

From great soil comes great food – a farmers' story

Andy Cato is a farmer who combines modern animal traction, beef cattle and crops on his farm in the Southwest of France. He shared the story of his experiments to improve his soil and his farm's productivity, finding ways to limit tillage in the context of organic agroforestry production with zero herbicide use.

"It was whilst making a living as touring musician that I came across an article about the implications of our current industrialised agriculture on topsoil. Topsoil is the basis of all life on Earth, took millions of years to develop and in 150 years we have already lost half of it through our farming practices. I became convinced that our most serious problems – climate change, public health, flooding – are all down to the mistreatment of the soil and can be remedied by farming differently."



Words became action in 2012 when he sold the rights to the songs he had written to buy 100 hectares of land in South West France, with an initial plan to farm cereals organically with standard soil cultivation practices.

The soil was unpromising, heavy clay with very little visible topsoil remaining and a pH of around 8. Analyses showed that organic matter was down to around 0.6% which is about average for a region where maize fields have been ploughed and sprayed for 50 years.

After two years of standard organic practices – shallow cultivation, inter row hoeing, tine weeding, winter/spring rotations, etc. – it became clear that the soil was severely depleted and that it wasn't getting better.

Transforming topsoil

Based on observations of the abundant fertility in the unfarmed land and forests around the farm, Cato felt he urgently needed to do things differently, namely:

- 1) Follow nature's lead in restoring the mix of animals and plants by bringing animals, trees and hedgerows back to the farm;
- 2) Find ways of growing which didn't involve the compaction and cultivation of the soil;
- 3) Return to heritage crops varieties;
- 4) Introduce the widest possible diversity of plants.

Encouraging diversity and nutrient recycling

"Forest ecosystems, with their unsurpassed productivity inspired me to rethink the design of my farm, to re-establish a basic framework of diversity and nutrient recycling. I began working with the association [Arbre et Paysage 32](#). Thanks to this collaboration, each year we now plant around 3km of hedgerows and have launched an ambitious agroforestry programme."

Animals & Mob Grazing

"Our herd of beef cattle is essential to the equilibrium of the farm. We have put in place a system which combines the current mob grazing ideas popularised by Joel Salatin and others, with the pasture mixes pioneered by revolutionary 1950s farmer [Newman Turner](#).

Mob grazing seeks to re-establish the relationship between cattle and grass as it existed in the wild. The herds are always moving from one field to the next, grazing in tight groups. This has important consequences. The animals always leave their dung behind them, thus avoiding disease. The grass recovers much more quickly, the soil remains protected, and fertility steadily increases. It avoids the steady degradation of pastures that occurs when extensive grazing allows the animals to come back to the most succulent plants time and again whilst leaving 'weeds' to proliferate."

Cow corridors

"Throughout 2015 we were confronted with the problems of shade and water. To restore fertility, the cattle need to graze all of the farm fields – there is no division between cropland and pasture. But almost all of the trees were removed from the farm in the 1960s, meaning that until the new hedges and trees planted have developed, there is barely any shade. Hauling water daily was also very time-consuming. We began experimenting with 'cow corridors' – i.e. every field can be accessed from a network of corridors that lead back to the barn where there is shade and water. The corridor wire is simply propped up at the entry point to that day's pasture. Unsurprisingly for animals that navigated huge plains for the millions of years that preceded their domestication, the herd has no problem finding its way back from the furthest corners of the farm.

These cow corridors have had a huge impact. It is now so easy to send the herd to any part of the farm, that all grazing opportunities – undersown clovers, cover crops, weedy stubble, etc. – can be quickly seized upon. It also means that longer term pastures can always be grazed to the correct height, leaving plenty of residues for rapid regrowth. We have seen a rapid increase in drought resistance and the amount of growth produced per year. The diversity of aromatic herbs, grasses and legumes in the Neuman-Turner inspired pastures has led to a complete absence of disease. This confirms the work not only of Newman Turner but also [Albert Howard](#) and [André Voisin](#)."

Planting trees

"The next step in the development of grazing equilibrium is a project to plant thousands of trees that will provide grazing foliage in times of drought, harvestable nuts and fruits, shade, timber, while also restoring habitat and diversity and the related benefits to the crops."

Growing crops without compacting the soil

"The big question was how to grow nutritious and abundant crops without disturbing and damaging the soil. These experiments were originally inspired by research from the Rodale Institute. The basic idea is very simple - the creation of weed suppressing mulch on a field scale and the planting of cash crops through this mulch. After some experimentation, the yields of maize and soya successfully grown this way far surpassed those of the crops sown into cultivated soil. The number of passages in the field went

from 12 to 2 (sowing and harvest) and the soil remained covered at all times (for a complete version of these experiments see here <http://therealfoodfight.uk/farm-experiments/>)

“Even with such reduced tractor use, the problem of compaction remained. If I didn’t want to cultivate the soil, I had to stop compacting it. Thus began the research into modern horse power. The Amish of Pennsylvania farm hundreds of thousands of hectares with horses for religious reasons. They have a network of factories producing light weight, efficient tools for horse drawn farming. After spending some time with them to adapt their equipment to our no till methods, we are now doing everything with horses. And it is not horse farming as it appears in the museum – it involves GPS, hydraulics, and precision equipment. Nevertheless, farming large areas with horses requires a constant search for economies of power, and therefore methods that are ever more gentle on the soil.”

For an example of this, see on the above mentioned link the sections on buckwheat sown into vetch, or the use of allelopathic effects for weed control in barley.

“For a farm like ours of around 100ha with a diversified crop rotation, horse-drawn farming has large economic benefits over the tractor equivalent, even before we begin to talk about the environmental and agronomic benefits. What needs to change is the inclusion of horse power in the European list of renewable energy so that those that follow us can get the financial help we are currently denied.”

Local food and heritage varieties

“Until a couple of generations ago, we had a hugely diverse selection of seeds that had been selected by countless generations of farmers for their taste, hardiness and nutrition. The replacement of this genetic inheritance by fertiliser- and pesticide-dependant hybrid mono-cultures has had hugely negative impacts on the nutritional value of food and thus on public health.

The centralisation of our food production systems has led to a system totally dependent on fossil fuels, one which lacks traceability, and the loss of the fundamental link between society and its food supply.

Our goal at the farm is to return to locally-adapted crops growing in fertile soil, and to go from field to plate via their on-farm transformation into flour and bread. The response to this has already been inspiring. A return to local, sustainable agriculture based on a restoration of our soils not only has the capacity to tackle public health and climate change issues at source, but also to recreate the links at the heart of society that hold us together. After very few years, i’ve seen first-hand that by restoring species diversity, soil life, trees, hedges – in a word, equilibrium – nature’s powers of recovery are boundless.”

More information

www.therealfoodfight.uk



Broadcast sowing of buckwheat into a flowering vetch cover crop



Barley directly sown into buckwheat residue





www.naroques.com

The Arbre et Paysage 32 website: <http://www.ap32.fr/>

Download their inspiring booklet on the keyrole of agroforestry to ensure quality food production (in French) "[Des arbres dans nos assiettes](#)"

[EIP-AGRI Focus Group on Agroforestry](#)

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