> *"Around 45% of farms are still burning or burying waste on farm, and if it's not separated properly it has to go to landfill."*

Recycling route to net zero

Climate Change Champions

A Lincolnshire farmer has made it his business to take in and recycle waste plastic from other farms. *CPM* visits to see how this fits in with moves to restore biodiversity to the family farm.

By Tom Allen-Stevens

Heaped up from floor to ceiling in one of Robert Moore's old potato stores are tens of millions of spent shotgun cartridges waiting to be recycled.

"These are mostly from clay grounds," he explains. "We think most private shoots still illegally put their spent cartridges in domestic waste that goes to landfill. But it costs just 0.01p per cartridge to recycle them."

Barff Farm, near Caenby in Lincolnshire, is home to Agri-cycle that has taken in 160M cartridge cases over the past year and has the capacity to process 1.6bn. The plastic is recycled, usually into drainage pipe, and the metal goes back to the steelworks. It's part of a business that collects and processes 12,000t/yr of waste plastics, much of this sourced from farms across the UK.

The business is based on Robert's family farm that comprises 350ha of mainly heavy clay, farmed as part of an 800ha arable and livestock business run by his brother Alistair and sister Janette. Moving away from the recycling plant, Robert explains the history of the land that surrounds it.

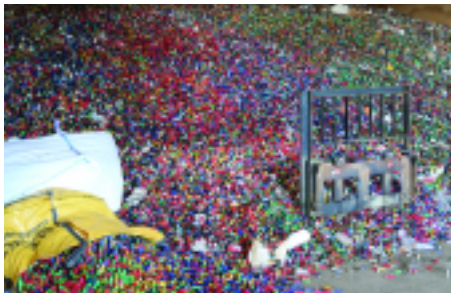
No hedges or trees

"We moved to the farm in 1988, and it had no hedges or trees, which had all been removed some time before — historical maps show there used to be over 90 small fields here which had been reduced to just 13. While the land is good productive arable soil, blackgrass has become a serious issue. The changes we're making now are not only restoring the productive areas to a more sustainable system. We've taken out less productive land, squaring up fields and restoring some of the lost hedgerows and trees."

By now he's reached one of the new plantings — a total of 5ha of trees were established last year next to Paunch Beck, with its strong clear flow into the River Ancholme at the edge of his land. Deliberately not planted in straight lines, the avenues between the trees are cut in alternating years to balance cover for wildlife value with good management to help the trees themselves establish well.

Robert inspects the trees within their tubes. "We've lost quite a few, despite irrigating them during establishment. These will be replaced this coming winter. We planted them on the south side of the dyke, which helps protect the water from farming operations, and provides shade — this area's already been visited by kingfishers and we're hoping more wildlife will be attracted here with the additional habitat. But we also didn't want to shade out any growing crop as the trees got taller."

The planting was done through The Woodland Trust's MOREwoods scheme, funded by Lloyds Bank, which covers up to 75% of costs. This included an expert advisor from the Trust who helped Robert ▸



Most spent cartridges probably end up illegally in domestic waste that goes to landfill, but it costs just 0.01p per cartridge to recycle them.

The avenues between the trees are cut in alternating years to balance cover for wildlife value with good management.

▸ design the planting scheme. "One thing I was keen to do was connect the woodland with the reservoir on the farm, to provide a wildlife corridor." So 1km of hedges were established at the same time, through the MOREhedges scheme, to complement 2km he had previously planted.

Around these plantings, Robert explains that areas have been strategically taken out of arable and put down to permanent pasture and grass margins while some temporary grass now also comes into the rotation. Working with his brother, there's a 100-head beef suckler herd with 400 sheep, and between 400-1000 more brought in over the winter to graze down the grass and complement the arable rotation — new introductions to a system previously all cropped. There's also 6ha of wildflower ley.

Livestock introduced onto the farm are one of a number of measures helping to increase the health and productivity of the heavy clay soil.

"The grassland has been located with hedgerows and fencing to allow the stock to be rotated around the grazing. Then we've squared off fields to maximise production from arable soils, aiming to cut out short work on headlands to minimise overlap of sprays and fertiliser," he says.

Fewer constraints

Although he's benefited from the Woodland Trust scheme, he decided against going into Countryside Stewardship. "I find that some of the guidelines go against what you'd consider to be good practice — I didn't want to be constrained in how we could use or manage the areas taken out of production."

Half of the land left in arable production is now spring cropped in a rotation that also alternates winter wheat, oilseed rape and winter beans. Stubble turnips in front of the spring crop help with blackgrass control and provide forage for overwintering sheep. Robert recalls how the heavy soils got progressively tighter in years gone by. These days, it's a Sumo Mono that passes in front of a Cultipress and 8m Väderstad Rapid drill. Hardly any land is ploughed now and soil structure is improving year on year as the changed cropping and livestock bring in their influence.

These changes have also vastly reduced the amount of fertiliser purchased and spread. There's also a family-owned broiler enterprise and the chicken litter from this is spread on the land, with further savings in fertiliser costs. Meanwhile, yields are creeping back up as the farm gets its blackgrass under control, with winter wheat averaging 9t/ha and spring barley 7.4t/ha.

The new environmental features connect the River Ancholme with a reservoir on the farm.

Total production is below what the farm used to achieve when everything was in a winter cropping rotation, but far less is spent on herbicides. "Three years ago, before we'd made the changes, the wheat on some fields would have to yield 9.6t/ha just to break even, which clearly wasn't sustainable."

As Robert returns to the farm buildings, he explains that the aim for both the farm and the recycling business is that they operate at net zero carbon. That's not just about minimising emissions and sequestering what he can into the trees, hedgerows and soils. Solar panels clad the roof and there's an additional ground-mounted array nearby. He now has planning permission to expand this by a further 300kVA, which would supply the plant with all it needs.

"Recycling plastic can also be a water-intensive business as it has to be cleaned after it's shredded. But we don't draw much water as it's all recycled within the plant. It comes from the reservoir on the farm, processed after washing with solids

What makes Robert Moore a Climate Change Champion?

Innovative ideas

Robert has built a nationwide business around helping farmers recycle the plastic used on farms, taking this further with other operators in an industry-wide initiative to encourage more recycling and less waste. This has gone hand-in-hand with a plan to restore biodiversity to the family farm.

Productivity push

With blackgrass among the biggest challenges, the poorest land has been taken out of production with spring cropping, a sound rotation, manures and the introduction of livestock bringing sustainable yields using far less synthetic inputs.

Cultivation care

The rotation and livestock are helping the farm's move to minimum tillage on the heavy soils.

Bio-based boldness

With the aim of net zero carbon for both the recycling side and the farm, solar provides the power while a water treatment plant minimises freshwater usage. Agri-cycle also helps other farmers cut their emissions.

Robert Moore has built his business around making it easier for farmers to recycle, which helps them cut their own emissions.

Climate Change Champions

UK Farming has set itself the challenging target of Net Zero emissions by 2040. Although led by the NFU, it will take the entire industry, working together in a partnership approach to meet this ambitious goal.

But there are individual growers, thought leaders who have already started on this journey. They have the ideas, the progressive outlook and the determination to shape positive change. *CPM* has teamed up with leading agricultural suppliers who have a credible Net Zero aspiration to identify these individuals and bring them into the top-level discussion about how farming can position itself as the solution to climate change.

https://www.cpm-magazine.co.uk/climatechangechampions/

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A new water treatment plant has cut by 80% the freshwater needed to wash around 12,000t of plastic processed every year.

separated out, then stored in two large tanks ready for reuse. Any water that comes off site passes through a series of reed beds to ensure it's clean."

Haulage, that forms a large part of Agri-cycle's footprint, has also been reduced. Robert indicates the new processing plant that takes in plastics, such as fertiliser sacks, packing them into dense bales for onward transport.

But this drive to reduce the carbon footprint goes further than just the business itself. Two years ago Robert, along with a number of other UK recycling businesses, started the Green Tractor scheme. This aims to make it easier for farmers across the UK to recycle their waste, with the ambition to provide UK agriculture with the ability to recycle all farm plastic by 2030.

"We estimate around 45% of farms are still burning or burying waste on farm, and if it's not separated properly it has to go to landfill. So we help with information and tips on how best to store plastic waste and new technology to help manage it."

Activities include lobbying of government and other bodies for support to increase plastic recycling facilities within the UK.

Audited figures are provided for the quantity of farm plastic collected and recycled, and the supply chain is encouraged to show corporate responsibility in how it sources plastic it supplies to farmers.

A lot comes down to the choices made on farm, however. "New silage covers can contain up to 30% recycled content. Bale wrap made from transparent film is far more recyclable. Perhaps the biggest difference farmers can make is to separate out their own waste streams — this is best done on farm, and the more you recycle, the more you cut your own emissions," he explains. ■

Banking on a relationship that delivers long term prosperity

The personal contact with his bank manager is one that Robert values. Relationship manager Darren Franklin from the Lloyds Bank Agriculture team joins a Zoom call to discuss the business. For Robert it's a chance to update him on the recent planning approval for the new solar panels and proposals to take this project forward — it represents an investment of around £280,000.

"If this is financed through Lloyds Bank, the business will benefit from our Clean Growth Financing Initiative," explains Darren. "All lending is subject to status, but to qualify, we look for projects that deliver significant carbon and greenhouse gas emission reductions, although there are no hard-and-fast rules. We waive the arrangement fee for loans made through CGFI, which is typically around 1.5%."

The initiative has already funded projects worth around £7bn. It's particularly geared towards those that involve buildings and infrastructure with an energy saving of 70% or more. Reservoirs and ring mains, renewable projects and bridging payments for capital expenses under environmental schemes also qualify.

Darren explains that it's a key objective for the bank to help farms invest towards a more sustainable future. "My view is that we've always been here to lend money. We aim to build an understanding of our customers' business and enable investment that delivers long term prosperity. The more money we can help customers invest in sustainable projects, the faster UK Agriculture will achieve its net zero objective. It's one of the reasons we're also involved in the Woodland Trust's MOREwoods and MOREhedges schemes."

The bank has a broad commitment to help plant one million trees per year over the next decade. Already the scheme has created almost 3000ha of woodland and 320km of hedges, he notes. Farmers looking to put more than 0.5ha down to trees or plant at least 100m of hedgerow benefit from funding for planting, as well as advice from the Woodland Trust on where and how to plant.

Renewable projects get favourable lending terms under Lloyds Bank CGFI, such as the plan to increase the ground-mounted array of solar panels at Barff Farm.

Lloyds Bank has been cutting its own carbon footprint too, ensuring its branches and offices are energy efficient. There are aims for operations to be net zero by 2030 and to reduce total energy consumption by 50% over the same timeframe.

The aims of both CGFI and MOREwoods fit neatly with the direction Robert has been taking the business, and the investments he's made, notes Darren — the water treatment system has reduced water usage by 80%, for example.

"Robert has geared his investments towards leaving the farm is a better state, both in terms of productivity and the wildlife it sustains. The Agri-cycle business takes that a step further and enables other farmers to cut their own carbon footprint, and the Green Tractor scheme makes it easier for farmers to recycle their plastic waste. It's the difference he's making both within his own business and for the industry as a whole that makes Robert a Climate Change Champion,"