

Costs of beef production slashed by crimping grain

An overhaul in feed preservation has slashed costs, improved rumen health and increased performance on Duncan Fairbairn's Gloucestershire farm.

Duncan Fairbairn (pictured) had been growing and drying grain at New Meadow Farm in Winchcombe, Gloucestershire for his beef rearing and finishing business for many years but was gradually beginning to question whether the costs and hassle involved were really worthwhile. Finding the right window for cereal harvest at the ideal 14-15% moisture was an age-old challenge and using a specialist mobile roller to process the grain added extra cost. Once the corn was in from the field, there was also the issue of dry grain storage, which – for his then small beef enterprise – was a relatively costly business.

Buying his own grain roller was the first step in reducing his processing costs and for this, Mr Fairbairn approached Kelvin Cave Ltd. "Using a contractor for rolling dry grain had become expensive – I reckon it added about £15 per tonne," he says. "So, having my own grain roller was the first step in cutting costs and I managed to obtain a second-hand Murska 350."

But when Mr Fairbairn took delivery of the machine, he was questioned by Kelvin Cave's sales director, Ian Hall, about the wisdom of rolling dried grain at all. Mr Hall also introduced him to the concept of crimping, a process by which moist grain is treated for long-term stable storage.

"The machine Duncan had bought was perfectly suited to rolling dry grain but it is also designed for crimping," said Mr Hall. "This means high moisture grain can be harvested around three weeks earlier than conventional harvest and is processed with the preservative CrimpSafe through an applicator on the machine."

The crimped cereal is then stored in a similar way to silage – compacted and sheeted in a clamp without specialist equipment.

"This process not only brings the cereal in at a higher feed value, it also comes in at a higher dry matter yield and in better condition, usually before there's any disease,



shrivelling or loss of grain," says Mr Hall. "And with the right preservative, a quick and controlled fermentation is achieved and the crop's nutritional value is retained."

Mr Fairbairn could see the appeal of the process and was prepared to try it on a small scale.

"We had a long, narrow silage pit which I'd used for storing moist feeds, so we used this for the crimp," he says. "I did have reservations because it was completely new to me and I was worried about what would happen if it didn't work out."

In the first year he cut two fields of winter barley and the crop came in at 5t/acre (12.4t/ha) at 42% moisture.

"Even allowing for the extra moisture, we had good dry matter yields for these fields," he says. "However, we think we cut the corn a few days earlier than ideal, and now aim to harvest at 28-32% moisture."

Opening the clamp for the first time three weeks after harvest, Mr Fairbairn says: "I thought that was 10 steps to heaven! It smelt like honey, the cattle loved it and there was absolutely no wastage."

Continuing to use crimped cereals has now

allowed him to rethink how he feeds his cattle and to make operational changes to the whole system.

"We used to buy in calves at around five weeks and put them on to milk and creep, followed by a pellet until they were around five months old," he says.

"But this was a costly system, so they now come on to the farm at three to four months and go straight on to the grower total mixed ration [see panel overleaf]. They will stay on this until they weigh around 450-500kg and then move on to the finisher ration." [see panel overleaf].

In the finishing period, the ration is based on two-thirds of the grower ration and one-third crimped barley (fresh weights), which ramps up the starch to 35%.

"We have no scouring and have absolutely no worries about acidosis when feeding crimped cereals as unlike dry rolled cereals they are slowly fermented and very safe for the rumen," he says.

David Hendy, the farm's nutritionist explains: "Clearly there are practical and logistical benefits to crimping cereals but from a nutritional perspective it also has





advantages. It's safer for rumen stability, is more digestible and degradable than conventional rolled grain and can be safely fed at a higher rate where finisher rations need to have optimum performance."

The cost of the crimped barley has been meticulously worked out by Mr Fairbairn, who says it's considerably cheaper than rolled, dry-stored cereal.

"Last season, my growing, harvesting and transporting costs were £372/acre for winter barley and the first 10 acre field we harvested – even earlier than usual on 22 June – yielded 57 tonnes of grain (5.7 tonnes/acre fresh weight and 4.1t/acre dry matter).

"This means our growing cost was £65.26/tonne at 28% moisture," he says. "Added to this is our crimping cost, which includes the CrimpSafe, sheeting, depreciation and labour, and worked out at a further £19 per tonne.

"This gives a total cost of £84/tonne of fresh weight, which, at 28% moisture, is £116.66/tonne of dry matter – and that's an over-estimate as it assumes zero value for the straw which came in at 2.9 t/acre (7.2t/ha)."

He compares this with the £148/t DM he has calculated as the cost of his dried, rolled barley although says this varies from year to year depending partly on whether drying is needed. However, this figure fails to account for the additional yield to come from the earlier crimp harvest which, on average, has been over one tonne/acre extra on a dry matter basis because of the lack of losses.

The cost of crimped barley has been worked through to cost the entire TMR which Mr Fairbairn says is £88.45 per tonne of dry matter for the growers and £106.50/t DM for the finishers.

However, he says: "The most important thing to me is not just the cost of the feed nor getting the highest growth rate, but the cost of producing a kilogram of liveweight gain."

With growth rates averaging 1.1kg/day for growers and 1.45kg/day for finishers, he says this costs the business 66.7p/kg and 90.3p/kg of liveweight gain respectively [see table].

Confident these figures are appreciably better than his earlier ration, he says he has cut the cost of bought-in feed by at least £5,000/year and now aims for 96-98% self-sufficiency.

However, he says the knock-on benefits of harvesting and using crimp extend beyond the cost of liveweight gain as there are agronomic and health benefits which help the finances of the whole farm.

"The contractor loves the job because harvest is so early, it's no longer weather-dependent and it doesn't matter if – like last year – there is uneven ripening of grain," he says.

"We also get more and better quality straw which has a higher feed value, and we can get on the fields early for autumn cultivations and potentially get in a forage crop for autumn grazing," he says.

Today, the business has expanded to a throughput of 110-130 head finished each year from the 160 acre holding. Performance of the beef continues to improve and the kill sheets from St Merryn Meat show grades of up to -U3 and deadweights of up to 387kg for stock aged 19-23 months.

Most are 50:50 dairy x beef breeds and Mr Fairbairn says: "I find cattle fed a better ration for longer seem to have better carcass quality with a higher killing out percent.

"With our previous ration and dry cereals as our main energy source, we would have waited until at least 24 months to finish the dairy cross cattle and used to have around 15% more O+ and fewer R and -U grades," he says.

As a farm contractor himself – specialising in silage, racehorse hay and cultivations – he has now switched the preservation of

every forage made on the farm to a Kelvin Cave product and upgraded the crimper to a Korte 700 with a throughput of over 10 tonnes/hour.

"We use CrimpSafe 300 for grain which comes in at over 24% moisture and CrimpSafe Hi-Dry for grain at between 16 and 24%," he says. "We've also switched to Safesil Challenge for grass and lucerne silage, Safesil Pro for wholecrop and maize silage and we treat the racehorse hay with Propcorn NC as it's so important in this to prevent the growth of fungi and moulds. All silages are also sheeted in O2 Barrier 2in1.

"We know it will cost us more than some other products but it's all about maximising the value of everything we grow on the farm. We are confident we will get the money back... and then some again."

New Meadow Farm grower ration (freshweights/head/day)

Lucerne hay	0.75kg
Grass silage	9kg
Crimped barley	1.5kg
Minerals and limestone flour	0.15kg
Wholecrop/maize silage	6kg
Brewers' grains/bread	3kg

Analysis in dry matter: DM 40%, 13.7% crude protein, ME 11.1MJ/kg, 45% NDF, 17.5% starch
Average intake: 20.4kg/head/day freshweight or 8.3kg DM at average 1.1kg gain/day. The cost of the ration is therefore 73.4p/head/day and 66.7p/kg gain

New Meadow Farm finisher ration (freshweights/head/day)

Grower ration	17kg
Crimped barley	8.5kg

Analysis in dry matter: DM 48.4%, 13.4% crude protein, ME 12MJ/kg, 35.3% NDF, 35% starch
Average intake: 25.5kg/head/day freshweight or 12.3kg DM at 1.45kg gain/day. The cost of the ration is therefore £1.30/head/day and 90.3p/kg gain

Products used on New Meadow Farm:

PRODUCT	PURPOSE
CrimpSafe 300	Grain harvested at over 24% moisture
CrimpSafe Hi-Dry	Grain between 16% and 24% moisture
Safesil Challenge	Grass and lucerne silage
Safesil Pro	Wholecrop and maize silage
Propcorn NC	Racehorse hay
O2 Barrier 2in1	All clamp silages



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