

# Farming for the future

“Our goal is to still be farming in 30 years time.”

## Technical Sustainable farming

Corteva and LEAF's unique partnership through the Resilient and Ready programme provides farmers with training, support and mentoring to help their businesses be as robust as possible in light of a changing landscape for agriculture. *CPM* flew to Aberdeenshire to meet the latest participants.

By Charlotte Cunningham

As an unusually balmy late-October morning breaks over Aberdeenshire, farmers begin to arrive for an open day at the 153ha Newseat of Dumbreck farm, tenanted by young farmers Harriet Ross and Ben Lowe.

Though only in their early 30s, the pair have already achieved an inspirational amount. While Harriet introduces herself as an “accidental farmer”, her background in consultancy from her time at Strutt and Parker, alongside Ben's experience as an agronomist with Agrovista, comes together in the most strategic way when it comes to the operation of the business.

The pair took over the farm on a three-year farm business tenancy from the Aberdeen Endowment Trust in July 2019,

which has now been extended to ten years, explains Harriet. “This has given us some stability here to base investment on.”

Alongside the land at Newseat, Harriet and Ben have recently completed succession on Harriet's parents farm, just five miles away. This farm is 243ha — 163ha of which is arable, 40ha are in environmental schemes and the other 40ha is proposed to go into solar panels. “We also have a livery business we run from that farm too — mainly to make use of some of the poorer land,” explains Harriet.

Adding to this, the summer also saw the duo take on an additional 81ha from a neighbouring farmer, she adds. “We had the conversation with him at the beginning of the year as we thought he was slowing down and didn't really have anyone to succeed the farm and we were interested in the potential of a joint venture.

“However, he offered it to us to purchase so we spent the following six months doing budgets and speaking to banks and at the beginning of August we completed. We basically took over the business as it was, including 81ha of arable and 450 sows, as well as six full-time staff.

“The pigs are a really important part of the strategy for us. Our arable business was missing something to close the loop and we hope this is it, as we continue to work to make our business as sustainable as possible.”

With an arguably large workload, Harriet and Ben have been focusing on defining short, medium and long-term goals through the Resilient and Ready programme to provide structure and direction to the business.

### Short-term goals

When it comes to short-term goals over the next one to three years, Harriet and Ben are focused on getting the basics right, ensuring efficiency and maximising the resources they have.

This includes creating a more diverse, lower-input system, with the aim of reduced diesel and fertiliser usage and also perhaps reduced reliance on pesticides through using integrated pest management principles.

While the current cropping plan includes traditional cereals — like winter barley, oilseed rape and winter wheat, one of the key things they've done so far is to bring grass back into the rotation, explains Ben. “One of the big things we could see was that a lot of arable farms have lost grass over the past 50 years and this comes as a huge cost to the soil.



Only in their early 30s, Harriet Ross and Ben Lowe have already achieved an inspirational amount.

“Therefore, we decided to implement blocks on the farm where we’ve given the soil a ‘rest’ by putting it to grass and have spent the past few years giving it lots of digestate to help it regenerate — working with a neighbour with anaerobic digesters to provide this digestate.

“By doing so, we’ve created better root structure and soil stability to drill our cereals into.”

The next challenge was to ensure the structure they’d spent three years creating could be preserved when cereals were sown. “So what we’ve done is bring in a Mzuri drill to direct drill wheat straight into the grass,” he says.

Standing in one of the trial fields, Ben explains that the crop was sprayed off in mid-October and then digestate was applied. “The digestate was very important as there’s a lot of biomass trying to break-down at once and without the nitrogen from the digestate, it would pull nitrogen from the plant and effectively starve it — success is all about getting the attention to detail right.”

This application was trialled last year on two fields which compared the performance of the Mzuri (direct drilling into grass) with a field that was ploughed and combi-drilled for gross margin comparison), explains Harriet



Bringing grass back into the rotation has helped build soil health and structure (pictured: wheat direct drilled into grass).

(see tables on page 24). “The headline here was that the field drilled with the Mzuri yielded 0.5t/ha more.

“This was to prove to us that it didn’t cost us money to preserve the soil and encourage biodiversity. At the end of the day, we’re a business and we’re here to be profitable — part of being sustainable and resilient is to be profitable — but this proved that this didn’t have to come at a cost to the environment.”

They also carried out a carbon footprint on the field using the Agrecalc tool (see table below). “There wasn’t too much of a difference between the two fields which I was quite surprised about — I thought the Mzuri would have less impact due to the reduced diesel usage,” notes Harriet.

“But something that Agrecalc doesn’t take into account is the carbon that’s released by cultivations — so that’s something to consider in the future.”

They are also doing worm counts and measuring soil organic carbon to monitor whether or not their actions are having a positive effect or not. “This is going to be a more long-term thing, but our worm counts are already showing us that we’ve got more in the Mzuri-drilled field.

“I see the carbon audits as an efficiency calculator — they help us see how efficient we’re being with our nitrogen, for example.”

## Medium-term goals

Over the next 10-15 years, building a resilient system is their primary focus. A large part of this is based on soil health, and to aid that, adopting integrated farm management (IFM) practices is going to be key, explains Ben. “We’re quite lucky with this farm as it was historically run as a dairy enterprise, so the top 30cm of soil is in beautiful condition,” explains Ben. “However,



Direct drilling wheat into grass with the Mzuri drill is helping to preserve soil structure, compared with a combi drill.

when you go down to the subsoil, it’s not very fertile.”

Before undertaking any cultivations, Sustainable Soil Management carried out a number of soil samples to help Ben and Harriet understand better what they were working with. “This showed us that we had three different depths of pH — our investment in lime was just getting bogged down with cultivations,” he adds.

“It also showed us how fast that lime was cycling, putting us in a stronger position to make decisions on whether we should apply digestate (faster cycling) or farm-yard manure (slower cycling) to the crops.

“All of this knowledge will only help us build stronger, more resilient soils.”

Harriet adds that they are also looking into adding bugs to muck to make better use of it. “This will allow us to adjust, and hopefully reduce our bagged fertiliser over time.”

Growing their own protein — with an eye on minimising their carbon footprint — is also a medium-term goal. “Something we feel we’re missing from our rotation at the moment is legumes, but this is something we’ll be looking into in the future,” notes Ben. ▶

## Carbon footprint – Mzuri vs combi drill on winter wheat

	Agrecalc average (winter wheat)	Mzuri drill	Combi drill	Whole farm average
Manure and fertiliser (kg CO <sub>2</sub> e/kg grain)	0.28	0.27	0.28	0.29
Fuel (kg CO <sub>2</sub> e/kg grain)	0.07	0.01	0.02	0.05
Electricity (kg CO <sub>2</sub> e/kg grain)	0.01	0.01	0.01	0.01
Total emissions (kg CO <sub>2</sub> e/kg grain)	0.41	0.33	0.35	0.38
Grain yield (t/ha)	8.86	9.57	9.04	9.37
Straw yield (t/ha)	3.71	3	3	3
Fertiliser use (t/t grain)	0.09	0.06	0.06	0.09
Electricity use (kwh/t grain)	16.16	8.89	8.89	8.89
Red diesel use (l/t grain)	18.62	5.45	8.37	17.15
Red diesel use (l/ha)	163	52.14	75.65	160.69

## HB farms – strategy summary

### Short-term goals

- Get the basics right – attention to detail
- Efficiency – maximise own resources
- Keep things simple, but must be profitable

### Medium-term goals

- Sustainability – close the loop
- LEAF marque and IFM farming practices
- Think about carbon footprint – grow own protein

### Long-term goals

- Resilience – future ag policies and no reliance on subsidies
- Increase long-term biodiversity
- Maintain and enhance high soil health
- Farm the good bits better and enhance the poorer bits for wildlife.



Understanding the soil is imperative to building resilience, says Ben Lowe.

## ► Long-term goals

When asked what their long-term goals are, Harriet laughs and says in 30 years time she hopes to still be farming. While perhaps a rather clichéd answer, when you unravel the meaning, this aspiration is supported by everything the pair are doing now to ensure their business is as resilient as possible to survive the next 30 years of farming.

Protecting the environment underpins a lot of this, adds Harriet, and while much of the future direction of the business will be dependent on agricultural policy, what they are aiming to do now is increase long-term

biodiversity — farming the good bits better and enhancing the poorer bits for wildlife.

Tamsin Morris, from Walking the Talk has been working alongside Harriet and Ben to map what's currently going on with wildlife at the farm.

"This has largely involved looking at what's on the farm in terms of wildlife habitats and biodiversity, how they could develop that over time and how anything they do fits within the farming business," explains Tamsin.

"It's important to stress that we're not trying to change farmland from being an agricultural landscape, but instead, looking at what habitats and species are thriving in the current environment and how we can help to enhance that without taking big areas of land out of production."

An example of this is a small burn at the edge of a field which has been a stronghold for water vole, she notes. "This is partly because of fairly intensive efforts to control mink in Aberdeenshire, but also because agricultural landscapes can lead to burns which are quite open and lacking any tree cover — but instead often have quite lush grassy banks. Those grassy riverbanks alongside slower flowing burns can provide great habitat for water voles.

"So, some of the actions we looked at taking were expanding the grassy edges to strengthen the habitat. It's all about making

more of what's already here."

Agri-environment schemes are a clear direction of travel, but with much unknown about how these are going to look and what the conditions may or not be, it's a challenge for growers in the short term, adds Harriet. "We're pretty limited in what we can do at the moment, but what we've tried to do here is put our environmental areas into as feasible a scheme as possible.

"If future policy can help us manage the land a bit better, then that would be really beneficial for both farmers and the wider environment." ■



Tamsin Morris has been helping to identify existing habitats on the farm and what can be done to enhance them.

## Gross margins - Mzuri vs combi drill on winter wheat

Winter wheat field gross margin report 2020-21 (Mzuri)				Winter wheat field gross margin report 2020-21 (combi drill)			
Summary	Harvested area: 5.7ha	Yield: 9.57t/ha	Total yield: 54.55t	Summary	Harvested area: 6.9ha	Yield: 9.04t/ha	Total yield: 62.38t
	Value/ha	Value/t	Total		Value/ha	Value/t	Total
<b>Total income</b>	£1,952.28	£204.00	£11,128.00	<b>Total income</b>	£1,844.16	£204.00	£12,724.70
<b>Input costs</b>				<b>Input costs</b>			
<i>Sprays</i>				<i>Sprays</i>			
Adjuvants	£2.67	£0.28	£15.20	Adjuvants	£3.20	£0.35	£22.05
Fungicides	£102.09	£10.67	£581.89	Fungicides	£102.09	£11.29	£704.39
Growth regulators	£9.78	£1.02	£55.74	Growth regulators	£9.78	£1.08	£67.47
Herbicides	£42.32	£4.42	£241.22	Herbicides	£42.91	£4.75	£296.08
Trace elements	£17.18	£1.80	£97.93	Trace elements	£17.18	£1.90	£118.55
Other	£3.73	£0.39	£21.24	Other	£3.73	£0.41	£25.71
<i>Total spray costs</i>	£177.77	£18.58	£1,013.22	<i>Total spray costs</i>	£178.88	£19.79	£1,234.26
Fertiliser				Fertiliser			
<i>Total fertiliser costs</i>	£117.82	£12.31	£671.60	<i>Total fertiliser costs</i>	£121.50	£13.44	£838.35
Seed/plant				Seed/plant			
Total seed/plant costs	£92.63	£9.68	£528.00	Total seed/plant costs	£96.00	£10.62	£662.40
Total input costs	£388.22	£40.57	£2,212.83	Total input costs	£396.38	£43.85	£2,735.01
<b>GROSS MARGIN</b>	£1,564.06	£163.43	£8,915.17	<b>GROSS MARGIN</b>	£1,447.78	£160.15	£9,989.69
Field work				Field work			
<i>Total field work costs</i>	£285.98	£29.88	£1,630.06	<i>Total field work costs</i>	£274.19	£30.33	£1,891.92
<b>NET MARGIN</b>	£1,278.09	£133.55	£7,285.11	<b>NET MARGIN</b>	£1,173.59	£129.82	£8,097.77