

CHARLES and JO Mear have been running Wood Farm since they purchased it from Charles' father in 2012



WOOD FARM - AIMING FOR A CARBON NEUTRAL FREE RANGE EGG

Charles and Jo Mear have been focusing on sustainability since they bought Wood Farm from Charles' father. Homemixing, solar panels and anaerobic digestion, all contribute to their efforts.

Working to provide the best environment, management and nutrition they can now make the enviable claim that they haven't used any antibiotics for over three years. BFREPA members since they started, they believe in localisation and circular farming to reduce waste - getting several uses from what they produce.

Wood farm free range eggs
The farm, near to St Neots in Cambridgeshire, was originally bought in 1948 by Charles' great-grandfather. Charles father John continued with arable production on around one thousand acres of owned and contracted land. But when Charles, decided he wanted to return work on the farm rather than go to

university, they needed another source on income. He researched the possibilities and deciding on free range egg production, travelled the country to visit different production systems. "Our first flat-deck house was built in 1996 and the second in 1997. We had a total of approx. 28K hens and were supplying egg to a large packer for top-end supermarket brands. I enjoyed it but felt that we were doing all of the hard work for none of the reward." Then John decided he wanted to retire – allowing Charles and his wife Jo to buy the farm in 2012. The point at which, they started the process of selling their own eggs.

Jo has a background in marketing so took on the task of promotion. "We put three different sized eggs into boxes with the Wood Farm name on them and delivered 450 to a local town. Inside there was a leaflet about our business and pre-paid form to be returned if people would like to sign up to have eggs delivered to their door. An amazing 300 people replied, which was an exciting endorsement of what we were trying to do." This built up to an egg round that delivered to over a thousand households each week. Along with supplying local shops and businesses.

Joint venture

The next step in their adventure was when in November 2009 they received a call from Yorkshire Farmhouse Eggs, who were looking for a joint venture in the region. "At that point there wasn't a Lion Code packing centre in East Anglia, but they had an offer to supply 120 Sainsbury's stores in the region. We had the eggs so just needed to work out how to build a packing centre by the new year. Adrian and James Potter drove down, looked round the farm, we shook hands and started making plans. At the time he and Jo were building their own house on the farm, so they had to stop and start on a packing centre instead. "We got plans drawn up to convert an

existing building and the Potters send down a packing machine." The builders worked round the clock, with Jo bringing them fish and chips to keep their energy up.

"It was a leap of faith for all of us but one that has paid off. They are a great company to work with and share our ethos, being a family business themselves. They had already bought a business in West Sussex, so being able to supply from East Anglia as well, helped to expand their coverage of the UK." Woodfarm Free Range eggs now supply three other major retailers (Tesco, Asda and Co-op), as well as Sainsbury's with their branded eggs. This has meant taking on four local egg producers to supply the demand, with Yorkshire Farmhouse taking any surplus.

Circular Farming

"Before we started homemixing, we were having feed delivered every five days. The lorries were then buying wheat from local farms and taking it back to the mill on the other side of the country. This didn't make any sense from an environmental or financial point of view." The Mear's bought a Buschoff static mill, supplied by B&W feeds in Dorset and started using wheat grown on their own 200 acres of arable land, along with wheat bought from neighbouring farmers. The mill is powered by solar panels installed on the mill barn roof and can be run in the day to make the most of the energy they produce.

Next they looked at what else they could do with the land in terms of energy production and circulating nutrients. "We use the chicken muck to grow the wheat they eat, as well as maize and rye. The maize and rye are whole crop foraged and used to fuel an anaerobic digester (165 kw – 1.4M kw), commissioned in 2017. The process breaks down this 100% plant-based feed stock to produce methane. This then runs our generator transforming the methane into green electricity and renewable

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Wood Farm

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Free
Range
Eggs



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heat." The farm uses 10% of its output – the rest going back into the grid, which is sufficient to power 340 local homes. "Once digested, the crop is separated into Bio-Mulch and Liquid Bio-Fertiliser, which along with our chicken manure are applied onto our fields as valuable sources of natural fertiliser. This drives the yields of next year's crops, completing our 'full circle!'"

These processes are part of the Mear's Full Circle Growing enterprise which offers a range of 100% natural, organic soil conditioners and fertilizer for garden use. The original plan was to also use the chicken manure in the digester but unfortunately this hasn't been possible. "We use limestone grit in the diet, which ends up in the muck and would wear the mechanics of the digester as well as silting it up. Instead we are using the heat generated from the plant to dry the manure, in a purpose-built poultry manure dryer, before turning it into a pelleted

product. The dryer is also fitted with biological air scrubber to reduce ammonia emissions, which is important to protect the surrounding wildlife habitats." The calcium carbonate, however, is a benefit to the chicken manure pellets, helping to balance acidic soils. The nitrogen and phosphorus in the pathogen-free and virtually odourless products, provide nutrients for growth, along with a high level of organic matter, which increases the water holding capacity of soil.

The Bio-Mulch, either fresh, mature or dried, can be used as a peat-free soil conditioner – adding valuable humus and promoting beneficial soil microorganisms. The Liquid Bio-Feed is separated from the solid digestate and can be used as a liquid plant food. "We use the dried product ourselves in the scratch area and verandas as it absorbs moisture very well. Our plan is also to sell the product as a biofuel for green energy generation and we're currently looking for an affordable way to do

the official testing for accreditation. It has similar heat generation to coal and woodchip pellets but is more sustainable.”

The other area that Charles is investigating is the use of home-produced protein for the hens. “Soya is our Achilles heel in terms of being carbon neutral but at the moment we haven’t found a suitable crop we could grow that is rich enough in protein. I was interested in insects as a source of protein and got in touch with Entomics, a business that came out of Cambridge University. They have devised a modular system to produce Black Soldier Fly larvae (*Hermetia illucens*) from low-grade feedstocks and organic waste.” Working with Entomics, the larvae will be grown on site at Charles’ farm and fed to the older hens in a three-month trial, to demonstrate impacts on hen productivity, health and welfare.

Antibiotic free

Money saved on compound feed and energy was re-invested into providing the best possible nutrition for the hens. “Being a multi-age site, we did have health issues and our vet bills were high. For this reason, and one of sustainability, we wanted to reduce our medication costs.”

Charles is working with Harriet Smith, Poultry Co Ordinator at Alltech, to support gut health and bird performance - helping to reduce the use of antibiotics. “Power Tract is designed to support gut health and immunity as well as counteract the negative effects of mycotoxins. In addition, Bioplex and SelPlex minerals are added for antioxidant protection and to support feathering; as well as sustaining egg quality and shell strength throughout lay. He’s really pleased with the quality of the eggs his hens are producing, which is particularly important when selling your own brand into supermarkets. The contract producers are fed by Humphrey

Feeds and have worked with David Hope to include Alltech solutions to achieve the best possible gut health and egg quality.”

In 2016 Charles vet bill peaked at £16K but last year it was less than £2K. “This situation is very unusual on a long-established (47 flocks through) multi-age site like ours. We haven’t used antibiotics for over three years and the only veterinary products we are using are wormers and vaccinations. Crowshall vets have been supportive of our aims and worked with us to achieve the health status we have now.” Premier Nutrition provides feed formulations and the premix that Charles uses in his feed. “We include a targeted selection of products to optimise the health and performance of the hens. This includes a lactic acid bacteria (Bactocell), fibre (Arbocel), essential oils (Herban) and (Pidolin) calcium pidolate. Organic acids are also added to the water.” Calcium pidolate, improves calcium absorption by influencing the calcium binding system. And by working within the amino acid metabolic pathway it affects collagen production – an important part of membranes. Egg membrane is the foundation of the eggshell and as such is essential for eggshell integrity.

Steve Pritchard added, “Charles always does the best for his birds and has achieved good performance, which he is keen to maintain. The additives he uses focus on gut health as well as egg quality. His diets aren’t complex, containing mainly wheat and soya – with the aim of using high quality ingredients in a consistent formulation that also helps with gut health stability. Similarly, with the additives that go into the diet they aren’t the cheapest source but offer consistency. Above all it is Charles excellent management and attention to detail that leads to his high level of performance. However, he is prepared to invest in quality nutrition and products, in order to ensure this.”

CHARLES has kept Hy-Line Brown hens for the last 24 years and has been very happy with them and the support he's received from the company



Racehorses and wildlife

The family owned Waresley Wood in the 70's but sold it to the Wildlife Trust so that the public could enjoy this important habitat, particularly when the bluebells are in flower. "Over the years my father sold other parts of the land to the Wildlife Trust, so that the farm is now fully enclosed by young and mature woodland. My parents then planted trees and hedgerows to create corridors, allowing wildlife to from one area of wood to another across the farm." The Mears are also signed up to the mid-tier scheme and have planted up areas to provide food for the birds in winter along with wildflower zones, to encourage bees and other insects. "We also plan to install an apiary near to the anaerobic digester and dedicate this area for wildlife."

My Father's idea was just to keep the pastures that he could see from the farmhouse for his horses." Apart from farming his big passion is breeding racehorses – so for much of the year

mares and their foals graze the land. "They also graze the ranges, keeping them neat without any issue of disease transfer, sheep weren't working for us. In the spring it makes for a very picturesque sight. The hens follow the horses about, which encourages them to range and the birds do a great job of spreading out the manure too." The animals also offer some protection for the birds at range, although Charles has had to invest in fencing to avoid predation.

Set-up

There are two flat deck houses on the site, each housing 14K birds, with 30 acres of range each. There are a mix of pasture and established woodland, with trees planted around the houses. "We built verandas on each side of the houses, which are a god send. They offer shade keeping the birds cool in the summer and are insulated to keep them warm in the winter." There are concrete borders around the houses that help to keep

the bird's feet clean and can be scraped regularly. Further energy saving has been made from installing LED lighting throughout.

Charles has kept Hy-Line Brown hens for the last 24 years and has been very happy with them and the support he's received from the company, particularly in terms of lighting patterns. "This time we have decided to try a mixed flock with Lohmann Brown hens – to see how they get on in our system. The pullets are bought from Humprey's, who have also offered a lot of support in terms of management and feeding." He keeps the birds until they are 72 to 74 weeks of age, dependant on the quality of eggs and customer requirements. They then muck out and strip down the sheds before a contractor is used to wash and disinfect. "We've worked with RP Marsh for four years now, they are a great Father and Son team from Norfolk. Biosecurity is particularly important on a multi-age side so by building concrete roads

around the houses – we've been able to instigate a one-way system. The muck goes out of the unit at one end and eggs out at the other, which means that manure doesn't have to pass by the another shed." With the threat of bird flu four years ago, Charles also decided to build a clamp to store manure and avoid the potential cost of disposal should the birds become infected. "From a disease spread point of view it also makes sense; we were advised that after 42 days it would be inert, and we could use it ourselves."

Management

There are a number of enrichments in the shed, including re-used container hanging up, bags of digestate pellets and straw bales. "We fill the containers with different amounts of water and the hens peck as them like drums – it's great to watch." The flocks on the farm are currently 45 and 21 weeks of age, both of which performing well. "We were very pleased with the performance of the last flock

Performance over two flocks

Parameter	Last flock	Current flock
Flock size	13,500	14,100
Breed	Hy-Line Brown	Hy-Line & Lohmann
Flock age	73 weeks	46 weeks
Laying	81.5%	92%
Peak	95.7% @ 24 weeks	96% @ 24 weeks
Eggs per hen housed	328	166
Mortality	3.62% (inc. 0.84% smothering)	4.2% (inc. 2.4% smothering)
Feed intake	113 g per hen housed per day	122g per bird per day
Body weight	2025 grams	2051 grams
Floor eggs	<0.4%	<1%
Seconds	3.9% farm & packing	2% in total
Assurance	Lion code and RSPCA	Lion code and RSPCA

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out. However, smothering is our biggest cause of mortality, which is very frustrating."

Jo and Charles employ 17 people on the farm, in both full and part positions. "Rose is the poultry manager and a real mother hen; always going the extra mile to ensure the performance and welfare of the birds. We also have Deidre, who is in her 80s, packing eggs along with other staff and our children. Millie (14), Alex (12) and Harry (7), all enjoy the farm and particularly love riding."

Dominic is the packing station manager and his father drives the lorry to distribute eggs. "We have a great team and the business wouldn't work without them. We no longer do an egg round but do sell the garden centre in the village and other shops – so that local people can still buy eggs from us. Our eggs are also used in local schools, through Histon Produce and by Cambridge University catering establishments – via the supplier Cheese Plus.

The future

"I'd love to put up another shed but planning issues prevent us. To increase capacity, we'd have to knock down the building and put up multi-tier units instead, which we don't want to do." The Mear's are continually looking for ways to improve sustainability in order to achieve their aim of a carbon neutral free range egg. "We have worked with Warwick and Cambridge University to test our Full Circle products.

Along with Dr Mary Dimambro of Cambridge Eco who is also calculating our environmental impact in order to validate the claims we want to make. And once we've got as far as we can go, we will work with Alltech E-CO2 to audit the farm." Charles and Jo are also interested engaging with the local community and are planning to have more open days for schools, along with other initiatives. "We believe that now it is particularly important to communicate to the public that farming can be part of the solution, rather than a cause of climate change."