

'Whole farm' approach to sustainability and resilience



Paul Sousek farms 65 acres at Jacobstow in Cornwall with a 'whole farm' approach to sustainability and energy resilience.

Since buying the farm in 2005 (without any prior farming experience), he and his wife have established a herd of Red Ruby cattle, native Wiltshire Horn sheep, geese, chickens, a vegetable plot and an orchard, completing organic conversion of the farm in July 2009. The whole farm has also been converted to run on renewable energy.



His whole approach to the farm has been born out of wanting to escape from reliance on fossil fuels and its effects. *"Having read about Peak Oil we decided to do something about it and create a lifeboat for ourselves... We wanted to be self-sufficient, resilient and sustainable and produce food while sequestering carbon; given that for each calorie of food you need 9 calories of oil to produce it. Fossil fuels are getting scarce and expensive so we need to get to food production which does not rely on fossil fuel whilst we still can."*

He describes the way in which he manages different aspects of the farm and farmhouse, all underpinned by a need to reduce, eliminate or compensate for the use of carbon emissions. Looking at his trees as a resource is one way he is doing this.

"We wanted a 'neglected' farm where trees were allowed to mature in hedges and islands and this farm had many of these plus 2 acres of woodland as well. We need about 8m³ of wood for heating in the winter so we need to cut down about 6 of our estimated 250 mature trees each winter."

They have to date planted over 100 trees to supplement the wood supplies on the farm.



He aims to be self-sufficient in energy suggesting that *"Farming is also about energy and the next generations, it's not just about food."* He uses renewable energy for water and space heating, electricity and transport fuel, and began the journey of reducing consumption with installing insulation, draft-proofing, switching to LED lighting and other measures, managing to save 25% in energy bills in the house alone.

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Electricity is provided by a small wind turbine and photovoltaic panels (see above and below) which are connected to on-grid inverters.



We use renewable energy for heating both space and water. We have installed a heat store - a kind of battery for heat. It is powered

by 40 water heating solar thermal tubes - basically glass thermos flasks - and a wood burner with a large internal boiler and an electric immersion heater running on surplus home-grown electricity. We have no bills for heating."

He also installed a largely "carbon-neutral resilient" water supply. Water for the farm and house comes from a borehole, although they are still connected to mains water (in case of emergencies). He uses reverse osmosis filters which self-clean and help to save on energy and reduce water bills.

"They complement each other very well in providing energy every single day. Either the turbine or the PV panels generate the energy we need and when they are combined they produce a lot more than we need. Overall, we generate 20% more than we use, cutting down our electricity bill from £1800 a year to £300, not counting the FiT payments. So overall we generate income rather than spend money on electricity."



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He goes on to explain *"Because of the cows we tend to use quite a lot of water - so we switched from mains to a borehole. It is 30m deep with a 200m run to a storage tank (see above) and has 3 filters. The storage tank (1.5m³) is at the highest point on the farm so if we get a power cut we still have some water flowing by gravity from the tank. Our bill for water has been reduced from £1500 to £100 a year."*

All equipment used on the farm is second-hand to ensure embedded carbon from the product is used for as long as possible, and the cattle, which are brought in over winter, are managed in a way that will have minimal impact on carbon stores.



They are reared on grass with minimal used of fodder *"We have a strip grazing system for cattle; we let them have a few yards at a time, and they are so keen that they eat up everything in sight and trample any unpalatable weeds."*

He aims to sequester as much carbon as possible in to the soil *"I use traditional deep rooted pasture plants. Most pastures consist*

mainly of rye grass which isn't any good without copious amounts of fertiliser, as it has short roots and minimal access to minerals."

He has over sown the whole farm with old varieties of early and late season grasses, all deep rooted, perennial and nutritious. *"Deep roots improve the soil structure and sequester carbon. It will be very good for drought conditions and also for removing water - increasing drainage, as well as for access to minerals."*

Paul has grown a mixture of species originally recommended by a long-term Cornish farmer in his book 'Profitable Ley Farming' published back in 1947. Each species has its own attributes; foinet (early growing with a high feeding value), cocksfoot (with a mass of deep roots and great yield), meadow fescue (high yielding and late growing), tall fescue (very late growing) and switchgrass (which can be used for fodder or bedding, and has extensive roots).

Paul has integrated in to this mixture: Cornish marl clover (red, perennial), Lucerne (lime-loving), chicory (long tap root, loved by stock), yarrow (spreading, nutritious), and white clover, with an aim of being able to ensure 100% grass feeding by extending the season and providing highly nutritious silage.

He suggests that it should *"all result in a nutritious drought resistant pasture that will produce more fodder than conventionally fertilised leys and provide bedding as well. I am hoping that eventually there will be no need for any additional fodder (i.e. pellets)."*

In his quest to *"create a resilient food supply for the community,"* a similar philosophy is

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applied to the farm business in which he has established an organic fresh meat box scheme and delivers lamb and beef on a monthly basis. He claims that local deliveries are carbon neutral as they use biofuel (which they make from waste vegetable oil), for tractor work, transportation and produce deliveries.



Waste vegetable oil is collected from fish and chip shops and wholesalers and used to make the bio-diesel in a small purpose-built reactor (see below).

Meat boxes to London customers are delivered using the on-farm biodiesel with the aim of being carbon neutral.

"We don't charge an organic premium. Having cut out all the intermediaries by selling only directly to end customers, we are able to retain the whole of the margin, most of which would otherwise be absorbed by middle men. It also helps that we have minimal energy, water and fodder bills, zero fertiliser and chemical bills and very low vet bills."

He points out that it all leads to a lower or negative carbon footprint.

If you would like to know more about Cottage Farm or attend one of their open days please click [here](#).

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