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AGROECOLOGY IN ACTION

WHAT IS AGROECOLOGY?

The UN Food and Agriculture Organisation (FAO) describes agroecology as “the basis for evolving food systems that are equally strong in environmental, economic, social and agronomic dimensions... Agroecology is based on applying ecological concepts and principles to optimize interactions between plants, animals, humans and the environment while taking into consideration the social aspects that need to be addressed for a sustainable and fair food system. By building synergies, agroecology can support food production and food security and nutrition while restoring the ecosystem services and biodiversity that are essential for sustainable agriculture.” © FAO 2019

Social benefits are a part of the farm system. Farms help to provide public access to nature and wildlife, public access to fresh nutritious food at an affordable price, and public understanding about where their food comes from, including how to cook it, which can improve public health.

Land is managed in a way that delivers environmental benefits as an inherent part of the whole farm system. Public goods, such as soil health, clean water, fresh air, and a biodiverse ecosystem, will be default outputs of diverse farms.

Agroecological farms contribute to a vibrant and resilient economy in both rural and urban areas, through creating local food systems which employ more people in higher-quality jobs, and return a higher proportion of income to the local economy.



Agroecology is farming that works with nature and creates a fair food system. It describes any farming system which:

- uses no agro-toxins, instead working with natural processes to produce abundant amounts of nutritious food which is distributed fairly to create a food and farming system that is equitable, sustainable, nourishing and humane;
- multiplies biodiversity in agriculture (our rich heritage of seeds, plants, trees, and livestock breeds), which builds resilience;
- provides decent work and respectable livelihoods on the land, maintaining the rich fabric of our communities and local businesses;
- ensures that everyone, including the most disadvantaged in society, can access nutritious food that enhances rather than undermines their health;
- fights climate change by phasing out synthetic fertilizers and maintaining extensive grasslands and trees that sequester carbon;
- regenerates the land, restoring biodiversity by creating habitats, hedgerows and wildflower meadows;
- provides a sustainable home-grown food supply for the UK by protecting soils and natural resources.

As the multiple food poverty and ecological crises became ever more pressing, world governments are increasingly acknowledging that agroecology needs scaled out to become the dominant model of food production globally. These key reports have indicated to the world that it is time to change:

- The International Panel on Climate Change (IPCC) report released in October 2018 advises that the food system as a whole makes a 25% - 30% contribution to GHG emissions and warns that we have just 12 years to limit global warming to 1.5°C by reducing those emission to net zero.¹
- The most recent Global Assessment Report on Biodiversity and Ecosystem Services published in May 2019 has revealed that nearly a million species are on the verge of disappearance at an unprecedented rate of extinction.² Some reports show a loss of up to 75% of our insect population.³
- The State of Food Security and Nutrition in the World 2018, indicated that hunger continued to rise for the third consecutive year, reaching 821 million in 2017, returning to levels of a decade ago.⁴

The many advantages of agroecological approaches in reversing these trends were conclusively demonstrated in the International Assessment of Agricultural Knowledge, Science and Technology for Development report, a multi-year study involving hundreds of experts and the United Nations (UN).⁵

These findings were re-substantiated by the UN Special Rapporteur on the right to food in a 2010 report to the UN Human Rights Council, which showed the additional value of agroecology as a way to reduce food poverty and distribute economic development fairly in society. The report states "This will not happen by chance. It can only happen by design, through strategies and programmes backed by strong political will and informed by a right-to-food approach."⁶

So, don't lose hope! The 'Ten Years for Agroecology in Europe' report from the thinktank IDDRI, models a wholesale transition to agroecology in Europe, showing that a transition, based on phasing out pesticides, imported feed and synthetic fertilisers while redeploing extensive grasslands and tree on farms could feed 530 million Europeans healthily whilst reducing Europe's global food footprint, reducing agricultural GHG emissions by 40%, restoring biodiversity and protecting natural resources.⁷

"Agroecology in Action" highlights what pioneers of agroecology right here in the UK are doing to create a productive and sustainable agriculture. The case studies are organised to illustrate the "public goods" agroecological farms deliver to our society, and the practices we can encourage through an enlightened agricultural policy. These farmers plant the seeds of hope.

If we have the courage and imagination to create a bold agroecology programme, we can scale these models out to create a food system to feed everyone in current and future generations without destroying the intricate web of life on which we all depend.

1 The International Panel on Climate Change (IPCC) Special Report 'Global Warming of 1.5 °C' released in October 2018.

2 Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services: Global Assessment Report 2019.

3 Hallmann CA, Sorg M, Jongejans E, Siepel H, Hofland N, Schwan H, et al. (2017) More than 75 percent decline over 27 years in total flying insect biomass in protected areas. PLoS ONE 12(10)

4 FAO, IFAD, UNICEF, WFP and WHO. 2019. The State of Food Security and Nutrition in the World 2019. Safeguarding against economic slowdowns and downturns. Rome, FAO.

5 (IAASTD) a synthesis of the global and sub-global IAASTD reports / edited by Beverly D. McIntyre . . . [et al.].

6 Report submitted by the Special Rapporteur on the right to food, Olivier De Schutter 2010 UNHRC

7 Poux, X., Aubert, P.-M. (2018). An agroecological Europe in 2050: multifunctional agriculture for healthy eating. Findings from the Ten Years For Agroecology (TYFA) modelling exercise, Iddri-AScA,

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ENCOURAGING BIODIVERSITY



Diversifying production systems by adopting mixed cropping systems, such as rotations or intercropping.

Incorporating wildlife margins and set-aside zones, bird feed crop rotations, beetle banks and hedgerows into farm design.

Planting and breeding resistant seed and livestock varieties, and recovery of traditional varieties of crops and animals.



TAMARISK FARM

Tamarisk Farm is a family-run farm combining food production for the local community with conservation and public engagement.

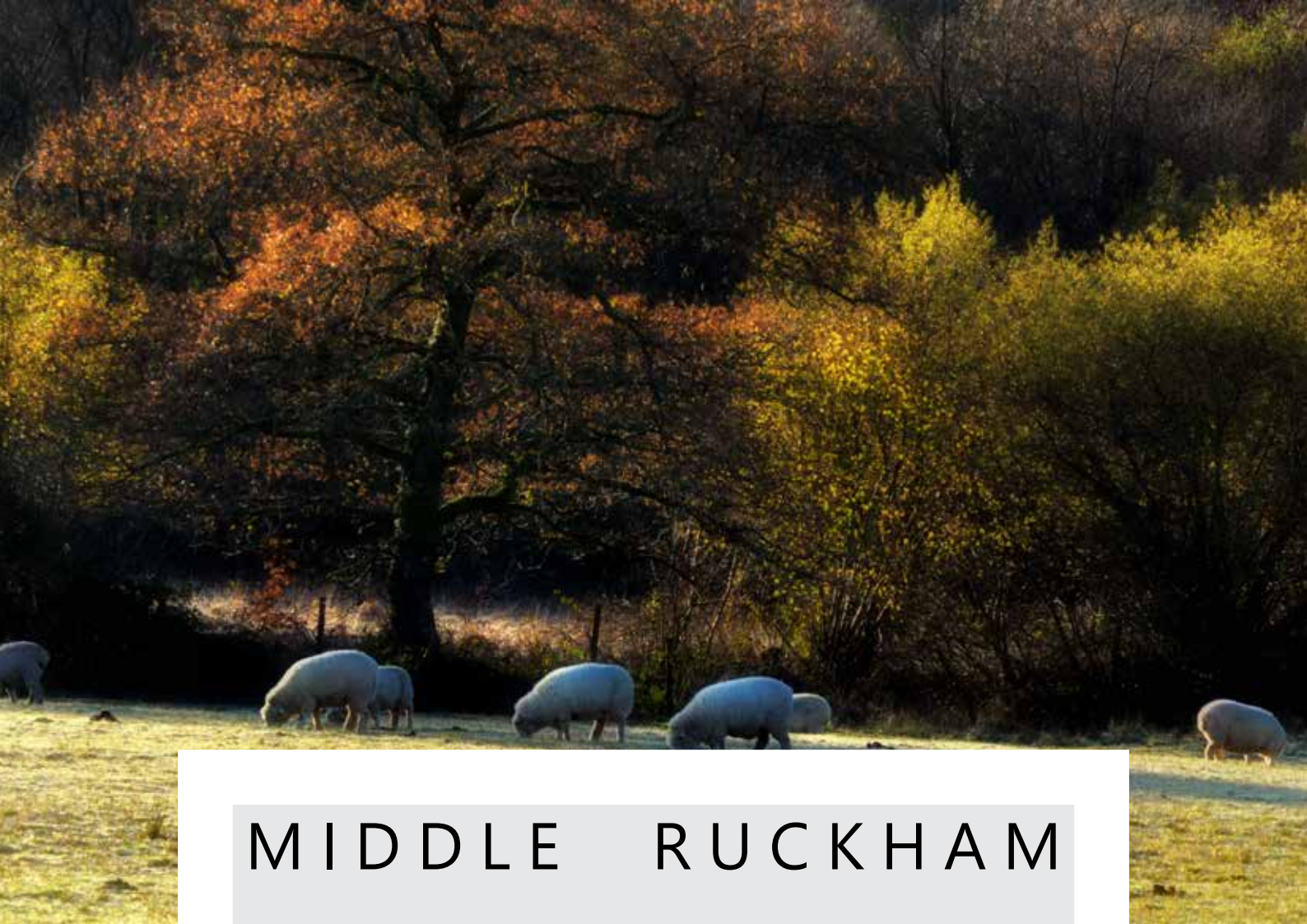
Tamarisk Farm is an organic mixed family farm operating on 180 acres, plus a further 400 acres rented from the National Trust. The main enterprises are a 25-cow beef suckler herd of Red Devon cattle and 180 ewes, mainly Dorset Down, Shetland and Jacob, and 90 acres in arable rotation, growing wheat, rye, barley, oats and drying peas.

The land is poor quality, but this results in a diverse range of wildlife habitats. By running cattle and sheep extensively over Tamarisk's pastures the blackthorn scrub is kept at bay and a wide range of wildflowers, insects, birds and reptiles are able to live alongside the livestock. Unusual plants such as 9 species of orchid, grass vetchling and dyers greenweed, resident and migratory birds including kestrels, barn owls, hobby, marlin and corn bunting, as well as dormice and great crested newts are all found on the farm. The livestock breeds have been chosen for their ability to thrive on poor quality grazing, and are fed exclusively on fresh grass, hay and a very small bit of home-grown grain for the ewes prior to lambing. The farm is currently supported by the Higher Level Stewardship Scheme.

To remain viable, the farm has developed a range of income streams, centred around producing high quality organic meat, cereals and wool for local markets. A small farm shop sells meat, home-milled stone ground wheat and rye flour, peas, free range eggs from hens fed on home-grown cereal, and a wide range of naturally coloured wools. Other produce is sold into local supply chains, such as cleaned grains to local water mills or meat to local butchers' shops, restaurants and abattoirs. Many of the cattle are sold as store cattle at one year old to the Organic Livestock Marketing Company.

Tamarisk Farm sees public engagement as an important part of its role. Despite no longer receiving support for visits other than for school age children, educational farm events are offered to people of all ages. Alongside the farm's annual open day, a series of visits focused on aspects such as lambing, the arable and milling enterprises, wildflower identification and ways wool can be used, give visitors an opportunity to learn about how food production and nature conservation can occur simultaneously on the same piece of land.





MIDDLE RUCKHAM

Mixed farming and forestry with livestock and a working horse

Middle Ruckham Farm and Forest is a mixed farming and forestry enterprise comprising 10 hectare ex-Forestry Commission PAWS, 5ha broadleaved woodland and hazel coppice, 1ha orchards, vegetable beds and polytunnels, and 14ha wildflower meadows. The plantation is in continuous cover management and we are members of a workers' cooperative owning a mobile sawmill, which we use to turn our timber into compost toilets, our main source of income. The orchard and meadows are in mid-tier Countryside Stewardship and support hundreds of species; the farm is a County Wildlife site and is registered organic. There is a mix of cattle, ponies, a working horse and a flock of Devon Closewools which are grass fed and live out all year. We also keep chickens and bees, milk one of the cows and make our own herbal medicines. We use the sheeps' wool for insulation and plan to develop our own yarn. Most of our produce is for ourselves but we provide mixed salad leaves to a local restaurant and sell surplus eggs, honey, beef and milk to visitors. Traditional management of hedgerows provides a surplus of fuel wood and we host volunteers through WWOOF who come here for an educational experience.



REPLACING AGROCHEMICALS



Reductions in use of nitrate fertilisers, replaced with use of organic fertilizers produced from livestock, compost, or green manure on site.

Reductions in use of pesticides, replaced with use of integrated pest management schemes, such as encouragement of biological pest control.

Reductions in use of herbicides, replaced by alternative weed controls such as cover cropping and manual weeding.

F O X W O O D

Small-scale traditional farming in the south of England

Foxwood is a 2.7 ha (7 acre) family smallholding in the Weald of East Sussex. Prior to our family moving here in September 2002 the land was part of a neighbouring farm and for some years had been rented out, growing mainly arable crops and maize silage under a chemical regime.

Since we took on the property we have been trying to improve soil fertility and maximise food production while following the area's traditional farming system. This involves a mixture of livestock and arable production and is largely self-sustaining. We believe that this ancient system is the most sustainable and healthy way to farm and is also the most beneficial to wildlife.

Animal feed and manure is home-produced as much as possible. Chemical fertilisers, herbicides, crop pesticides and growth hormones are not used but other modern technology and medicine is used where appropriate. Produce is sold or valued as organic. Human labour using hand tools forms a major part of the work supplemented by small-scale mechanisation. Most of the labour is our own but family and friends help out at busy times. Very occasionally we hire contractors with machinery.

The farm has developed gradually as the farm work is done on a part-time basis due to us having other employment and the farm is not our main source of income. Our first livestock (cattle) arrived in the summer of 2006 and pigs and sheep followed in 2009 and 2010 respectively. We currently have the following stock and land in production over the course of a normal year:

- 8 Lleyn ewes and followers
- 2 summer-fattened weaner pigs
- 3 hens, 1 cockerel
- 0.15 hectares arable land
- 10 x 10m vegetable plot with 5m polytunnel
- 0.09 hectares ancient semi-natural woodland
- 2.34 hectares permanent pasture (including hayfield)





TOLHURST ORGANIC PARTNERSHIP C.I.C.

Farming food, resilience and biodiversity for people and planet.

Tolhurst Organic Farm is situated in South Oxfordshire and has held the Soil Association symbol for over 40 years. The land, which includes a two-acre walled garden with 1,600 metres of polytunnels, is rented on a Farm Business Tenancy from Hardwick Estate. It is a pioneering example of fruit and vegetable production on what would normally be termed as land that is 'unsuitable for vegetables'. The thin, calcareous soil is a sandy clay loam with an extremely high stone content. Despite the obvious drawback, the farm produces excellent quality produce and yields on the 18-acre site and has been demonstrating a near-closed system for many decades, operating a 'stockfree organic' system that has excluded all livestock inputs. Brought-in fertility from ghost acres has been replaced by extensive rotations utilising innovative green manure technologies with support from woodchip compost and ramial chipped wood. Much of the latter is now grown on the farm as part of the vegetable production integrated into an agroforestry alley cropping system.

More than 100 different vegetable types are grown as well as top fruits (part of the agroforestry includes apples) and production is all year around with more than 140 tonnes of produce grown annually. Strawberries help to fill the 'hungry gap' in April and May. More than 80% of the production is sold within eight miles of the farm through its box scheme network and the farm shop, open 24/7.

The farm is accredited by FACE and has regular visits from school children. Many public events take place on the farm; two major festivals are the Strawberry Fayre and Squash and Pumpkin Festival, which attract several thousand people. The farm is a very popular venue for farmers, academics and students from all over the world who wish to explore the way this farm is able to operate on very low inputs with such strong environmental benefits. Farm tours are a weekly event for much of the year. Training seminars are also held on the farm covering a range of technical subjects related to the farm's production. A 12-week on-farm training programme is in place to enable young people to gain more knowledge of stockfree organic systems. The farm is run by the Tolhurst family. Iain Tolhurst set up the original business in 1976 still works full time on the farm, which is now set up as a Community Interest Company with four full-time staff as well as some part-time help in the growing season.

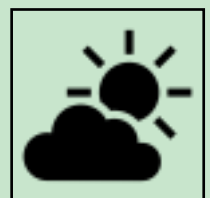
The farm has been conducting a range of trials and experiments for many decades and has a close relationship with the Organic Research Centre, which is based in Berkshire. Much useful and interesting data have been collected over the decades and long-term soil studies have shown huge improvements in soil quality. Three separate trials are in place this year looking at the use of ramial chipped wood and woodchip compost. The farm has pioneered the use of woodchip in horticulture. Many flora and fauna studies have been carried out demonstrating the extremely high biodiversity of the site. Over many years the farm has been building resilience to climate change and changing markets through low-tech solutions working with natural systems.







ADAPTING TO AND MITIGATING CLIMATE CHANGE



Reduction in use of imported animal feeds, especially soya. Use of alternative domestic feed for animals, such as pasture, forage, and UK based grains.

Reducing fossil fuel dependency through system design and appropriate equipment.

Increasing the carbon sequestration capacity of land through installation of permanent pasture, orchards, and woodlands; and growth of perennial crops.

WOODLAND VALLEY FARM

A Cornish farm with an entirely pasture-fed dairy herd



We have a 170 acres organic grassland farm in mid Cornwall on grade 3 land with medium silty clay loam soils in the most part. We are certified by the Soil Association.



We run a 100% pasture fed dairy herd of about 80 cows on a mixture of perennial grasses with some forage crops (this year forage rye and forage rape) which we extend using min till methods over several seasons. As part of our adaptation to climate change we have planted a trial wood pasture of 15 acres. If this can be established successfully we would seek to spread this throughout the grazing block. During last year's drought in particular we noticed that cows were suffering from heat stress and milk output was reduced. The trees will also give shelter as they grow, provide some browse for the cattle, and create a lot of edge effect where productivity is maximised. There will also be potential for harvesting of woodchip for bedding in the medium term future.

We have focussed on soils and their ability to sequester carbon, with steady increases since 2009. The current level of 9.5% soil organic matter is a doubling of the levels we started with. Anecdotally soil volumes have increased, as has the overall health of our livestock.



HOME FARM

Permaculture in practice: Earth
Care, People Care, Fair Share

Home Farm is 450 acres of mixed arable and livestock farming, located near the village of Screveton, in south-east Nottinghamshire. The ethos of Home Farm helps reconnect people to land, food and farming while producing delicious, nutritious food grown in harmony with the earth. The farm is transitioning to a holistic, regenerative system. We're concerned with creating wildlife habitat, reducing the use of agrochemicals, reforesting the land and reducing our carbon footprint.

The farm has been run by David Rose's family since 1933. The current team is small: David manages the farm in a joint venture with two farmers from a neighbouring farm who handle the arable work. Part of the farm is managed by Farmeco Community Care, a project run by one paid staff member and a few volunteers, and which aims to help the whole community (but vulnerable young people and marginalised groups in particular) to gain confidence, attain new landwork skills, make friends and realise their full potential. The group maintains the 16-acre 'edible woodland' and holds many workshops and events for the local community. The community farm wouldn't exist without the work of volunteers and visitors, which highlights the essential nature of having an interconnected, engaged community within the agroecological system. The farm has linked with several other enterprises including: a community cider club; a cyclist's cafe; the Men in Sheds project; a forest school programme; and twin projects Plant Magic and Animal Magic which invite children and adults to learn how to garden and care for animals.



We are a Woodland Trust demonstration unit. David is an ambassador for the Woodland Trust and has overseen the planting of 11,000 trees since 2012, all supplied by the trust. Considerable sections of the farm have been planted up with a range of native trees and shrubs including hazel, willow and rowan. We have planted more than 400 apple trees of traditional varieties suitable for eating, cooking and cider making; as well as a further 125 elder, walnut and sweet chestnut. The fruit is sold wholesale to local shops, and through the cafe. Trees have been planted in rows, with crops intersown in the intervening alleys. This year we have sown wheat (for bread flour). Other crops on the farm include oilseed rape and barley (for beer). Along the lines of trees, wildflower seed mixes have been sown in a 3m wide band to encourage pollinators. The vegetation provides habitat for myriad insect, bird and animal species, including beneficial insect species such as hoverflies, which predate pests that would otherwise damage the crops.

The trees are under-sown with grasses and legumes such as clovers, to allow grazing by sheep. The orchard also offers a space for local people to enjoy being in nature and receive training in agroforestry management techniques such as tree planting, pruning, and harvesting. The farm has a small sheep enterprise, as well as 20 nanny goats. We have 160 ewes and 280 lambs this year, reared for their meat which is sold locally and at the monthly on-site farmer's market. The sheep roam among the trees, feeding on the grassland and leaves from the lower branches. The manure produced by the sheep supplies organic matter which feeds and enriches the soil and soil organisms.

The farm's wild flower meadow lies on the farm's 3 mile nature trail and is part of our high level environmental stewardship. The hay in the meadow will be cut only after all birds have hatched. It offers fantastic shelter and habitat not only for wild animals, but also game birds. Guns and beaters from the local shoot get involved with the environmental and woodland management.

There are several honeybee hives on the farm. The bees play a key role in pollinating fruit trees and producing honey. Many other bee species are attracted too, as are various butterfly, fly and moth species such as the common blue butterfly. Returning to a mixed farming system is creating a diverse base for wildlife and the RSPB and Wildlife Trust have monitored increased numbers of birds and animals. The farm is home to many other creatures including frogs, great crested newts, water voles, and the shy kingfisher. This farm also offers good hunting for predatory animals such as foxes, barn owls, little owls, sparrow hawks and kestrels. Hares, harvest mice, bats and badgers can also be found, as well as the elusive green woodpecker.

Future developments for the farm include construction of a large wildlife pond, a low impact campsite and new green build. These projects will generate much of their own energy, either by solar or wind power, and will aim to recycle all waste, for example turning waste from compost toilets into rich 'humanure'. The farm's original energy efficient, straw bale-walled and green-roofed Eco-Centre was a huge success, relying on a combination of passive heating design, and a wood chip boiler to supply hot water and underfloor heating.

The new structure will act as an event space and training centre through which to further our goals in nurturing people and planet.



H U X H A M ' S C R O S S

From a barefield site to a thriving community farm that also provides a mental health service for young people

In 2015, the Biodynamic Land Trust bought Huxhams Cross Farm from Dartington Hall Trust with the aim to keep it in sustainable food production in perpetuity. It was a bare field site that had been farmed conventionally growing barley and had been left to set aside. The site's six fields were in poor repair and had poor soil and there were no gates.

The Apricot Centre Community Interest Company (CIC) took on the first tenancy with a very secure Farm Business Tenancy. The farm was designed using the permaculture methodology with the Biodynamic Land Trust to offer a home to a farm and a mental health service for young people. The specific functions of the farm were to be productive, low carbon, resilient to climate change and to support biodiversity. Today, the Apricot Centre CIC has a team of 9.5 people, 3.5 full-time equivalent on the farm and the rest on the wellbeing team. The farm grows vegetables, fruit, eggs, local grains and is starting a simple food processing arm to the business with the aim of zero waste. The farm is designed to be as closed-loop as possible.

Regarding climate change mitigation, we have planted more than 4,000 trees over the three years of operation, 1,000 fruit trees and 3,000 agroforestry trees. Planting trees helps to slow the movement of water down the hills and provides a home for functional biodiversity – in other words, our pest-control system. We have increased our soil organic matter by using green manures and clovers, which have transformed the soil from what looked like the surface of the moon to a wonderful rich tilth, supporting good crops of delicious food. We feed our flock of 150 chickens with 50% of food from the farm, including our own wheat grain. We aim to put photovoltaic panels on the barn and training centre roof this winter when we have enough funds. We have also installed rainwater harvesting systems.

We sell our food within a 15-mile radius through a vegetable box delivery scheme and on a market stall. We hardly use any packaging, and the plastic packaging we need to use is not single use – the bags can be reused many times. We are economically viable as a business. Three hectares of the farm are wetland meadows grazed with Sheltand cattle to increase the orchid populations. The meadows are also managed for birds, bat and butterfly populations.

We are active members of the biodynamic community, the permaculture community, the agroforestry



community, and are part of a very exciting food-producing community at Dartington Hall Estate in South Devon. We have the UK Government Countryside Stewardship mid-tier grants starting in 2015 for a five-year contract expiring in 2020 and are registered as a fully biodynamic farm. We have received a LEADER grant for our training centre and for the new food processing part of the business. We also just received the Power to Change grant. We are part of Dartington Mill, which is a partnership between us and a local large farm and a bakery and we aim to mill local grains and then supply them to the bakery or to sell the flour ourselves to give our grain an outlet.

We grow ten types of soft fruit over 0.5 hectares: rhubarb, strawberries, raspberries, gooseberries, black-, red- and whitecurrants, blueberries, blackberries and grapes. We have also planted top fruit: peaches, apricots, cherries, greengages, plums, damsons, apples, pears, quince and medlar. We have planted a minimum of two varieties of each type of fruit, and have planted about 20 different varieties of apple. Planting different varieties gives our system a continuity of supply of fruit from May until February, and it provides resilience in the system with the unusual weather patterns we now experience. The varieties we have selected are on semivigorous rootstocks, which means they are slow to come into cropping but have a long lifespan and can cope with the organic system and a bit of weed competition. The weeds, however, are biodiversity and with the addition of the fruit into the mix our orchards build up a rich flora and fauna of insects, butterflies and birds.

Six hundred trees have been planted in an agroforestry system in a 20-hectare field. The rows of fruit trees are planted 20 m apart and in between a dairy farmer grows his fodder crop, Luscombe Drinks grow elderflower in the field also on 20 m spacings for their cordials. We juice our grade-out crop of apples and sell this product as well. To put our farm into context, 90% of fruit consumed in the UK is imported, and at most just eight varieties of apple are commonly found in supermarkets. The agrobiodiversity in our cropping orchards is very high, which increases the resilience of our crops to climate change and extreme weather events.

We also have a flock of 150 chickens that move around the farm. The chickens live in the orchards in mobile chicken houses and they are constantly moved to new grazing. This method provides fertility for the trees and breaks the cycle of fruit pests and prevents disease. The eggs that our chickens produce are outstandingly tasty because the chickens constantly get new sources of grass and grain alongside layers pellets, which makes up 50% of their diet. Gutters collect water that feeds a trough that provides the chickens' water.

We provide a mental health service on the farm for young people in a non-clinical setting. We are also developing an area for social prescribing and school visits. However, there is currently no funding for school visits so the sessions are difficult to arrange. We open the farm every year on Open Farm Sunday, which is the first Sunday in June at 10 am. We regularly provide tours and educational visits; sometimes the visits are funded and other times they are not. We also run courses for the general public on permaculture, biodynamics and agroforestry systems every year on the farm.





BUILDING SOIL HEALTH



Use of crop rotations to avoid soil depletion; including leguminous crops to build fertility, and green manures to build organic matter.

Use of cover crops during winter to reduce erosion, and at time of peak nutrient application to reduce leaching.

Development of soil structure by reducing compaction, growth of deep-rooting plants, and encouragement of soil fauna.



SPINDLEBROOK FARM

A South Devon farm that doesn't use tractors or till the soil

We are a 16 acre conservation farm and 1 acre no-dig market garden. Growing a diverse range of high quality, nutrient dense vegetables for our local community, whilst maintaining & enhancing biodiversity on our farm.

Key principles of Spindlebrook market garden include:

- 'No-Dig': We minimise soil disturbance & fossil fuel use, through avoiding ploughing, heavy machinery or deep tilling. Our work is done by hand, using traditional and modern human-powered tools
- Keep soil covered: Using deep layers of compost and ramial wood chip, we nourish, protect and regenerate soil, cultivating healthy soil biology. We minimise exposure of soil to the elements, protecting soil structure and organisms, and reducing erosion.
- Keep plants growing in the soil as much as possible: Plant foliage protects soil and roots help feed beneficial soil organisms and fungal networks, boosting plant resilience and helping to reduce the need for fertiliser and pesticides.
- No harmful chemicals: Fertilisers, pesticides, herbicides and fungicides harm soil organisms, water courses, wildlife and people.
- Low food miles and supporting rural economies: We sell to restaurants, through local shops, online & direct to our local community at farmers' markets.



FRESH & GREEN

Multiple yields from one small farm.

Fresh and Green was established by Ruth Hancock in 2003 on one acre of land borrowed from a local farmer. The current farm was established on a bare land holding that was purchased at auction in 2006 by Ruth and her partner.

Fresh and Green operates a veg box scheme that is run from a small site called Hoppin's Field on 4.9 hectares of grade one agricultural land in the Otter Valley in east Devon. Up to 90 households per week receive a wide selection of fresh vegetables and herbs grown at the farm, which are distributed through a vegetable box scheme on a year-round basis. All vegetables are marketed direct, and locally, meaning that the business benefits financially from the short supply chain model. All types of vegetables are grown at the holding – except for some winter storage potatoes, which are sourced from a larger organic grower nearby.

The present site and business has been developed and expanded over the years and now comprises approx 3 ha of intensively produced vegetables (organic methods are used, but are not certificated) including 600 square metres of protected cropping under polytunnels, and a propagation greenhouse. A wooden, turf roofed barn, and temporary accommodation in the form of a mobile home are also on site. The farm is situated within the East Devon Area of Outstanding Natural Beauty and the developments have been placed to mitigate any deleterious effects on the landscape. Planning permission was sought – and eventually granted – for all developments.

In addition to the wide range of vegetables grown, the farm also runs two flocks of laying hens, with the eggs being marketed alongside the vegetables. The chickens are 'tractored' around the growing site – with moveable fences and houses – and are used to clear the ground



of crop aftermath and weeds. Cultivations are kept to a minimum and ploughing is rarely undertaken, unless there is a very heavy weed burden. The most common cultivation technique used is disc harrowing, followed on by spring tines, to eliminate weeds before planting and sowing.

The soil on the farm is grade one, and the property is gently south facing meaning that there is a long growing season available. Approx 40 tonnes of council greenwaste compost is imported to the site as a soil conditioner. In addition to this, composted woodchip, locally collected manure, and most recently bio-char (made on site from windbreak prunings) are used as soil health amendments. These additions maintain soil structure and fertility on the sandy loam. Any potential soil run off from slopes is prevented by cross-contour cultivations.

More than 1,000 linear metres of nitrogen-fixing Italian alder has been established on site, which provides shelter for crops, feedstock for biochar, and heating fuel for the dwelling. The alder has been underplanted with native hedging – rowan, holly, hawthorn, blackthorn, and hazel – to enhance biodiversity and to ensure that the windbreaking effect is maintained at the base of the trees. Field margins are allowed to grow native weeds, including brambles and nettles, which host many beneficial species of insects.

There is a well-established orchard of some 90 fruit trees, mainly heritage varieties of apple, pear and plums. Hundreds of native trees have also been planted on areas outlying to the productive growing areas. Three local beekeepers maintain hives on the site and their pollination services being gratefully received in return for plentiful year round forage. A high population density of butterflies, moths, hoverflies, mayflies and other species are also present. Nightjars are temporarily resident in summer because the farm is in close proximity to Pebblebed Heaths, which is a Designated Special Area of Conservation. Bats are routinely seen, patrolling the windbreaks, in search of food at night. Green woodpeckers, buzzards, and tawny owls are permanent residents, too.

The farm provides full-time employment for Ruth and at least two and a half days' paid work for another worker year round. Four 'volunteers for veg' come to help, for half a day a week each, and for the last three years the farm has also hosted a seasonal trainee, who works onsite full time from March to October. Fresh and Green holds at least one open day per year and receives visits from many interested parties such as groups of primary school children, employees from the UK government Department for Environment, Food and Rural Affairs, and university agricultural departments. Ruth regularly runs courses in agroecological market gardening and hosts weekends of farm skill sharing, in conjunction with the Landworkers' Alliance.

The farm is home to a wide diversity of wildlife, and is firmly embedded in the local community through supplying fresh produce to local households, as well as providing local employment, volunteering, and training opportunities. Local markets in the area are receptive to naturally grown local produce and this, combined with good soil quality, community support and Ruth's working lifetime experience in farming and growing (including a National Diploma in agriculture), has meant that Fresh and Green has been profitable from the start.



V A L L I S V E G

A market garden and campsite with a co-operative educational enterprise

We are a small market garden and campsite with a co-operative educational enterprise (SELCO) and allotments on our land. We have wild bee habitats and usually livestock.

Every year more living things benefit from our land – plants, birds, wildlife and people; those living onsite, and visitors.

Growing

No dig – we make a lot of compost to build the soil

- For biomass: using woodchips, animal manure, human urine (from source separating compost toilets in the campsite and households) and vegetable waste.
- For fertility: worms eat food waste from households and campsite

Minimal chemicals, instead:

- Wildlife ponds
- Predator habitat
- Compost
- Interplanting flowers and crops
- Mulch

Reduced labour and machinery increases financial returns and reduces emissions

- No dig – less work and machinery
- Mulch – less weeding

Selling

- Direct to customers (increases returns)
- Very local (reduces emissions and time selling)
- We deliver (reduces car use by customers)
- We sell first then harvest – reduces food waste

Community

- Family, workers, tenants, (including one with combat stress – dramatically improved through living in community in nature). Lives transformed by connection with each other and nature.
- Allotment holders get fresh food, exercise and community
- SEN children and adults learn horticulture and bushcraft skills at SELCO
- Volunteers learn about sustainability and growing food
- Campers experience nature
- We contribute to community involvement in healthy and sustainable food by: founding the seed swap, donating to the Christmas meal and community fridge, speaking and writing about our project, making links with local farmers.





PROMOTING CLOSED-LOOP SYSTEMS



Minimising loss of resources through careful design to ensure optimum use of sunlight, space, water, and nutrients.

Use of cover crops and composted manure spreading to maximise on-farm nutrient use.

Minimising food waste through adding value to primary products that are unsuitable for market, and using waste for animal feed.



MONKTON WYLD FARM

Micro dairy with reduced inputs and low waste

Simon keeps dairy cows on the fields belonging to the community where he lives, Monkton Wyld Court in west Dorset. The tradition of dairying there goes back almost uninterrupted to Victorian times, when the house was built, and probably long before that. Now the house is home to a community educational charity.

Commercial dairy farming is in a bad way. It is a capital-intensive enterprise, involving expensive high-tech equipment for milking plus tractors and other field equipment to grow the grass. The cows are also fed a great deal of grain, and the work involved in milking and caring for today's large herds is unremitting. The supermarkets have an iron grip on prices and persistently pay farmers less than the cost of production for their milk, with the result that almost half of all dairy farmers have gone out of business in a decade. Those that remain get ever bigger, in the hope that the economies of scale will save them.

Simon comes in at a totally different level. He has just two cows. He milks them by hand and makes hay with hand tools. The most expensive piece of kit he uses is one of his splendid Austrian scythes. Grass and hay make up almost all of the cows' diet, supplemented with lucerne (alfalfa) nuts as necessary. No grain is fed. Milking is a leisurely affair, and there are other community members who can do it for him if he needs to be away or take some time off.

He sells his milk to the community, which gives him a regular market at retail price, and he makes cheese with any surplus. Selling at retail price and adding value – in this case by cheesemaking – are fundamental to the economic viability of small-scale production. Not everyone has the advantage of such a captive market on their doorstep as Simon does, but the demand for local, naturally produced food is strong enough in most parts of the country to make a similar enterprise viable. Simon reckons that with four cows rather than two a person could make a full living.

The whey, the residue from cheese-making, is fed to pigs, at the rate of one growing pig per milking cow. The pigs live in a little paddock which, by the time they go to slaughter, is completely cleared of vegetation, manured and ready to grow a crop of vegetables. Two paddocks are alternated between pigs and vegetables, saving much of the work of ground preparation and manuring. This integration of



cattle, pigs and vegetables is a good example of the permaculture principle of linking, where an output of one part of the system becomes an input to another. It's a cyclic system, just like a natural ecosystem. The beauty of it is that it reduces the need for both work and external inputs while making profitable use of outputs which would otherwise go to waste.



> > MIXED FARMING

Mixed farms produce both arable crops and livestock, where ruminant livestock are an integral part of the arable rotation. A report from the FAO and the World Bank states: "Mixed farming is probably the most benign agricultural production system from an environmental perspective because it is, at least partially, a closed system. The waste products of one enterprise (crop residues), which would otherwise be loaded on to the natural resource base, are used by the other enterprise, which returns its own waste products (manure) back to the first enterprise. Because it provides many opportunities for recycling and organic farming and for a varied, more attractive landscape, mixed farming is the favourite system of many agriculturalists and environmentalists." (C. De Haan et al, *Livestock and the Environment: Finding a Balance*, FAO/USAID/World Bank. Chapter 3 Mixed Farming and the Environment, 1997.)

Most mixed farms in the UK rely for their fertility on legume/grass leys, which are effective at sequestering carbon. In a typical mixed farm, the role of livestock will be (a) to take advantage of the fertility building grass and legume crop; (b) to support a diversity of crops that help to keep the land weed free; and (c) transfer nutrients, in the form of manure, from outlying permanent grassland to arable land.

Mixed farming was intrinsic to all farming systems throughout Britain until the end of the 19th century, because there was no other convenient way of ensuring the continuing fertility of the land. When artificial fertilizers became common practice it became both possible and more economically viable to specialize. As a result, large sections of the east of Great Britain have become predominately arable, while the west of the island is focussed upon livestock. The area under ley grassland has halved since 1973, from 2,400,000 to around 1,200,000.

The result is a severe nutrient imbalance, with the arable farms in the east mostly reliant upon artificial fertilizers, while the farms in the west of the country have a surplus of manure. Dairy farms in particular accumulate vast lagoons of slurry which they pump back onto grassland already saturated with nutrients, resulting in nitrate leaching and pollution of watercourses, or used to fertilize maize silage crops, which are fed back to the cows.

Reverting to genuine mixed farms would bring many environmental and social advantages: (i) Arable farms that became mixed farms would be less reliant on chemical fertilizers, more biodiverse, less dependent upon pesticides and herbicides and would sequester more carbon (ii) Dairy and other livestock farms that reverted to mixed farming would cause less pollution, would produce more food per acre, and would support more biodiversity (iii) Mixed farms would result in less need for long-distance transport because straw and animal feeds would be used on site and a wider variety of goods would be available for local consumption (iv) A wider variety of agricultural jobs would be available in specific regions of the country.





G R E E N A C R E S F A R M

An established organic farm that practises companion growing and promotes biodiversity, as well as growing pulses for Hodmedods



Green Acres Farm is certified organic by the Organic Farmers and Growers C.I.C. We farm 450 acres of organic land in Shropshire with a system built on the belief that sustainability requires diversity. The rotation is mixed with clover leys grazed by cattle and sheep, as well as producing red clover seed. Cropping includes milling oats, peas for human consumption grown for Hodmedods and this year 14 different milling wheats for direct sale to millers and bakers. We increasingly see ourselves as food producers, adding value on the farm where we can and getting closer to our customers. Companion cropping, diverse cover crops and agroforestry all contribute to the resilience of the farm. A green-waste composting enterprise receives 5,000 tonnes per annum of local kerbside garden waste, with all the resulting compost used throughout the rotation to contribute to raising organic matter and improve the soil. This is our 20th year since organic conversion and whilst we have proved that our system is sustainable without synthetic inputs, we are learning all the time. We're proud to farm in a way that contributes positively to biodiversity and soil, air and water quality whilst producing healthy food that is in genuine demand.

INCREASING ACCESSIBILITY AND AFFORDABILITY OF FOOD



Selling affordable food to low income households, such as selling at a subsidized rate to households in receipt of benefits.

Developing short supply chains to increase public access to conveniently located, fresh and nutritious local food.

Enabling affordable prices for consumers while securing a fair price for farmers by cutting out middle-men through direct sales.





CHAGFOOD CSA

Chagfood is a Community Supported Agriculture Scheme started in 2009 using a £38,600 Local Food Fund lottery grant, but since 2012 members' subscriptions have been able to fully fund running costs and the wages of two part-time growers. Now 80 households are supplied with a weekly share of the vegetable harvest, grown on five acres of rented land.

Chagfood was initiated in 2009 by two local people, keen to bring vegetable growing back to the area. Twenty five initial members were recruited, a grower was hired, an acre of land rented and a £38,600 Local Food Fund lottery grant secured to pay for infrastructure (three polytunnels, a packing shed and a tool shed). An additional £9,800 grant from Dartmoor National Park subsidised the scheme in the first two years, but from 2012 members' subscriptions were able to fully fund running costs and the wages of two part time growers.

Chagfood has now expanded onto a second five acre site, and has 80 members. Members receive a box for 28 weeks, from July to January, although during the hungry gap they are provided with a couple of seasonal items each

week. Membership costs £500 per year for a small share and £660 for a large share. Members are encouraged to pay up front for the whole year, although they also have the option of a monthly standing order. Day to day management decisions are made by the growers.

Chagfood is a Community Interest Company, and at the AGM each April, members are asked to vote on the box price and the growers wages. They are also invited every Thursday throughout the growing season to assist with growing tasks and harvesting and are kept up to date with a weekly email newsletter. On average about five tend to come and help on a regular basis. Veg shares are dropped off at five collection points (usually a members' house) in local communities around Chagford.

E D I B L E F U T U R E S

Bristol scheme supplying salad and other veg to local residents

Edible Futures CIC is a horticultural business turning over £15,000 on 1.5 acres and distributing £10,000 annually to two part time staff. In the field we grow a range of salads, vegetables and cut herbs that are sold directly to grocers and restaurants in Bristol. We also operate a Community Supported Agriculture scheme called 'Salad Drop' that provides 50 households with a weekly salad bag, delivered to a refrigerated drop off point. Whilst we can not afford 'organic' certification, we grow without chemicals, using a nine year crop rotation. We derive fertility from compost, manure, cover crops, herbal leys and aerated compost teas. Each season we grow over 60 crop varieties, all of which are open pollinated. We save an increasing number of seeds each year, and in 2018 reduced our seed bill by more than £200 as a result of using saved seed.

Edible Futures CIC works alongside other food producers and conservation workers on a 7 acre shared site we ambitiously call Feed Bristol! Leased by Avon Wildlife Trust (AWT), the remit of Feed Bristol as a whole site is to demonstrate an interaction between crop production and wild life conservation. Besides Edible Futures CIC, Feed Bristol is home to a veg-box scheme called Simms Hill Shared Harvest, a mushroom operation and medicinal herb grower. AWT manage the margins and buffers between these food producing operations to conserve natural biodiversity. Drawing on higher level stewardship standards they grow diverse pasture in the walkways and wild flowers in the headlands, whilst also managing ponds and hedgerows as habitats spaces. As such, Edible Futures CIC is a resilient, small farm business operating within a broader context of nature conservation.



Edible Futures is one of three small farms that form the Bristol Food Network, which supports, informs and connects individuals, community projects, organisations and businesses who share a vision to transform Bristol into a sustainable food city.

In 2015 Bristol was the Green Capital of Europe. Three strong and interconnected 'entities' have nurtured the Good Food work; Bristol Food Network, Bristol Food Policy Council, and Bristol Green Capital Partnership, supporting and connecting many projects, hosting gatherings, co-creating plans and publicity, and together pushing for policy change.

- With over 800 members in Bristol's Green Capital Partnership, and a local award scheme for Workplace Wellbeing, businesses are procuring local, organically grown, and fairly traded food. Cafes and restaurants are advertising their local suppliers, and the local currency the Bristol Pound is accepted by 265 local food businesses.
- Bristol is the first Local Authority since the Second World War to introduce household food waste collections and the first city outside London to hold a Feeding the 5000 event.
- The Healthy Schools Programme is putting food into all curriculum areas and teaming up with the Soil Association, the BBC, and Incredible Edible. The work in schools reaches all cultures and all parts of the city.
- The first Love Food Festival was held in 2008 at Bristol's 'Paintworks'; these family friendly and celebratory events now happen several times each year attracting hundreds of visitors. Street markets have gone from a rarity, to being widespread, even including night markets with live music. Since 2014 Bristol has run a 'Food Connections Festival'. In 2014 and 2015 this engaged over 265,000 people at over 300 events.



>> WHAT IS CSA?

Community supported agriculture (CSA) is a partnership between farmers and consumers in which the responsibilities, risks and rewards of farming are shared.

CSA helps to address increasing concerns about the lack of transparency, sustainability and resilience of our food system. It is one of the most radical ways that we can re-take control and ownership of our food system.

The approach can vary. Consumers, often described as CSA members, are closely linked to the farm and the production of their food, and provide support that goes beyond a straight forward marketplace exchange of money for goods. This involvement may be through ownership or investment in the farm or business, sharing the costs of production, accepting a share in the harvest or providing labour.

The most common produce for CSA farms is vegetables, but they can also include eggs, poultry, bread, fruit, pork, lamb, beef and dairy produce. CSA farms are also developing around woodlands for firewood and also more recently fish.

Farmers receive a more stable and secure income and closer connection with their community, and consumers benefit by eating fresh healthy local food, feeling more connected to the land where their food is grown and learning new skills.



INTEGRATING THE COMMUNITY



Hosting events such as farm visits and cooking lessons for schools and communities to increase public awareness about food production.

Enhancing community involvement through Community Supported Agriculture.

Provision of mental health services and other well being benefits through providing opportunities to reconnect with nature.



S P Y W A Y R O A D

Starter farm with off-grid power generation

The objective of this project has been to establish a system that can support a family of four on a field of 2 hectares, whilst respecting ecological concerns. The system is run on organic principles and comprises new coppice, old pasture, a wild area, wildflower meadows, and land for growing food, each determined by the soil conditions at the location. There is mains water and a mobile phone signal, but the field is off-grid with solar electricity generation and a grass-fed anaerobic digester.

The project has been running for almost five years. For activities requiring considerable labour, the field is thrown open to the community, who are rewarded with tea and cake. At other times basic machinery is used to maintain the field, and 'Oak Tree Cottage', a former construction site office, provides a welcome sanctuary without raising planning concerns.

Establishing the energy supply has taken precedence over food production, and yellow rattle seed from the wildflower meadows has so far been the only cash crop. The only bought in item is woodchip, used for mulching and hot composting. Longer term the plan is to make the field available as a starter farm, and hopefully to encourage young blood into farming.



Bucolic perfection in West Dorset. Half the field is pasture, and when sheep are not present the neighbouring farmer cuts and carts the hay for winter bedding.



Five Acre Community Farm is a place for nature and people to work together to produce food. Using principles of organic farming, we care for our soil, our ecosystem and our health; recognising the interdependent nature of all living things on our planet. We are a community of people who share values around the quality of the food we eat and care about the impact we have on our environment.

We employ a grower who looks after the farm for us. She selects a large range of vegetables to be grown, and plans the sowing, planting, nurturing and ultimately, harvesting ensuring that we have a good range of vegetables all year round. Her tasks include caring for the soil to maintain its health, nourish it and rest it.

At our farm, we produce food which is of the very best quality, organic, fairly produced, seasonal and healthy. Shares are harvested on the morning they are collected or come from our traditional vegetable stores. Everything we provide, we grow on our field. It's as simple as that. Our vegetables have a low carbon footprint, they are organic, they are nutritious, they are seasonal and we are passionate about them.



FIVE ACRE COMMUNITY FARM

An organic vegetable farm in Ryton, near Coventry



CAERHYS ORGANIC FARM

Pesticide free and community-based organic agriculture on a farm that grows heritage wheats, potatoes and livestock.

I am an organic farmer and campaign against genetically modified (GM) crops and pesticides. In 2003 I drove my tractor all the way from West Wales to Downing Street to protest about GM crops and to raise support from fellow farmers. In 2010, I launched Wales' first community supported agriculture scheme (CSA). I believe the CSA model allows a mutually beneficial relationship between farmers and the community. The people who joined my CSA come to the farm regularly and have begun to refer to it as 'our farm'.

I have been a farmer/guardian of Caerhys for more than 50 years and I realise what a special farm it is. It is more than a farm – it's a living soul of nature and as such I love it beyond measure, it's very difficult to describe in words! The living proof of this farm is what it gives to others apart from food. Woofers / volunteers that come to stay here and work with us on the farm find themselves and find happiness. The farm gives people space to heal, realise what pleasure it is to be near nature and grow vegetables that taste delicious. When the time comes for them to leave our farm they don't want to go and are sad to tears when catching the train back to their own world.

Caerhys is an organic family farm situated on the coast of Pembrokeshire, above Abereddy beach few miles north of St David's, the smallest city in Europe. We farm 120 acres of mixed enterprises, which compliment each other in a sustainable way to benefit others.

The enterprises (also called the branches that nourish the oak called Caerhys):

COCA ~ Caerhys Organic Community Agriculture

The best project on the farm was established in 2010 as the first community supported agriculture scheme (CSA) in Wales, with the help of a local support group called Eco City Group, based in St David's. We began with 12 families and with no funding to establish ourselves. I was the grower and with help from two horticultural mentors we gave two acres of land free of charge for three years as commitment of our trust that CSA would secure a future for our farm.

My son Carwyn desired passionately to come back to farm and I could envisage that by creating the CSA we could establish my son as the grower, giving him a wage that would secure the farm. That made me realise that the farm helped to bond the community and our farm because sharing the farm that fed them in true food sovereignty, according to the ideology of agroecology. Today we have 60



families receiving organic vegetables every week. Caerhys is truly what it set out to do – to feed local people.

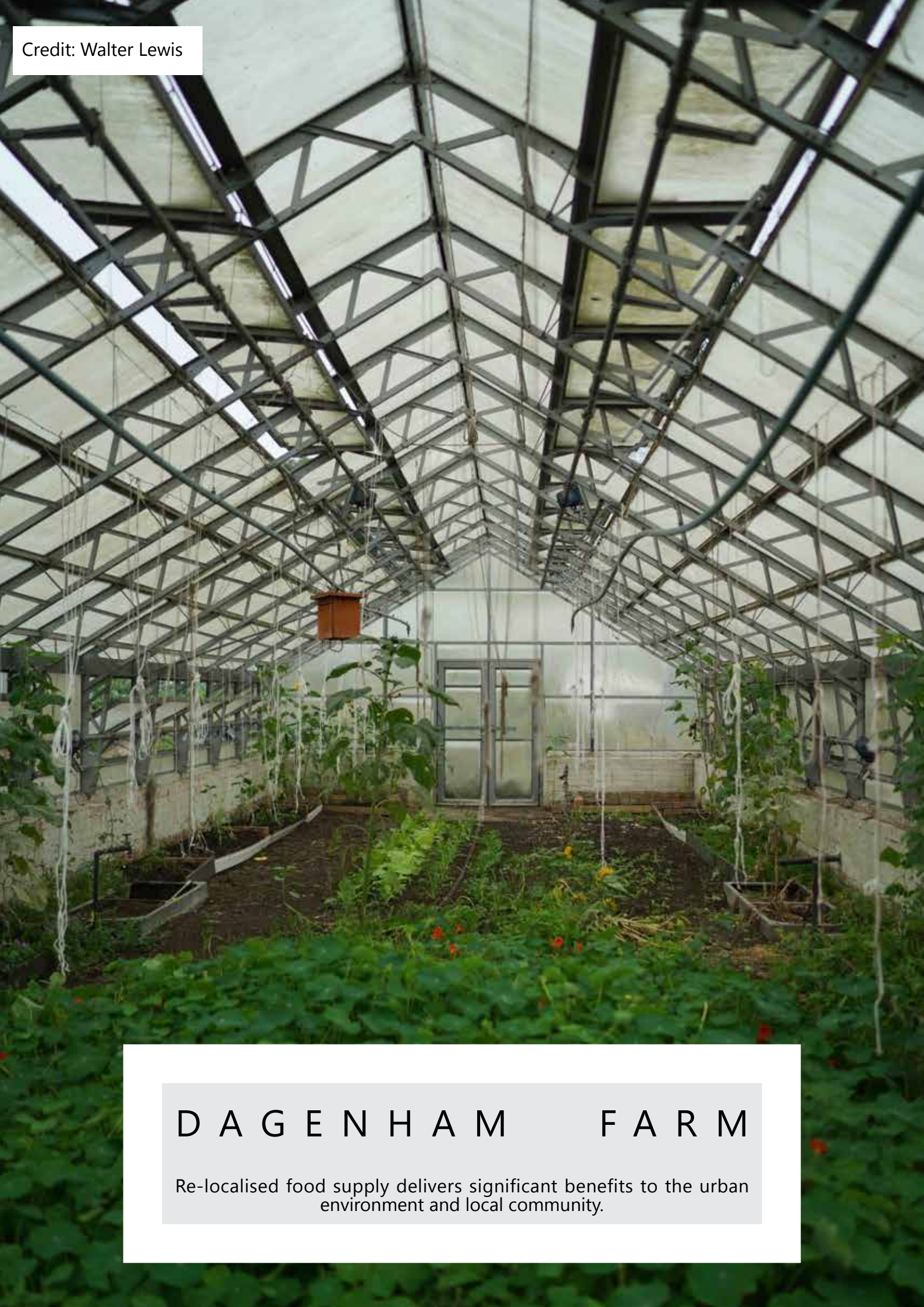
Suckler Beef Herd: The Welsh Black Suckler herd rear calves at foot for ten months from birth in a natural, caring way. All the animals are pasture fed. We have crossed our Welsh Black breed with a Belted Welsh Black (and ancient breed) that graze permanent pastures established more than 30 years ago. The animals are happy and content and spend most of their time lying down admiring the view. During the winter months when weather dictates and our fields get too wet, the cattle are in loose housing and bedded freely on sheltered straw bedding which is used as compost for our fields applied in rotation with cereal crops. Calves reared by the females are kept to build our herd and males are sold to other organic farmers to finish as beef cattle.

Ancient Cereals: Our farm grows 25 acres of cereal every year, which is sold to horse owners and sheep farmers and some as seed. Varieties we grow are the holy grail of grain, which are the seeds of the future. Now that climate dominates our survival, all the ancient heritage grains are important because they were grown pre-Green Revolution before chemicals and nitrates were dreamed of. Seeds such as Emmer, which is a variety of wheat descendant from the Egyptian's, is great for bread and is low in gluten. The Black Oats variety was grown by my grandfather and is widely grown by farmers to feed their total stock on their farms. Other cereals include Einkorn, April Bearded and Hen Cymro.

Tourism: One of the mainstay enterprises on our farm is bed and breakfast, which reflects the situation of farming in our country because our market is dominated by supermarkets and food is treated as a commodity not realised as a necessity. Guests come to our farm because our view is inspiring and amazing, plus we are organic and by having them visiting it gives us the optimum time to educate them about life on our farm and emphasise the importance of organic farming.



Credit: Walter Lewis



D A G E N H A M F A R M

Re-localised food supply delivers significant benefits to the urban environment and local community.

Growing Communities is a successful social enterprise that has been running Dagenham Farm next to Central Park since May 2012. Having transformed an ex-council nursery site into a thriving growing and learning site, the farm regularly produces more than four tonnes of organic vegetables per year and provides an important space for the local community.

We support two part-time grower jobs at the farm, enabling staff to work around family commitments. We also run weekly volunteer sessions so the local community can access and benefit from the farm. Benefits for volunteers include learning growing skills, getting exercise and fresh air, and an improved overall sense of well-being.

We follow land management and growing practices that lead to benefits for the environment. For example:

- Use of composts, manures and cover crops (to build soil organic matter, and to reduce nutrient leaching and waste);
- Rainwater harvesting and storage (to build resilience to drought and reduce abstraction);
- Avoidance or reduction of fertilisers (to reduce nitrous oxide emissions);
- Crop rotation, diversity and intercropping (for pest and disease reduction);
- Beetle banks and wildflower margins (for invertebrate and bird conservation);
- Avoidance or reduction of herbicides and pesticides (to build biodiversity).

Produce is traded through short and direct supply chains both within the borough and nearby areas to the Growing Communities fruit and vegetables scheme in Hackney, as well as to local restaurants and other retail outlets. There is also a weekly stall throughout the summer at Dagenham East tube station. Through the short supply chains we also minimise use of packaging, refrigeration and transport, which increases resource efficiency and waste reduction.

Overall, Dagenham Farm shows the potential for growing and selling significant amounts of quality organic produce from farms on the outskirts of London and other cities. It also demonstrates the importance of community spaces and the benefits to local residents through being involved with a working farm.



ENCOURAGING INNOVATION AND EDUCATION



Facilitating farmer-to-farmer skill sharing and knowledge exchange.

Educating farmers and the wider community on techniques and traditions in farming.

Developing individual and whole-farm innovations to enhance profitability and sustainability.





Credit: Clem Sandison

Farmer-to-farmer learning networks have been increasingly recognized for their capacity to enable the transmission of knowledge/innovation, mutual support, and sharing of equipment, resources, and facilities. Farmer-derived innovations are essential to agroecology and can be amplified and shared through these learning networks.

“Farm Hack” is a farmer-to-farmer network that was originally started by The Greenhorns in the USA and has been gaining momentum in the UK. Farm Hack is founded on the principles of open source technology, and tools and techniques are also shared freely and developed on the online forum farmhack.net. Farm hack events bring together farmers, growers, fabricators, engineers, and IT programmers to demonstrate and share tools, skills, and ideas through field demonstrations, practical workshops, seminars, entertainment, and sharing good food, local ale, and cultural exchanges such as a stomping ceilidh dance.

Community Farm Hack 2018 was a skills gathering in North Wales on 6th-7th of October for us to network and share our knowledge about farming and technology.

The skill shares and workshops that took place there included:

- Setting up a CSA
- DIY open source on farm robots
- Communicating with customers and building CSA memberships
- Tool sharpening and reconditioning with tools for self reliance
- Nursery Management for better horticulture
- Low impact homesteading being off grid and super healthy
- CSA for livestock farmers
- Machinery and tools for small scale producers
- Wood work tools, carpentry and round wood construction.





FARMED

A new farm and food education centre promoting sustainability and regenerative agriculture

FarmED is a 107-acre farm in the Cotswolds that has been developed as a centre for farm and food education with an emphasis on regenerative agriculture.

Ian and Celene Wilkinson acquired Honeydale Farm, now FarmED, in 2013 with a view to demonstrating ways of making smaller farms viable by using sustainable practices, growing diverse crops and having more livestock on the farm.

Ian is the managing director of Cotswold Seeds, which for 45 years has offered advice on soil improving crops such as deep-rooting, carbon-capturing herbal leys, and their benefits to soil fertility, livestock and human health.

The nitrogen-fixing four-year herbal ley is the heart of the farming system at FarmED. The herbal ley is mob-grazed by a sheep flock. It is a natural, self-sufficient system that improves soil quality, eliminating the need for purchased fertilisers and pesticides whilst adding value to commodity crops, ultimately driving the profitability of the farm and using fewer of the earth's natural resources.

A natural flood management scheme has been created at FarmED, with a large scrape and wetland planted up with a dense mixture of alder, hazel, willow and dogwood to encourage water infiltration deep into the sub-soil and provide habitats for wildlife. Further wildlife habitats have been created by planting a 250-tree heritage orchard, shelterbelts, buffer strips, hedges and pollen and nectar margins. This, together with supplementary winter bird feeding, has significantly increased the tally of bird species from 44 to 84.



Ian's vision is for FarmED to become a centre for the wider rural community by acting as a food hub for processing, distribution and sales of local farm produce. The Honeydale Kitchen Garden, established in 2018 with a 1.5 acre fieldscale site and large polytunnel, is just the start. It is run by the Kitchen Garden People, a Community Supported Agriculture Scheme (CSA), helping to revolutionise the way that food reaches consumers. The weekly veg box distributed to members includes salads, veg and fruit, such as kale, squash, french beans, garlic, coriander, mustard, peppers, strawberries, rhubarb, and many different varieties of lettuce.

At the heart of FarmED are two impressive buildings: one provided spaces for lectures, presentations and meetings and the other is a demonstration barn and kitchen with woodfired oven. Public engagement is key at FarmED, and events such as the pollinator day and the sainfoin experience day have already attracted scientists, farmers, students, academics, politicians as well as representatives from environmental organisations and wildlife groups. School and university groups regularly visit and when it officially opens in 2020, FarmED will offer a comprehensive programme of training, lectures, events, farm walks and talks suitable for all ages.



THE HUSBANDRY SCHOOL

Ecologically farmed vegetables, fruit, flowers and livestock



The Husbandry School is a Devon-based venture, focusing on the practical application of husbandry and agroecology on 49 acres of land near Ashburton. Husbandry itself is an ancient word which means nothing less than 'the care and management of nature and the resources of living.' At our project we use the land as an experimental learning centre to illustrate Husbandry in action. We consider the whole ecology of our land as we care for it, in the aim of creating a sustainable, resilient and low input system. Here on our fields, we use the waste from our livestock for fertility building, we rebuild our hedge banks and ditches to collect rainwater and we capture the energy of the elements to provide us with power.

We grow two acres of vegetables, fruit and flowers and keep a variety of livestock, supplying local people, shops and passionate chefs with ecologically produced food.

The land and our low impact house and school buildings are used everyday by our re-engage re-inspire students. These are school aged children that join us for long term therapeutic education placements where they engage with outdoor learning through a programme of animal care, land work and horticulture. As well as this, we run an extensive adult course programme, teaching ancient skills of rural craft and traditional land management.



Credit: Adrian Arbib



SUPPORTING CULTURE AND TRADITION



Supporting artisanal food producers and land based craftspeople to create an evolving sense of community and connection to the land.

Reclaiming and sharing traditional skills.

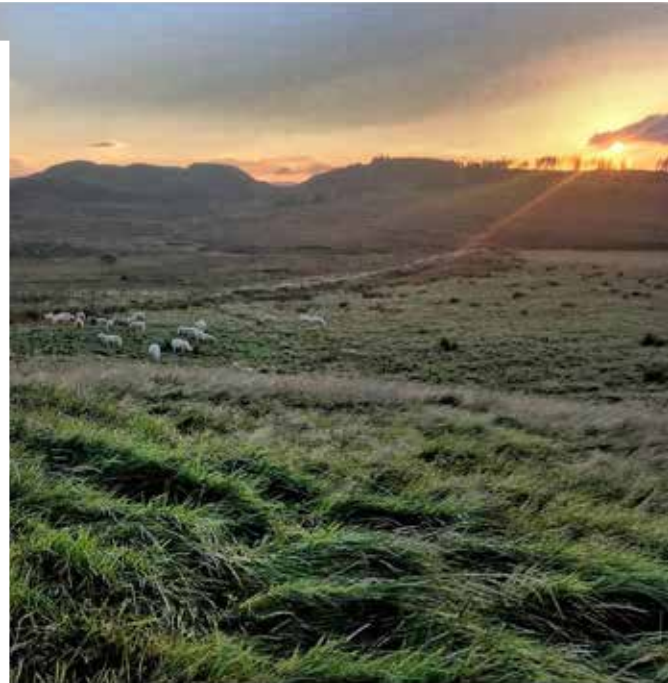
Preserving diversity in heritage seeds and livestock.



LYNBRECK CROFT

Mixed farming in the Scottish Highlands

Lynbreck Croft is a 150 acre mixed upland farm in the Highlands of Scotland with a diverse range of enterprises that include cattle, sheep, pig, poultry, hens and bees. Our pig and poultry are fed on organic certified feed and our sheep and cattle are grain free. Our farm is zero input – no chemicals, fertilisers or lime is applied. Our goal is to use our animals to regenerate and build soil, improve diversity and produce the highest quality, nutrient dense food. We practise low stress animal handling and seek to utilise our livestock's natural instincts to best improve our land. We are passionate about selling all of our produce to a local market and building long term climate and economic resilience into our business. We offer eggs weekly and meat seasonally and are expanding into added value cured and smoked produce. We offer a range of monthly croft tours and courses to educate the public on what we do and why we do it and we currently feature on the award winning BBC2 This Farming Life series. We also work on a national scale as Scottish Government Climate Change champions to highlight the importance of low impact, community focussed agroecological farming systems.







R E A L S E E D S

Mail order seeds for home gardeners from an off-grid Welsh farm.

Real Seeds grows and sells seeds by mail order in small packets to home gardeners. All the seeds sold are open pollinated, and Real Seeds also campaigns for seed sovereignty in Wales and the UK, and encourages all growers to learn to save at least some of their own seed. All seed orders are sent out with seed saving instructions.

The business started in 1998, and has been on its current site in the Pembrokeshire Coast National Park since 2010. Currently there are five permanent employees, plus one casual home worker (seed packing) and a seasonal summer helper, which works out to just under five full-time employees across the year. Labour time is split very roughly between one-third outdoors work and two-thirds seed- and order-packing (although the latter includes cleaning of grown seed and germination testing). Turnover in the last financial year was just over £500,000.

The business sells a mixture of seed grown on the farm, seed contract grown by a network of local producers, and seed bought on the commercial wholesale market. The proportions vary by year, but roughly 30-40% is grown by Real Seeds on the farm and by the seed growers network.

Real Seeds is working with the Gaia UK Seed sovereignty programme to train potential new agroecological commercial seed producers, many of whom will hopefully go on to grow seed both for Real Seeds and other independent UK seed companies.

Real Seeds has 6.5 acres of land, certified organic by the Soil Association, of which 6 acres is owned, 0.5 acre rented. The main site is approximately 2.5 acres. The land is relatively poor quality, located around 95m above sea level and was previously part of a larger field used for sheep grazing. It is now set out with a broad shelterbelt of mixed coppice woodland (planted winter 2011) with fruit trees and bushes on the south-facing edge, approximately 1 acre of outdoor seed cultivation and trials, barn and yard area, and two polytunnels 27m x 9m used for undercover seed production.

The site is off-grid, with electricity to the barn provided from a solar photovoltaic (PV) system, and water for tunnels and irrigation from a borehole (pump also powered by PV). The barn is a wooden construction, built from locally grown timber milled on site.



Wildlife now present on the site includes common lizards, grass snakes, toads and a wide variety of insect life.

We use a small Kubota tractor for initial bed preparation and for mowing, but use wheelhoes and other hand tools for most day-to-day cultivation. We are not no-till but soil is kept covered through a mixture of cover cropping, under sowing and sheeting down. At the moment fertility is provided through a mix of green manures, composted on farm waste, plus horse manure from a neighbour.

The second site is approximately two-thirds of a mile away on the edge of the Carningli common, and is 4 acres planted mainly to coppice woodland (planted winter 2011). As this woodland comes into production the main use will be for fuel, with the brash chipped and composted to provide fertility for the seed production area (replacing the horse manure). A small area has been left unplanted to allow for a potential isolation garden for brassicas if needed in the future.

This second site received support from Better Woodlands for Wales and it was noted by the grant giving body that the woodland would form part of a wildlife corridor (along with woodland planted on neighbouring holdings) from Ty Canol ancient woodlands up and on to Carningli common.

Initial seed processing and drying takes place in the barn on the main site. The business also rents office space from Pembrokeshire County Council in Newport where final seed processing and drying, seed packing, order processing and general admin takes place. We have tried to install a PV system here but haven't been able to so far; currently we use 100% renewable electricity from Ecotricity.

Real Seeds aims to keep its carbon footprint as low as possible by thinking about the ecological impact of all our activities on a day-to-day basis in all parts of the business, not just the farming and growing.

On the office side, orders are sent out in cardboard mailers, and we have recently moved to biodegradable paper envelopes for most seed packing. We also aim to run a sustainable business by putting the needs of customers and employees first, rather than aiming for high profits. All employees over 18 years old receive the same hourly wage and a profit-share bonus at the end of the season.

INCREASING THE QUANTITY AND QUALITY OF JOBS



Enhancing labour conditions and wage levels on farms to improve quality of jobs in farming.

Adding value to primary products for creating employment, which contributes to economic resilience and reduction of food waste.

Encouraging more jobs on farms to increase secure land-based employment opportunities in rural areas.





BLACKHAUGH COMMUNITY FARM

A community farm that supports local people through different enterprise projects.

Blackhaugh Community Farm is a community-managed 43-acre farm in Spittalfield, Perthshire, Scotland. The farm was bought by Alice and Johnny in 2015, and is now collectively managed by Blackhaugh Farm Action Group, which is made up of people who live and work on the farm, with a total of eight people employed part-time on the farm on various different projects.

Our aims are to:

- Support people to live, work, and learn from/on the land;
- Foster a land-based and inclusive community that is based on principles of autonomy and mutual aid;
- Facilitate and create a farm that is ecologically beneficial; and
- Look outward to support other communities and engage with wider movements for social and ecological justice.

Since 2015 we have set up a number of different enterprises and projects on the farm. Taybank Growers Cooperative is a workers' cooperative with three members who all work part-time on a 4-acre market garden leased from the farm. The cooperative runs a veg box scheme for 60 customers, with produce grown solely on the farm. They also sell produce through an honesty shop located on the farm, and also sell to local restaurants and cafes. Taybank Growers Cooperative aims to sell all of its produce within a 20-mile radius of the farm to reduce food miles. The cooperative uses low-dig agroecological methods to minimise the impact of climate change and works in a way that is actively improving the soil and biodiversity of the farm. The soil on the farm is particularly sandy, having been a former riverbed for the Tay river, and we are working over time to build the fertility of the soil using green manures and low-dig approaches.

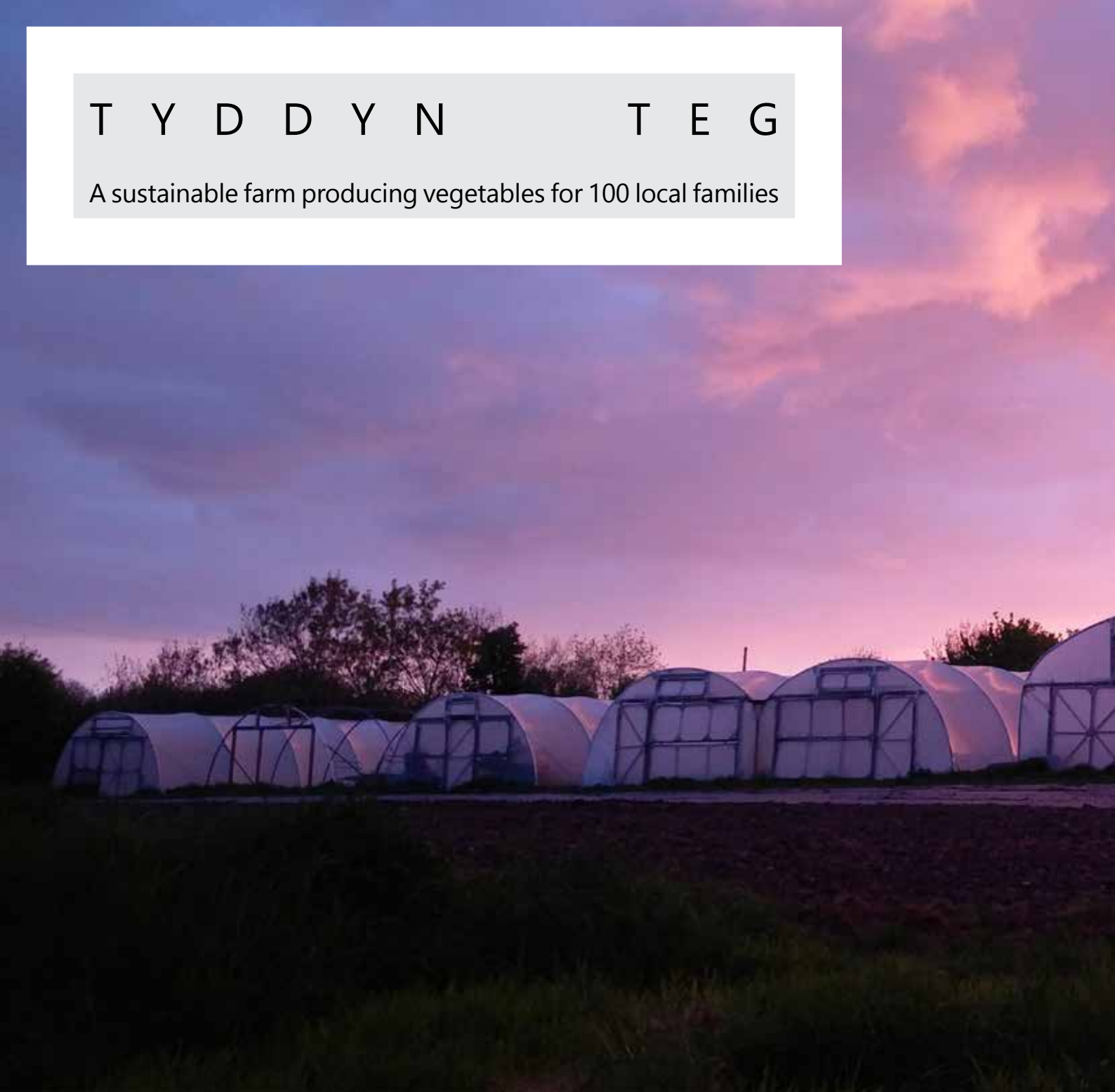
Plants with Purpose and Appletreeman also lease 2 acres of land from the farm to produce Scottish varieties of apple trees. They also run a small plant nursery, which specialises in plants that are native to Scotland and are beneficial for biodiversity or can be used for medicinal purposes.

New this year are two new enterprises on the farm. SCRAN has a small flock of 50 laying hens that are used to help with land management on the farm. The eggs are sold at the honesty shop and through the veg box scheme. The Wheat we Eat is another project started this year to trial four different types of heritage wheat – an acre of each – planted between alleys of trees (willow, damsons and plums, apples, sweet chestnut and some hardwoods for firewood) in an agroforestry system. The wheat will be harvested in autumn 2019 and milled by Blair Atholl watermill, which is a traditional stone mill.

The rest of the land is currently either being rewilded through tree planting and conservation, or let out on short-term grazing lets for local farmers, though the Blackhaugh Farm Action Group would welcome long-term proposals from people interested in setting up an agroecological farming enterprise, particularly livestock or arable farming to create a mixed system.

T Y D D Y N T E G

A sustainable farm producing vegetables for 100 local families



Tyddyn Teg is a non-hierarchical company that grows vegetables for over 100 local families. Our ultimate goal is the rapid growth of a sustainable food system. Our current focus is developing the vegetable business into a profitable, labour efficient, carbon negative, ecologically sustainable farming system that is capable of supporting five well-paid full-time jobs on five acres of land. To achieve this we aim to produce a year round supply of vegetables for 250 families, and to use agroecology to eliminate the necessity of running tractors.

Once we have achieved this, we hope to leverage our example to have a wider influence

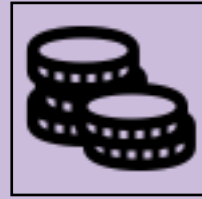


on our food system, both by providing practical and financial support to other sustainable food system projects, and by fostering the growth of a wider community that can apply political pressure to effect policy change to support the development of sustainable food systems.

Though we are currently almost exclusively focused on developing our farming infrastructure and know-how, we are laying the groundwork for a diversified business operation capable of supporting our institutional ambitions. This means developing on farm food processing and hospitality to become more publicly accessible and to generate profits to invest in new ventures.



ENHANCING ECONOMIC RESILIENCE



Enhancing local economies by creating links with local food shops and restaurants, tourism, schools and hospitals.

Improving farm viability by reducing bought-in farm inputs, like feed, seed, fertilizers, herbicides and pesticides.

Improving farm income through direct sales, because farmers retain a larger share of the final price of food.



S L A D E F A R M

Organic Welsh livestock and cereals farm with an on-site butchery and shop



Slade Farm is a 300ha family run, organic mixed tenanted farm situated on the Glamorgan Heritage Coast. The farm has a sheep flock of 500 ewes, 55 cow suckler herd unit, 35 pigs and around 80-90ha of organic arable on rotation round the farm. Farming with nature, we manage a range of habitats, improving the farmland bird populations as well as producing quality meat and organic cereals.

Here at the farm we aim to be sustainable by not 'buying in' forage or feed cereals for our livestock, all our feed (including the protein) for the cattle, pigs and sheep, is grown here on the farm. Reducing the farm's carbon footprint as well as providing a patchwork of habitats due to cereals and grassland being grown across the farm.

Here at Slade we have an on-farm butchery and shop, selling and delivering our own meats, which have been born and bred on the farm, to our local community. We produce a range of products including dry-hung beef, lamb, pork and mutton joints. We have won a number of quality and taste awards, the latest being awarded 3 stars in 2019 for our Organic Pork Shoulder from the Great Taste Awards. Monthly, we deliver meat boxes around the Vale of Glamorgan and Cardiff. The meat boxes can consist of any combination of our products. Having a personal and direct relationship with our customers, enables us to educate them on cooking methods which helps balance the carcass, reducing waste.

Organic cereals are sold through Organic Arable, direct to a number of customers including our Oats to Whites and our Organic Spelt to Sharpham Park. On a smaller scale our Organic Milling Wheat is sold direct to Feling Ganol, a stone mill in Llanrhystud, producing Strong Organic Welsh Bread Flour.



N O R T H A S T O N D A I R Y

A small dairy in the Cherwell valley that hand delivers organic milk in re-useable glass bottles, yoghurt and meat to many local residents.

North Aston Dairy is able to take a small acreage and a small number of animals and make a decent living for four workers and delicious produce for the local customer base. The farm is situated in the Cherwell Valley between Banbury, Bicester and Oxford in North Oxfordshire.

Last year, the business had a turnover of £126,000 from 14 Ayrshire cows, of which £60,000 went to my partnership draw (working full-time) and wages for the one full-time and two part-time employees. This turnover is predominantly from liquid milk sales followed by yoghurt, meat (rose veal from calves and beef from retired milking cows), ice cream and cream. Because the business controls the entire supply chain for the product from sunlight on the grass to finished products on the doorstep, labour is by far the biggest cost.

All the dairy produce is packaged in re-useable glass containers and the return rates are around 95%, meaning that containers are used time and time again, reducing our packaging costs as well as the carbon and plastic footprints of the business. About 80% of our sales are delivered to the doorstep by us and about 70% of deliveries are within a three-mile radius of the farm so transport costs are very low.



The farm is organic so we don't have the carbon footprint of fertilizer production and instead fertility of the land is improved by careful grazing of the land and making compost from bedding straw and manure. The compost acts as a probiotic for the land, increasing fungi and bacteria levels, increasing the mobility of soil nutrients and providing a bigger base for the food pyramid. The business is almost 15 years old and we are seeing more (or more evidence of) wildlife on the land as the years go by including badgers, foxes, deer, woodpeckers and dung beetles.

Our customers all receive a monthly newsletter about what's happening on the farm so are kept well informed; many people stop us for a chat as we're on our deliveries. We have had lots of groups for tours and visits over the years and are always happy to take customers around or show them the milking. Our customers are very loyal and appreciative of the business and consider themselves lucky to be within our delivery area.

Financially we have never received any grant funding or bank loans, just small loans from customers to develop the business (for example, buying new cows or a tractor). The business started with just £60,000 investment from the partners to renovate the buildings and get the most basic necessary farming and processing equipment and has been investing every year since to make things easier and better to allow the business to be more self-sufficient and to develop new products.





BOND

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