers to the management of fields, rather than gardens (*hortus*: “vegetable garden”) or forests. Much of the human diet is based on annual crops and livestock, both of which generally grow and live on fields. The goal of “arable permaculture”, by definition, must be “the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability and resilience of natural ecosystems”². Arable fields and grassland should both be managed in conjunction, as diverse ecosystems dominated by domesticated plants and animals. The behaviour of wild herbivores and grasslands should be taken as the basic model, a point made, without reference to arable fields, by Albert Howard³ and, more recently, by Joe Salatin and Allan Savory. Agriculture, when understood as a field activity, can be understood as the symbiotic, perennial alliance between humans and large herbivores. Both keep fields largely free of arboreal cover and both depend on each other for their wellbeing and survival. It is, by definition, a mixed farming system, in which

herbivores (horses and oxen in England) play the central role in the maintenance of both grass and arable fields.

It is worth noting that stockless arable or “vegan farming” is always and inevitably incomplete and generally does not fully meet the basic premise of permaculture: it is not a system entirely modelled on nature, where flora and fauna, apart from very few extreme environments, work and thrive in tandem. A stockless arable farm may of course rely on green manures, for example, and be full of wildlife, but it cannot and will not have the same level of integration, yield potential and level of biodiversity and complexity that a mixed farm can achieve.

On the four acre field that I manage at a mixed dairy farm in Hertfordshire, an example of “arable permaculture” is being tested. All field work and cultivations are carried out with our pastured oxen, with no other input other than the manure from our herd. The latter are not necessarily permaculture-specific practices, so what does this system look like and how does it differ from organic or pre-industrial forms of arable farming? Here are two examples:

Polyculture

Permaculture has to involve polyculture, which is the norm in any natural vegetative ecosystem. In the same way that perennial grassland and hay are bio-diverse polycultures, arable fields should also be bio-diverse polycultures of annual plants, both domesticated and wild. The tendency towards monoculture, especially of grains, pre-dates industrial agriculture and is the norm in organic farming. An example from our field is an adaptation of the “Three Sisters” method: rows of courgette, marrow and pumpkin seeds are sown direct in the ground with nasturtium, alternated by sweet corn and sunflower. The former crawl along the ground; the latter reach for the sky. We only use open pollinated seed varieties and, on four acres, grow at least 60 seed varieties and six varieties of potato. A small quasi-perennial patch of Jerusalem artichoke and chicory will be planted in the wettest, lowest corner of the field. This is an interesting example of applying permaculture

Permaculture responses continued

and trees whilst eating a diet almost totally made up of annuals. Also worrying is looking at the papers/research that are being used to ‘back up’ claims, only to find that the person quoting them has either not bothered to read it, and just passed it on, or hasn’t understood what was there.

Chris Evans: Regardless of untruths this has provoked reflection and self assessment which is good. However, [it] is potentially divisive and may provide a hiccup in the development of Permaculture in the UK which is actually vibrant and dynamic at present so if such idle (and untrue/undirected) banter loses us just one potential member then it [is] a disgraceful and shameful waste. And tut tut to *The Land* for not researching the true position, direction and capacity of PC in the UK. Column space given to anti-GMO/corporate/governance etc. articles would have been wiser rather than provoking sensationalist divide and rule within the ranks.

Two from Reclaim the Fields:

A. I’ve heard the word “permaculture” referenced as the supreme saviour, the way we will feed the world and return to a Garden of Eden, and I’ve heard it savagely dismissed as a course-fee-hungry machine maintaining the status quo by rewarding those who can buy land with funding and labour from eager “wannabe” peasants ... For me, the realisation is how little revolution has been generated by it. It’s in more hearts and minds than any other land-based movement, and still its converts are mostly passive consumers and armchair activists. PC isn’t creating a revolution, but I hope it is paving the way.

B. Only through developing a culture of rigorous experiment can we prevent ‘cult permaculture’ from gaining the ascendancy. As a fellow Reclaimer said: “Although its methods appear to promote diversity, the permaculture pedagogy seems to churn out a carbon copy mind set, and people who are not particularly effective at getting things done. The movement needs to stop being a middle-class cult of consumerism and be a force to make a difference to ordinary people’s lives.”

principles: planting perennial plants that thrive in wet soil, in an observably wet part of the field, allowing better drainage and the utilization of the plants' natural propensities to achieve goals other than yields.

In terms of its outputs and productivity, the country-wide adoption of an arable polyculture system would, I believe, yield less grains and oilseeds but far more of all other crops. In the UK, potatoes, squash, root crops and brassicas would be staple human and animal foods. Livestock, including pigs, would primarily be fed on grass/hay, fresh mixed forage and waste, with a little grain used for poultry. Agriculture would of course be connected and engaged with other primary activities: horticulture, forestry, foraging, hunting and fishing.

Weed Management

Weeding should be seen as a laborious management challenge, but never as a problem. The conditions for domesticated plants to thrive are fundamentally those required by wild plants. So these are the ways in which we manage weeds:

- 1) *Weeds as forage*: during our weekly forage harvests, weeds are regularly cut and added to the forage mix. All but two weeds are very palatable to cattle and available all year round.
- 2) *Weeds as food*: wild amaranth and fat hen grow wild on our fields. Both are harvested young and tender and sold in bunches to the Indian community.
- 3) *Selective cultivation*: before sowing small seeds, especially slow growing crops like beetroot, carrots and spinach, I have found that cultivation before sowing is necessary. This is conventional weed management in organic farming. Potatoes, which grow fast and can largely look after themselves, require no ploughing at all: plenty of manure can be spread in early March, the field harrowed, straight furrows made with the potato ridger and potatoes planted. No further ridging/cultivations are required.
- 4) *Mulching*: during the growing season, it is important to control some of the weeds, especially when crops are still in the early stages of their growth. A technique which I have been using with success is to cut down, rather than uproot, weeds growing close to crops. On the potato patch, the weeds growing between the rows are cut back with sickles and left to rot, a method that has many advantages: it controls weed growth, protects and builds soil, and provides food for insects.

Federico Filippi is a PhD student at the Royal Agricultural University, Gloucestershire, researching permaculture and sustainable traditional farming systems from around the world. He manages an urban gardening project in Putney, and farms with oxen at New Gokul, Hertfordshire every Sunday.

REFERENCES

1. Is Sustainable Agriculture an Oxymoron? *Permaculture Activist* #60, May, 2006) www.patternliteracy.com/203-is-sustainable-agriculture-an-oxymoron
2. Mollison, B. (1979) *Permaculture: A Designer's Manual*, p. ix.
3. Howard's *Agricultural Testament* (1943: page 5). Agriculture must consider "the methods of Nature – the supreme farmer – as seen in the primeval forest, in the prairie, and in the ocean".
4. Mollison, B. (1979) *Permaculture Two: Design for Town and Country in Permanent Agriculture*, p.1

5) *Weeds as a "ley"/green manure*: following an early harvest, there is always the option to leave the field fallow without cultivation. In a short time, the field will be covered in dense, lush weeds. This summer, the top half of the field, having been covered in weeds for a few weeks, was ploughed and prepared for an early August sowing of winter crops. No manure whatsoever was added to the field. The winter crops, mostly turnips and rape, have been very high yielding and are still producing approximately one tonne per week. It is clear that weeds can build up organic matter and nutrients and can be ploughed in just like a green manure.

The Plough

I never plough or cultivate a field with the oxen unless it serves a clear purpose, namely preparing a field for sowing, and try to ensure that any given section of the field is not cultivated too often. The measure of sustainability is determined via observation: if the field functions as a healthy, rich ecosystem, then the right measure has been found. The traditional yearly ploughing cycles are not followed. For example, at the end of the summer harvest, I never cultivate a field unless I am sowing a winter crop that needs a seedbed (e.g. potatoes followed by turnips or rye). Otherwise, the summer crop residues should always be left in situ, to rot over winter. The traditional practice of ploughing the field in autumn, even when left fallow, is simply detrimental and serves no purpose: it leads to soil erosion, loss of fertility and increases vulnerability to flooding.

Permanent Agriculture

Permaculture needs to be far more focussed on bringing its principles to the field, rather than on a wholesale conversion to systems based on perennial plants, which is neither desirable nor necessary. Whilst permaculture should definitely involve the intensive planting of edible hedges, orchards and woodlots, as well as various forms of silvopasture and agroforestry, it needs to, first and foremost, offer a critique of arable farming, both pre-industrial and modern, without promoting its abandonment. In fact, if we understand permaculture to be a contraction of the words "permanent" and "agriculture"⁴, then its main role should be to define some form or other of inherently sustainable agriculture, understood primarily as a field based activity.



When cultivation involved livestock, pasture and arable were two sides of a unified agricultural system. In many places, they still are.